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Peter Parycek, Noella Edelmann (Editors)

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Conference for E-Democracy and Open Governement

21-23 May 2014
Danube University Krems, Austria

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Editorial

Editorial CeDEM14

Noella Edelmann*, Peter Parycek**

**Danube University Krems, Centre for E-Governance, noella.edelmann@donau-uni.ac.at*
**Danube University Krems, Centre for E-Governance, peter.parycek@donau-uni.ac.at*

The digital world changes our analog world, us, our lives, our society, the political sphere, governance, democracy but also our expectations and approach to reality. Remember when we used to think that the digital world was separate from the analog world? Have the digital and the analog now become the same world? Remember looking for information in pre-Google days? Remember the fear of internet addiction? How much time spent on the internet means addiction? Could you work without the internet?

Digitalisation can provide an open world, allowing us to find what we are looking for, enabling communication, sharing, participation and collaboration. It makes data and information available and accessible. But for many it is information overload. We know that the amount and complexity of data and information is going to stay and increase, so in the interest of all citizens, society, democracy, freedom and fariness, we need to find ways that help us deal, display, visualise this information. Then we will be able to work with and understand what is available.

The digital world and digitalisation lead us to set high expectations and to demand changes that are to be made quickly. The „reality" is that change is slow. We ask for government to be „open government", but for public administrations and politics to change they need to undergo a cultural change that is also set at a slower pace. „Slow" has disadvantages and advantages: on the one hand, by being slow we miss the trial&errors necessary to advance and push for change, but on the otherhand, slowness allows a reflexive process and avoids the traps set by fads.

The NSA scandals cast a large shadow on our digital world. And it „really" is a shadow: what is known in English as „data trails", the German-speaking world calls „Datenschatten" („data shadows"). Thinking about digital society and digital life means considering the opportunites and the freedom it offers, but also security concerns, data protection rights and thus data trails, cookies, crumbs and shadows. In addition, such issues and concerns may also be a cultural issue, meaning that we are more or less free in different countries, so that „a land of the free" may be „a land of the digitally unfree".

Is our digital world too complex? Are you disillusioned with open government? What should be the pace of change? Are we free in a digital world? Join us to answer such questions and engage in the discussions at CeDEM14 – there are enough opportunities at the the popular CeDEM tracks „E-democracy and E-Participation", „E-Voting", „Bottom-Up Movements", „Social and Mobile Media for Public Administration", „Open Data, Transparency and Open Innovation". We have introduced new tracks that consider philopsophical, ethical, technological and human issues, the roles of design and visualisation of information: „Technology and Architecture", „Rethinking Information Visualization for the People", „Freedom and Ethics in Digital Societies" and „Design and Co-creation for E-Democracy". The papers submitted to this year's CeDEM conference reveal that all over the world, experiments are being made, approaches are being tested. We see the

bottom-up push for fast change and the slow top-down approaches – revealing that cultural change is occuring?

In addition to these CeDEM14 tracks, the conference offers a „Reflections“ track containing short papers selected by the chairs, workshops, an Open Space that allows participants to democratically choose and organise in barcamp style the topics to be dicussed, the viewing of the film „Blueberrry Soup“ followed by a discussion with the filmmaker Eileen Jerrett. Enough opportunities for you to present and hear new ideas, engage in conversations, discuss opportunities, network and enjoy the CeDEM conference!

We are pleased that our CeDEM community is getting bigger, reaching more countries and continents. We know that this is due to the continued efforts and support by track directors, programme committee members, reviewers, honorary board members, keynotes and participants who are committed to the CeDEM and its success, as well as the authors who contribute their work and ideas. Many thanks!

I. Peer Reviewed Papers

E-Democracy and E-Participation

Traditional Media, Social Media, and the Law-making Process: A Study on the Marriage Equality Issue in Maryland

Amy B. Becker*, Siddharth Kaza**, Andrew B. Goldberg***, Ranjan Vaidyanathakumar****, Jason Koepke****

**Department of Mass Communication and Communication Studies, Towson University, abecker@towson.edu*
***Department of Computer and Information Sciences, Towson University, skaza@towson.edu*
****Arcode Corporation, abgoldberg@gmail.com*
*****Department of Computer and Information Sciences, Towson University, rmanga1@students.towson.edu, strago@gmail.com*

***Abstract**: Research has shown that exposure to both traditional and social media content can have a marked effect on public opinion and civic and political engagement. Moreover, in a democracy citizen participation in social media can influence the outcomes of the law-making processes. In this paper, we examine the interplay between newspaper articles, twitter posts, and events related with the same-sex marriage bill in Maryland that was signed into law in March 2012 and then voted on in November 2012. We describe the data collection procedures and study the volume of participation on twitter and the quantity of newspaper articles and editorials on the issue. In addition, we also study the sentiment expressed in this outlets. We find that participation in social media and newspaper media show different characteristics in reaction to different events. We also find that Maryland citizens express mostly supportive opinions on social media with regard to the marriage equality issue.*

***Keywords**: E-Participation, Text Analysis, Social Media, Sentiment*

***Acknowledgement**: This project is partially funded by the School of Emerging Technologies at Towson University*

Introduction

A wealth of research has shown that exposure to both traditional and online media content can have a marked effect on public opinion, knowledge and learning, and civic and political engagement (Althaus & Tewksbury, 2002; Eveland, 2003; Messing & Westwood, 2012; Moy, Torres, Tanaka, & McCluskey, 2005; Xenos & Bennett, 2007). Pundits, journalists, and academic researchers have spent the better part of the past decade examining what factors influence public support for marriage equality (Watkins, 2013). In fact, a wealth of previous research has documented the connections between conservative religious and ideological predispositions and opposition toward same-sex marriage (Author, 2009; Brewer, 2008; Brewer &

Wilcox, 2005; Campbell & Monson, 2008; Ellison, Acevedo, & Ramos Wada, 2011; Olson, Cadge, & Harrison, 2006; Sherkat, De Vries, & Creek, 2010) and the influence of exposure to framed media content on public support for both civil unions and same-sex marriage (Brewer, 2002, 2003; Price, Nir, & Cappella, 2005). Numerous polling organizations have documented the rapid shift in public opinion with Gallup first noting majority support for same-sex marriage in the United States in May of 2011 (Newport, 2011) which makes this issue worth studying from the viewpoint of e-participation.

Traditionally, researchers have relied on manual content analysis to discover important features (e.g., frames, bias, and public sentiment) present in traditional news and social media content (Binder, 2012; Nisbet, Brossard, & Kroepsch, 2003; Pan, Meng, & Zhou, 2010). This approach to content analysis means that researchers end up coding only a small selection of traditional news stories or social media content (e.g., tweets) in the attempt to define key features. This also limits the viability of longitudinal studies to look at these features during the law-making process on a issue. This is because the length of time that a typical law-making process may take precludes manual analysis of large quantities of social media content generated during the period.

This paper is part of a larger project on computational social science to make sense of large streams of news and social media data, analyzing the traditional news and the sentiment expressed in social media coverage in relation to legislation. In this paper, we focus on the coverage of the same-sex marriage issue in Maryland (a mid-atlantic U.S. state) and the participation of citizens on twitter as the law on same-sex marriage in Maryland is signed, challenged, and voted in the general elections.

Specifically, we explore the following questions:

1. What are the volumes of traditional media coverage and social media participation as the events leading to the law unfold? Is there any interaction between them?
2. What are the sentiments expressed in traditional and social media as law-making activities and the events surrounding them progress?

The next section provides the context on issue of same-sex marriage in Maryland. Section 2 presents a review of literature on the study of opinion traditional media and social media participation. Section 3 presents our research design. Section 4 presents and discusses the results and the last section concludes and presents future directions.

How a Bill Became a Law: Maryland and Same-Sex Marriage

The legislative debate over extending marriage benefits to same-sex couples in Maryland began in January 2011 with the introduction of the Religious Freedom and Civil Marriage Protection Act (SB 116) in the State Senate. Approved by the Senate on February 24, 2011, the bill then moved to the Maryland House of Delegates, where it was sent back to committee after it appeared that there would not be enough votes to ensure its passage before the end of the legislative term.

Formal political activity on the issue remained relatively quiet until July of 2011 when Maryland Governor Martin O'Malley announced his support for same-sex marriage and his intention to move the bill forward during the next legislative session. Some speculated that O'Malley's ownership of the issue was reflective of a sea change in public opinion toward same-sex marriage that was starting to take hold in various states across the country.

The legislation was reintroduced on January 23, 2012, newly renamed as the Civil Marriage Protection Act. The new bill had stronger protections for religious organizations that might be opposed to performing same-sex marriage ceremonies. The Maryland House of Delegates approved the legislation on February 17, 2012 followed by the Maryland State Senate on February 23, 2012; Governor O'Malley signed the bill into law on March 1, 2012. In the meantime, opponents of the legislation began gathering enough signatures to force the issue onto the November 2012 ballot---what would later become Question 6. Certified as a ballot measure by July 2012, the ensuing debate over same-sex marriage captured considerable media attention with religious leaders, celebrities, athletes, and politicians weighing in to advance their positions on the issue. In a close contest, Maryland voters approved the legislation in November 2012, voting yes on Question 6 by a margin of 51.9% to 48.1%, becoming the first US state to approve same-sex marriage at the ballot box (Elections 2012, 2012; for articles on key dates mentioned above, see Timeline: Same-sex marriage debate in Maryland, 2012).

Relevant Work on Traditional and Social Media

Traditional Media

A handful of research efforts have examined how the mainstream media has covered same-sex marriage and gay civil rights issues with a particular emphasis on cataloguing the volume of coverage received in order to measure the issue's place on the public media agenda. All of these efforts have relied on a traditional approach to content analysis; the scholars begin by gathering relevant newspaper articles from a particular bounded time period and manually code a subset of this retrieved content in order to make generalizations about the way the issue is treated by the press.

Li and Liu (2010) examined articles published in five U.S. national newspapers (New York Times, Washington Post, Los Angeles Times, San Francisco Chronicle, and The Boston Globe) between February and March of 2004. The researchers gathered 209 relevant articles using a Lexis Nexis keyword search for the term "same-sex marriage," and coded for key news values like balance and fairness. They conclude that the overall coverage was fair and balanced.

Another 2010 study also examined the framing of the same-sex marriage debate, this time comparing the ideological framing of coverage published in The New York Times and The Chicago Tribune (Pan, et al., 2010). They examined two years of content published between November 2002-November 2004 (treating the November 18, 2003 legalization of same-sex marriage in Massachusetts as a pivotal reference point). 219 stories were culled from both papers between 2002-2003, while 1,308 articles were pulled during the second half of the sampling time frame. Their results suggested a difference in the coverage offered by The New York Times and The Chicago Tribune after the November 2003 Massachusetts decision, with the New York Times promoting activist coverage and the Tribune emphasizing moral objections to gay marriage. However, these and other studies did not focus on the interaction of news media coverage with social media participation on the issue.

Social Media (Twitter)

In recent years, there have been several studies to analyse content on twitter with a focus on sentiment, relevance of tweets, and classification into multiple content categories. Table 1 shows a representative study in each of these areas along with the classification techniques they have used, number of categories, sample size, and accuracy achieved.

Table 1: Representative studies for content classification on twitter

	Techniques	**Categories**	**Sample Size**	**Accuracy**
Chrzanowski & Levick, 2012	SVM	Voted Democrat, Voted Republican	7.5 million	82.1%
Sriram et al., 2010	Naïve Bayes	News, Opinions, Deals, Events, Private Messages	5,407	~90%
Irani et al., 2010	Naïve Bayes, J48, DecisionStump	Spam vs. Not Spam	1.3 million	~70%-85%
Go, Bhayani, & Huang, 2009	Naïve Bayes, Max Entropy, SVM	Positive Sentiment, Negative Sentiment	359	~80%

Chrzanowski & Levick (2012) attempted to predict the voting behaviour of twitter users based on their posts, classifying them as either republicans or democrats. They used a supervised learning technique known as Support Vector Machine (SVM) to learn from a large sample of collected tweets. Sriram et al. (2010) attempted to classify tweets into several categories including news, opinions, deals, events, and private messages through the use of a probabilistic classifier known as Naïve Bayes. In Twitter Sentiment Classification using Distant Supervision (Go, Bhayani, & Huang, 2009), the authors attempt to classify the tweets' sentiment as either positive or negative. To accomplish this, the authors introduced several concepts to process Twitter data that included the steps necessary to be able to uniformly process data by normalizing it and reducing excess characters, emoticons, uniform resource locators (URL), and usernames.

In the field of political communication research, recent efforts to analyse Twitter content have suggested that use of the microblogging service varies across user types (elite or high-end users vs. average citizens), issue contexts, significance of the electoral contest (national vs. regional race), and the devices used by citizens to tweet out relevant messages (Binder, 2012; Larsson & Moe, 2012; Park, 2013; Veenstra, Iyer, Hossain, & Park, 2014). Specially, Binder (2012) found that tweets regarding the complicated issue of nuclear risk were more likely to include links to stories from traditional news web sites while Veenstra et al. (2014) offered evidence of a higher presence of included URLs for those posting from computers, rather than from mobile devices. In a related vein, research by Himelboim et al. (2012) also highlighted the importance of sharing traditional news content among Twitter users following state-wide election contexts. Researching the use of Twitter given a set of controversial issue contexts (e.g., global warming, health care reform, immigration, etc.) recent work has also offered evidence of selective exposure to consistent ideological content with homogenous network clusters driving the discussion of a range of issues (Himelboim, McCreery, & Smith, 2013). Depending upon the specificity of the topic, both liberal and conservative Twitter clusters were present; on more generalized, broader issues the dominant

clusters emphasized conservative political sentiments. Again, none of these studies have looked at the interaction between citizen posts on twitter with traditional media and a long-term law-making process.

Research Design

In this section, we describe the methods to obtain newspaper and twitter data on the same-sex marriage issue and the techniques used to identify sentiment in the articles and posts.

Acquisition and Analysis of Newspaper Data

A Lexis-Nexis keyword search was conducted using the search terms, "gay marriage," or "same-sex marriage," and "Maryland." Articles published between January 1, 2011 – December 31, 2012 were gathered from three major national papers including The New York Times, The Washington Post, and The USA Today. Given the interest in focusing on the issue attention cycle in Maryland, articles were also downloaded from the same time period from The Baltimore Sun, the state's leading newspaper, using the ProQuest database. A total of 983 articles were downloaded from the two-year period (156 from The New York Times, 372 from The Washington Post, 33 from The USA Today and 422 from The Baltimore Sun). A team of coders manually evaluated all of these articles. The articles were evaluated first for relevancy, whether the coverage was deemed to thematic or episodic in orientation, the opinionation of the coverage (pro, con, mixed, or neutral), the dominant and secondary frames present in the coverage (e.g., morality/religion, equality, personal story, public opinion, political event, or other), the speakers quoted in the article (official, elite, or ordinary), the context of the story (national, regional, state, local), and the type of story (news, opinion-official, opinion-unofficial).

Two trained coders evaluated the same subset of 174 articles from the full database of 983, or around 18% of the sample to test for intercoder reliability. Robust intercoder reliability results were achieved for article relevancy (Scott's pi = 0.86; 81 of 174 articles deemed relevant or 47%), article type (Scott's pi = 0.86; categorizing between news, opinion-official, and opinion-unofficial) and geographical context (Scott's pi = 0.74).

Acquisition and Analysis of Twitter Data

It is a challenge to identify relevant items from the large quantities of data that social media sites like Twitter provide. Though there are several ways to obtain tweets from Twitter, most methods do not provide the capability of doing keyword searches for specific issues like 'same-sex marriage' with the option of subsequently obtaining historical postings. However, it is possible to obtain historical postings for individual users if their usernames/screen-names are known. Thus, given a set of users, we can obtain all the tweets posted by them over time. It is important to be careful in the selection of users so as to get generate a seed set of individuals who are genuinely interested in the issue. To do so, we identified a seed-set of organizations who were posting on the issue of same same-sex marriage in Maryland (using simple searches on the Twitter website). We followed their twitter accounts to identify more organizations that followed them. This iterative procedure led to a set of 34 seed organizations – all of which were manually confirmed to be organizations posting on the same-sex marriage issue. After developing the list of seed set

organizations, we then used the Twitter API (https://dev.twitter.com/) to identify all the individuals who followed these organizations. We considered these individuals clearly interested in the issue since they followed our seed organizations.

Once the users were identified, we used the Twitter API methods to download all the tweets posted by the users (along with meta-information for users like location, names, etc.). Generally, the Twitter API limits downloads to 350 method calls (one method call can download a few hundred tweets) an hour. We designed a system to respect this limit and work continuously and iteratively for weeks in a failsafe fashion to download tweets. For each tweet we downloaded all relevant information available including, the text, posting date, and location (if available). Table 2 shows a summary of the dataset. Since these are all the tweets posted by the users, there is still a need to identify tweets that are relevant to the issue by searching by keywords (this is discussed later in the paper).

Table 2: Summary of Twitter dataset

Total tweets	9,256,819
Average number of tweets downloaded per day	~ 55,000 - 60,000
Total number of followers	63,955
Date Range	03/13/2008 – 12/12/2012

Results and Discussion

For this paper, we looked at a smaller subset of our newspaper and twitter datasets that were specifically focused on the same sex marriage issue and clustered around the major events related with the passage of the same-sex marriage law. We examined the interplay between the volume of social media participation and traditional media publication along with the sentiment expressed by citizens in both through the signing, challenge, and vote on the law.

Dataset Curation

Newspaper articles: Of the 983 newspaper articles, 440 or approximately 45% were deemed by the team of coders to be relevant, meaning that the main focus of the article was the debate over same-sex marriage. Articles that discussed the same-sex marriage issue as just one piece of the Maryland legislative agenda were treated as non-relevant as were batches of letters to the editor that addressed a range of issues. Of the newspaper articles coded as relevant, two-thirds were classified as straight news stories, while the other one-third of the content was split between official opinion pieces (authored by the editorial board, a regular columnist, invited guest, etc.; approximately 26%) while the remaining seven percent were written by unofficial sources.

Twitter posts: For the purposes of this investigation, we focused only on tweets from organizations that were located in Maryland and tweets from users who disclosed their locations in Maryland. This lead to a collection of 6,287 relevant posts from 4/09/2009 to 12/19/2012, mostly centered around the timeframe during which Maryland enacted, signed, and voted on the same-sex marriage law.

Volume of Newspaper Articles and Twitter posts

Figure 1 plots the number of newspaper articles and tweets in the curated dataset against significant events in the same-sex marriage law in Maryland. These events are listed in Table 3. As shown in the figure, the volume of traditional news and social media coverage generally increased throughout 2012, with larger upticks in coverage corresponding with the unfolding of major events in the legislative cycle. Of course, some events generated a more significant media response than other events. For example, the initial passage of the law in February 2012 generated more buzz on social media and via traditional outlets than the debate and hearings driving the prior legislative consideration of the law. President Obama's declaration of support for same-sex marriage in May of 2012 resulted in considerable media attention as well. Once Question 6 was certified as a ballot question in July 2012, discussion of the issue increased on Twitter, with traditional news coverage following suit during the final weeks of the election cycle (September and October 2012). Not surprisingly, a large amount of attention was devoted to the issue in November 2012 when the law passed, with coverage tapering off by December 2012 after the drama of Election Day had faded.

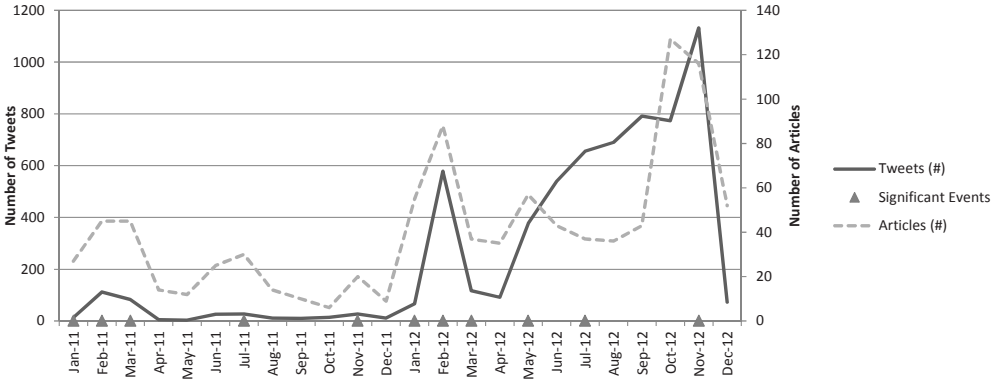

Figure 1: Relevant Newspaper Articles and Twitter Posts plotted Against Significant Events in the "Same-Sex" marriage issue in Maryland

Table 3: Timeline of 2012 Maryland Same-Sex Marriage Debate Events

Month	Event
Jan-12	Bill reintroduced in state legislature by Gov. O'Malley
Feb-12	Bill hears and passage of law
Mar-12	O'Malley signs Civil Marriage Protection Act into law
May-12	President Obama declares support for same-sex marriage
Jul-12	Ballot petition for Question 6 certified
Nov-12	Maryland voters pass marriage equality/Question 6

Sentiment Expressed in Newspaper Articles and Twitter posts

Figure 2 plots the number of pro/con twitter posts and pro/con newspaper articles against the events listed in Table 3. The sentiment in newspaper articles was determined by manual coding and sentiment expressed in twitter posts was determined using a Naïve Bayes algorithm (that achieved a 90%+ accuracy over 8 runs). We ran the classification algorithm over the data from January 2011 to December 2012 that included 6,233 tweets, with 3,957 of them being classified as positive, 180 being classified as negative, and 2,092 being classified as neutral.When examining the sentiment it appears that the bulk of the discussion by Twitter users concerning the same-sex marriage debate in Maryland was positive in orientation, with the volume of positive tweets generally increasing throughout the spring, summer, and fall up until the November 2012 election. Only a marginal amount of the collected tweets expressed a negative sentiment or opposition to the marriage equality law. In contrast, traditional news content was fairly evenly split between articles expressing positive sentiment or support for the marriage equality law and neutral articles that simply reported on the unfolding political events rather than adopting a stance or choosing a side on this particular issue debate. Interestingly, this tone in media coverage differs significantly from the results of a 2013 report issued by the Pew Research Center's Journalism Project that documented a focus on supportive issue coverage throughout media outlets and a corresponding emphasis on the civil rights frame in traditional media coverage (Pew, 2013). Conversely, the report chronicled a more mixed set of reactions on Twitter with an almost equal split between tweets urging support for same-sex marriage and tweets opposing marriage equality. The report also noted that more than 40% of the Twitter content was mixed or neutral in opinion, with the overall discussion more closely reflecting the national public opinion climate for this particular issue debate (Pew, 2013). Overall, this contrast in sentiment underscores the importance of looking more closely at particular issue contexts like the Maryland case and that the public opinion climate for marriage equality varies by regional affiliation. For example, with the recent October 2013 court decision legalizing same-sex marriage in New Jersey, a very clear pattern of support has emerged on both the East and West coasts of the United States, while the middle of the country and the South remain more resolute in their opposition toward marriage equality (Weigel, 2013). As these analyses show, the sentiment present in the debate over marriage equality in Maryland differed significantly from the national perspective.

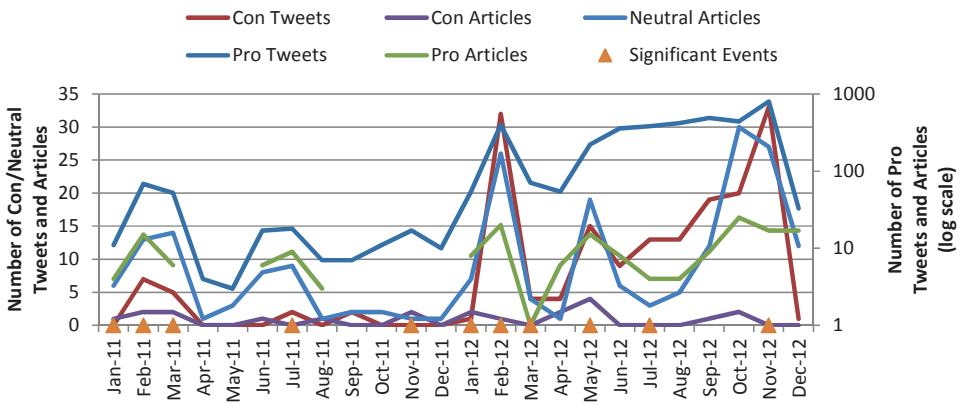

Figure 2: Newspaper articles and Tweets expressing positive (pro) or negative (con) sentiment on the same-sex marriage issue/law

Conclusions and Future Directions

Research has shown that exposure to both traditional and social media content can have a marked effect on public opinion, knowledge and learning, and civic and political engagement. Moreover, citizen participation in social media influences the outcomes of the law-making processes in a democracy. In this paper, we examined the interplay between newspaper articles, twitter posts, and events in the same-sex marriage bill in Maryland that was signed into law in March 2012 and then voted on in elections in November 2012. We studied the volume of participation on twitter and number of newspaper articles. In addition, we study the sentiment expressed in this outlets. We found that participation in social media and newspaper media shows different characteristics in reaction to different events. In some cases traditional news coverage follows social media while the reverse is true for other events. We also find that Maryland citizens express mostly supportive opinions on the marriage equality issue on social media which is different from national level studies. This is point to differences in citizen participation based on the states and political climates they live in.

In future work, we plan a deeper study on the opinions expressed on twitter and their relationship with the bill making and legal process. In addition, we plan to use well-tested automated coding techniques for newspaper articles and twitter posts. Other questions include identifying influential individuals who are opinion leaders in social media, and studying the participation levels of groups with different ideological orientations.

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About the Authors

Amy B. Becker

Amy B. Becker (Ph.D., University of Wisconsin-Madison) is an Assistant Professor in the Department of Mass Communication & Communication Studies at Towson University in Towson, MD. Her current research examines public opinion on controversial issues, the implications of new media technologies, and the effects of exposure and attention to political entertainment including late night comedy.

Siddharth Kaza

Siddharth Kaza is an Assistant Professor in the Computer and Information Sciences department at Towson University. Dr. Kaza's research interests lie in information assurance education, data mining, social network analysis, and security informatics. Dr. Kaza's work has been funded by the National Science Foundation, Department of Defense, and the Maryland Higher Education Commission.

Andrew B. Goldberg

Andrew B. Goldberg, Ph.D, is the Senior Scientist at Arcode Corporation in Bethesda, Maryland, makers of the email client Inky. Dr. Goldberg received his Ph.D. in Computer Sciences from UW-Madison in 2010, and his research focuses on semi-supervised machine learning applications in the areas of text classification and natural language processing.

Ranjan Vaidyanathakumar

Ranjan Vaidyanathakumar was a masters student at Towson University interested in data mining, analytics, and warehousing. He currently works in the industry on healthcare analytics.

Jason Koepke

Jason Koepke is a doctoral student at Towson University. Mr. Koepke's research interests lie in information assurance, data mining, and social network analysis.

Online-comments: Deliberative or Demonstrative Political Participation on the Internet?

Norbert Kersting, Tobias Zimmermann

Scharnhorsttraße 100 48151 Münster/Germany, norbert.kersting@uni-muenster.de; tobias.zimmermann@uni-muenster.de

Abstract: *Online-comments provide the chance for interaction and deliberation in societal mass media discourse. This paper uses Kersting's (2014) four areas of democratic participation to conclude about the democratic usability of online-comments: representative, direct, deliberative and demonstrative participation. The study asks whether debates via online-comments correspond to the deliberative ideal or if they tend to be individual demonstrations of opinion and group identity. This paper analyses online-comments on three professional news sites in Germany while applying an extended Discourse Quality Index (DQI). Results show that online-comments analysed could not meet high deliberative standards. They are predominantly relatable to the sphere of demonstrative democracy. As a consequence online-comments may enable interaction and could help to disclose problems of political process. As such they could play their part in a setting of blended democratic innovation.*

Keywords: *Online-comments, Democratic Innovation, Online-Deliberation, Demonstration, e-participation*

Introduction

The striking purpose of the internet for modern democracy is the rise of countless diverse instruments to publish information and opinion by individuals. These instruments enable individual participation in mass media discourse, which is a central assumption for the idealized public sphere deliberative democrats describe. One important form of individual participation in mass media discourse is the online-comment. The online-comment leads amongst the other Social Media-instruments to the hybridization of user and producer, what Bruns (2009: 4-5) calls the *produser*. *Produsers* are no longer constrained to be passive. They can contribute their individual point of view and emancipate themselves. Former consumers start to produce content and to distribute information. This development might provide the chance for interaction and deliberation in societal (mass media) discourse (Habermas 2008: 161). Online-comments can play a crucial role for the emancipation of the *produser*: Most of the different Social Media occurrences are not able to appeal to a huger audience permanently. The high amount of digital voices democratizes the public sphere on the one hand but fragments attention at the same time. Online-comments show the advantage to be connected to professional news sites. Webpages of professional news media companies remain the central source for political information of the citizens after a short phase of decentralized news production on the internet (Papacharissi 2011: 15;

Trice 2010: 190ff). User-generated-content by itself and especially online-comments face a rapid spread through the online-media landscape and impress increasingly strategies of media companies. This leads to a co-production of medial content and public sphere through the *produser* (Büffel 2008: 138ff). After mentioning the special characteristics of online-comments it seems compelling that an analysis will provide important insights for the debate about the democratic potential of Social Media.

This paper contributes to the debate by mapping online-comments in current debate about political participation and the role of the internet in this regard. From a theoretical point of view, Kersting's model of democratic participation online and offline is used: representative-, direct-, deliberative- and demonstrative democracy follow separate logics and subsume different actions and instruments of political participation this paper explains in Chapter 3 (Kersting 2014: 60-64). The main research question of this paper asks whether online-comments tend to show potential for fulfilling the deliberative ideal or if they show more demonstrative character?

A deliberative debate is characterized by the reciprocal search for mutual understanding through the exchange of arguments. In contrast demonstrative participation is focusing on expressivity. Main goals are to express political opinion and the belonging to a certain group (Kersting 2014: 62-63). Compelling studies showed who gets involved in deliberation and who participates online. Cook et al. (2007:41-43) and Neblo et al. (2009: 35) found evidence that most people who engage in deliberation are well educated and hold superior social capital. But findings also suggest that those most interested to deliberate are those disenchanted by standard representative politics. Studies on digital participation show that younger people play a crucial role. This emphasizes that participants in online-deliberation are not only those typically active but also those not reached by conventional participatory instruments[1] (Emmer et al. 2011: 217-218; Schlozman et al. 2012: 511). If it is known who is deliberating, it is tantalizing how is deliberated. This question is crucial: The broad range of digital "*third spaces*" (Wright 2012: 11) returns the chance for heterogeneous deliberation in mass media discourse but public sphere does not seem to develop as enthusiastically expected. Small range information bubbles with exclusive and homophilous character are apparent (Farrell 2012: 39; Habermas 2008: 161; Kersting 2014: 80ff).

The study looks at online-comments connected to articles on webpages of three German newspapers. These articles are dealing with analogue and highly controversial topics, explained at the beginning of the empirical section of this paper. This paper places online-comments in the theoretical model and gains implications for the debate about Social Media in political science. For analysis, it uses an integrative design of content analysis, which is derived from deliberative democratic theory (Discourse Quality Index). The aims of this paper are twofold. First, it provides a more clear understanding of the communicative action that takes place in the third space of online-comments. Second, online-comments are located in a convenient area of democratic participation what will give us an idea of their democratic usability.

[1] Of course it should not be neglected that recent research states a relevant digital divide in the political use of the internet. At the same time it shows democratizing potential by activating those not reached by conventional channels. Schlozman et al. (2012: 487ff) discussed this ambiguity in detail.

Decline of Participatory Support and Promises of Digital Age

From a normative perspective broad participation is central for the legitimacy of democracy (Dahl 2006: 37). Empirical research states a deep alienation between the sovereign and its representatives. Even if the system of representative democracy is not in question itself, politicians and political scientists go hand in hand by measuring the fact that political participation, interest and trust in the system are declining (Gabriel/Neller 2010: 78ff; Hay 2011: 1-25). Next to the decline of conventional political participation, we face the spread of informal political participation since the 1970s. New forms of protest are recognized and the citizens develop new spaces to introduce themselves into political discourse and decision making. Citizens participate increasingly individual, cause related and without taking part in long time commitments. Especially the internet plays a crucial role to facilitate the loose co-ordination of individuals in this regard (Hay 2011: 1-25; Kersting 2014: 56-60; Schlozman et al. 2012: 530-533).

Generally, political participation has to be defined as an act to influence political decision-making (Kersting 2008: 23). Concerning this matter participation in societal discourse or deliberation is labelled as unconventional and not institutionalized political participation (Barnes/Kaase et al. 1979; Kersting 2009: 27; Schaal/Ritzi 2012: 139-140). The proliferation of the internet and especially the so called Social Media-instruments has created a broad range of chances for participation in societal discourse. Therefore the democratic potential of the internet is controversially discussed in political science since its origins (Abbott 2012: 77ff; Wright 2012: 6). Political scientists agree that the internet will lead to profound changes in the character of politics and political communication. But they disagree about the significance and character of that transformative process. Fung et al. (2013: 30-33) explain that hope for a renaissance of ancient Agora-democracy through digital technology is driven by the recognition of a deficient public sphere before the proliferation of global internet access. Especially deliberative theory touched discourse about the democratic potential of the internet. From this perspective online-comments may contribute to a more deliberative public sphere. Like mentioned above, they hold potentially mass media reach. If selected journalistic articles deal with controversial societal topics, the readership is potentially heterogeneous, because access is free and open for different opinions. People are able to react to one another but they could act individually, issue-related and without any commitments. Moreover, journalistic hosts look for basically respectful behaviour in the discussion. To sum up, online-comments fit current participatory needs (Schlozman et al. 2012: 511) and have formal potential to enable deliberative discussion. While "we are frequently driven, when examining the impact of technology, to a choice between utopian and dystopian scenarios" (Papacharissi 2011: 9-10), analysis of online-comments provides insights about the participatory behaviour of people engaging in societal discourse in this special setting which is characterized by its heterogeneous many to many communication. As third space online-comments enable discourse and connection of individuals, but not necessarily fulfil Habermasian preconditions (Farrell 2012: 39; Papacharissi 2011: 15; Wright 2012: 7ff). In the context of the dichotomy between utopian and dystopian thoughts, the internet and its potential for interaction and maybe deliberative communication have inspired a lot of research, even on the deliberative capacity of the special participatory instruments. However, results remain ambivalent (Kersting 2005; Kies 2010).

Spheres of Political Participation

Political participation comes across in diverse forms and through heterogeneous instruments. These diverse forms could be related to four different spheres of democratic participation, characterized by different intrinsic logics and specific participatory instruments online and offline: representative democracy, direct democracy, deliberative democracy and demonstrative democracy (Kersting 2014: 60ff). In the following they will be presented briefly.

The principle of representation is characteristic for modern, liberal democracies and senior to the other spheres of democratic involvement. All other forms and instruments are subordinated. The representative democracy is a vote-centric conception of democracy. This means that representatives and parties on the different levels of policy making should be elected via majority rule. It includes exclusively conventional forms of political participation. Those are by nature decisive and institutionalized. Besides elections party membership as well as seeking for and holding an office, direct contacts to politicians, engagement in election campaigns and digital analogies like internet-voting or contact to politicians via E-Mail or facebook and the growing range of voting-advice-applications show a great variety of traditional and digital actions (Kersting 2012: 17-18; 2014: 66-68). Representative participation faces a severe crisis and is gradually declining. However, elections remain clearly the most used instrument of political participation (Gabriel/Neller 2010: 89-91; Hay 2011: 12-16).

Direct democracy is the second area of democratic involvement, which is vote-centric. But in contrast to the representative logic, direct democracy is issue-oriented and produces decisive decisions by circumventing the representatives. In this way direct democracy weakens the power of elected representatives and awards political veto-power to the citizens. Decisive referendums and citizen initiatives are the central instruments. On the internet, the importance of e-petitions is growing and offers completely new possibilities for mobilization, especially for side issues and minorities. Referendums and citizen initiatives have a lower voter turnout than elections, but since they are established in Germany they face a rapid growth (Kersting 2012: 18; 2014: 61-62).

The third sphere, deliberative democracy has its origins in the deliberative turn of democratic theory in the last decade of 20th century. Its nature is talk-centric, because deliberative democracy bases on normative ambitious discourses (Kersting 2014: 62). Deliberation means a special mode of communicative action which is often explained in contrast to strategic action. Free and equal people communicate and search for political decision through the exchange of arguments and not through bargaining. Preferences are not fixed in deliberation. People are willing to change position for the better mutually acceptable argument (Bächtiger et al. 2010: 36; Gutmann/Thompson 2004: 7; Steiner 2012: 4-5). Dialogical or deliberative democratic innovations are not decisive and influence political discourse and inherent perceptions of the participants. They are often implemented to solve manifest or latent moral conflict. Modern advisory bodies, citizen juries or open forums show concrete examples of this concept. Diverse influential empirical studies showed that deliberation could be effectual and had inspiring effects on people's opinion and levels of information (Bächtiger et al. 2012; Fishkin 2009; Steiner 2012). In contrast, on the internet exclusive homogenous group discussion with sometimes radicalizing character is observable. Discussion is often dominated by aggressivity and monologues (Kersting 2014: 72-74). But more optimistic findings show that it is possible that people change opinion, gain new information and slide to the common good in a relevant manner through digital discussion (Fishkin 2009: 169-175; Kies 2010: 114-115).

The last and fourth section of democratic participation is called demonstrative democracy. Political disenchantment, individualism and societal change of values all together lead to new forms of symbolic participation and political demonstrations. People shift astray from political long-term commitments and support event performances. Demonstrative participation is not institutionalized and has mostly unconventional character but is diversified. The demonstration is the typical occurrence. Civil society protests like flash mobs, conventional political actions like writing letters to the editor and illegal or even violent political protest are demonstrative too. Online activities like changing the profile picture in a social network or like- and share-activities are demonstrative like other potential forms of digital slacktivism. Digital vandalism (Anonymous) could be labelled so too (Christensen 2011: 3-4; Kersting 2012: 18; 2014: 76-79). The widening variety of protest and unconventional participation as such could be interpreted as a symptom of political disenchantment and can count for a growing importance of this sphere (Gabriel/Neller 2010: 90-93, Hay 2011: 1-25, Rucht 2007: 719-720).

It is the aim of this paper to find out about the main communicative characteristics of the online-comment. Participation in societal discourse via online-comments is not decisive, unconventional and counts as talk-centric. This begs the question if the contributions could fulfil (more or less) deliberative preconditions and could be integrated into the correspondent sphere. The other possibility is that the contributions tend to be more expressive and could called demonstrative. In the following the research design of this study is presented, which will guide us to explicate this mapping.

Research Design

This paper asks if contributions and debates via online-comments could fulfil the ambitious deliberative preconditions. Deliberation is often designed as the best method to handle moral conflict (Gutmann/Thompson 2004: 10-12). According to this, this study sets up a descriptive quantitative content analysis and analyses three highly controversial debates emerging from analogue conflicts about values and identity. The study looked at debates about the renaming of public spaces in Germany. These were discussed in the context of memory politics in several communities in Germany. A lot of streets and places in Germany are named after important persons from a time before the origin of the Federal Republic. The historical role as a door opener for the Hitler regime of General Hindenburg (president in Weimar Republic) for example is increasingly critical interpreted and renamings were discussed or politically decided. The renaming of public spaces touches the local identity of the citizens. This leads to protest and a bigger amount of political participation. The cities of Garmisch-Partenkirchen, Essen and Kiel witnessed such conflicts in 2013. This paper analysed the webpages of the most important professional news media on the local level in each case: merkur-online.de, derwesten.de and kn-online.de (see an overview in Table 1). Issues and platforms of the debates had similar importance on the local level. Totally 129 (=n) comments were coded. In Essen, a response-function is included on derwesten.de. It is used frequently and similar to the normal comment. It was decided to code and treat the answers like comments.

Table 1: Selected cases

1 Webpage	2 City, Inhabitants, Party of Mayor	3 Number of Comments	4 Phase of conflict
merkur-online.de	Garmisch-Partenkirchen, 26.000, local-conservative	100% coded (n=43)	Referendum decided against a renaming
derwesten.de	Essen, 566.000, Social Democratic	7,9% coded (n=542))	Referendum decided against a renaming
kn-online.de	Kiel 240.000, Social Democratic	34,1% coded (n=126)	City council decided for a renaming

Note: N=129 | Total 43-542

The Discourse Quality Index (DQI) was applied for quantitative content analysis. The DQI was originally developed for the analysis of parliamentary debates. But it is adaptive for all kinds of deliberative debates and was mentioned positively by Jürgen Habermas himself (Habermas 2005: 389). It operationalizes the distinguishing normative criteria of deliberation in an ordinal scale and mentions the discursive quality of the single contributions – in our case the online-comments (Steiner et al. 2004: 170). This paper implements an extended version of the DQI, which includes alternative forms of communication derived from empirical influenced discourse. The already discussed categories of storytelling and bargaining as well as the exploratively developed categories of individualism and rhetoric are included. There for this paper gains insights about the specific characteristics of online-comments and contributes to the harmonization of theoretical and empirical research. Following Bächtiger et al. (2010: 42-47) it relaxes the strict separation of deliberation and other modes of communication what leads to a more complex and even realistic understanding of the participation that takes place. A wider understanding of deliberation exempts empirical deliberative research from the narrow preconditions for deliberation that are exclusionary and broadens the deliberative program. They argue further, that this wider understanding is potentially more manageable for more scholars, is less remote from the deliberative practice and is more problem-driven and empirically grounded. This is particularly adequate in case of this study, as it transfers the DQI on a very new area of analysis. Corresponding studies showed that this attempt is promising since DQI categories proofed applicable for online-deliberation (Kersting 2005; Kies 2010: 95-100). In the following the categories used will be explained briefly. The classical categories of the DQI won't be discussed in detail because they seem to be mutually accepted and the group around Jürg Steiner and André Bächtiger discussed their basic categories sufficiently in a number of publications (Steenbergen et al. 2003; Steiner et al. 2004; Bächtiger et al. 2010; Steiner 2012; Bächtiger et al. 2012). This paper follows the traditional DQI-instructions in coding a comment, if it implies a demand2 (Steiner et al. 2004: 170).

High justification rationality is a central assumption for high deliberative quality. The argument constitutes the currency of deliberation. Because of that the DQI measures the syntactic structure of the argument. The DQI analyses common good orientation, because classical deliberative reasons

[2] „A demand is a proposal by an individual […] on what decisions should or should not be made." (Steiner et al. 2004: 170)

involve systemically a common good orientation and exclude particular interests. The DQI captures this differentiation. Respect is a main constituent of deliberation and requirement for deliberative discourse. It is measured if degradation or explicit respect is expressed or if contributions remain neutral. The DQI measures Respect towards Groups and additionally Respect towards counterarguments. It does so, because deliberation is an interactive process of reason giving and accepting. Consensus is merely an aim, so the DQI measures if contributors search for mutually acceptable compromise as a precondition for universalism. They call that category constructive politics (Steenbergen et al. 2003: 24ff).Each category is ordinal scaled. Zero represents the lowest deliberative quality.3

Story telling runs contrary to the Habermasian ideal of deliberation but prominent contributors to the deliberative debate integrate story telling in their concept of deliberation. Especially Iris M. Young shows important functions of storytelling for deliberation. Story telling could generate empathy and credibility and contributes in this way indirectly to the deliberative justification. Especially people who are not so familiar with the communicative mode of argumentation are enabled to take part in the discussion what maximizes the inclusiveness of deliberation as an important normative criteria for deliberative democracy (Steiner 2012: 57-65; Young 2000: 71-77). Story telling could be called deliberative if it serves as justification: "to make a point—to demonstrate, describe, explain, or justify something to others in an ongoing political discussion." (Young 2000: 72) This study measures if stories are told and whether they serve as justification which is positive from a deliberative point of view.

Bargaining and arguing are very often seen as dichotomic communicative actions, having their origin in the dichotomy of communicative and strategic action. Particularly the reception of the deliberative theory of Jürgen Habermas abetted this thinking (Holzinger 2001: 243-245). But deliberative empirical research seems to fail to process this differentiation. Naurin especially blames the DQI for failing to keep up the strict differentiation (Naurin 2007: 564). This happens because the dichotomy of bargaining and arguing is not logically complete. Bargaining and arguing deal with different kinds of conflict. Bargaining handles conflicts of interest and arguing serves conflicts of value. In common communication both kinds of conflict are mixed (Holzinger 2001: 245). Because of this it seems adequate to analyse both kinds of communication. Moreover it makes sense to differentiate as well between a cooperative and a confrontative version of bargaining. Naurin introduces the categories of integrative bargaining and distributive bargaining. Integrative bargaining does not include any coercion or threats. It is defined by respectful offers and mutual search for win-win situations. This paper follows this distinction into a positive and a negative category of bargaining (Naurin 2007: 562, 563).

Rhetoric and deliberation often build a second dichotomy in scientific discourse but there are several efforts in integrating it into deliberative concepts. Garsten (2011: 162-174) elaborates an integrative way in handling rhetoric. For him rhetoric integrates emotions into the discourse what seems to be inevitable: The common speech situation is unthinkable without emotions. Dryzek argues that rhetoric is even necessary for deliberation. But there are some hazards of rhetorical communication. Because of that it seems necessary to differ between a useful form of rhetoric and a not useful form. But Dryzek points out, that categorical tests of rhetoric are limited, because of their ignorance according to the systemic context in which rhetoric takes place. He emphasizes to

[3] The code book, including the codes for each category, coding instructions and standard examples is available as online appendix from the authors.

ask whether rhetoric contributes to the functioning of a deliberative system as a whole (Dryzek 2010: 321-323, 335). According to that the study measures if there is rhetoric (binary coded) as an indicator for emotional behaviour . The analysis is limited on the obvious use of rhetoric as outstanding stylistic device like rhetoric questions, obvious irony or sarcasm, dramaturgy and exaggeration.

Individualism operationalizes self-expression. People engage increasingly in individual manner, selecting the participatory instrument which fits their wishes and goals in the specific moment in best manner. Especially on the internet people seem to behave strongly expressive (Kersting 2014: 56-60; Schlozman et al. 2012: 511, 530-533). By operationalizing the reference to the self through the use of first person singular personal pronouns the degree of individualism and self-expression in the debate is figured out.

Similar to traditional DQI, Storytelling, bargaining and individualization are ordinal scaled. Zero represents lowest deliberative quality, the highest number represents absence. The only exception is rhetoric, which is nominal scaled.

Results: No Deliberative Dialogue but Demonstration of Opinion

Statistics presented in this chapter show how the comments analysed rate against the different indicators of deliberative discursive quality. They indicate a low quality of deliberation at large, comparable to studies of citizen deliberation (Bächtiger et al. 2012: 38-40) or digital deliberation (Kies 2010: 114-115). But the different indicators differ in their deliberative quality and show specific potentials of the online-comment as a participatory instrument. To start with the quality of justification, justifications are predominantly not sufficient from a deliberative point of view. Only 14% (data rounded) of the contributions were sophisticating. Bächtiger et al. (2012: 18-20) set up the threshold for good deliberation on this level so that it has to be concluded that debates via online comments mostly fail to be called deliberative with respect to the level of justification. But analysis makes also clear that only a minority of posts does not include a justification (24,5%). People do not refuse the argument as main instrument of persuasion. The most alarming indicator from deliberative perspective is the respect provided by contributors. Only few showed explicit or balanced respect. Positive statements about other groups of interest were almost completely absent. 50% of the speeches showed evidence of negative statements to other speakers or groups. We see the same picture with regard to respect for counterarguments. More than 40 per cent of the speeches showed disrespect towards counterarguments. But it is also conspicuous that a distinct majority of 61% mentioned other arguments, even though in mainly negative ways. Our findings about the use of respectful speech are very interesting. Only 13% of the posts showed evidence of respectful speech. But there is no connection to less disrespectful behaviour. Rather it seems that respectful speech is used in case of decided disrespectful behaviour. It can be concluded that the use of respectful speech couldn't tell us anything about the deliberative quality of online-comments. These results reflect the polarizing character of the debates chosen for analysis. It could be assumed that online-comments provide a forum for emotional behaviour that couldn't be expressed in other, more regulated circumstances. The de facto anonymity4 of the contributors supports this assumption. Taking these characteristics into account, the low quality of respect and

[4] This paper talks about de facto anonymity, because on the analysed webpages people had to register only by E-Mail address. People use nicknames.

the developable quality of justification indicate a protest oriented behaviour and not the intention to collaborate in deliberative discourse. This observation is maintained by the content of debate when protest is defined as nonconventional, interrupting daily routine and protestors are characterized by addressing public opinion over representatives or public administration, mostly to articulate contradictions or dissatisfaction (della Porta 2011: 2432). This is almost always the case in the debates looked at. People advocate their group of common interest massively, even including disrespectful communicative instruments. Communication and decision-making is not fostered. This is typical for demonstrative participation (Kersting 2014: 62-63). With regard to these indicators it is very interesting to focus on the inclusiveness of the justifications. Only 8% of the speakers justified their arguments by reference to own or group interests. This does of course not result in a majority of posts referring to shared interests or the common good. But 36% is a respectable amount of speeches advancing common good oriented justifications. More than one third complies with the thresholds corresponding to Bächtiger et al. (2012: 18-20). But this pleasant result from deliberative perspective doesn't coercively contradict the objections above. Demonstrative behaviour does not exclude a common good orientation. Most participatory instruments of demonstrative democracy include common good orientation. Political demonstrations against nuclear power or war are justified by links to an overwhelming common good. They face broad acceptance and participation in society. Meantime people engage more in demonstrations than in political party membership (Gabriel/Neller 2010: 90-93). Digital slacktivism maybe lacks effective political influence, but it is mostly intended by a will to support a common interest or the interests of socially deprived (Christensen 2011: 3-4). Online-comments seem to join this range of activities. Here, deliberative and demonstrative democracy are intermingling. Concerning constructive politics, noteworthy efforts to come to a shared conclusion weren't observable. That could be interpreted as well as a result of the controversial topic of the debates and as an indicator of low deliberative quality but there is also another explanation. Bächtiger et al. (2012: 17-18) do not measure constructive politics in their analysis of citizen deliberation as the participatory setting does not produce binding decisions. This applies also for online-comments. It seems compelling to resign the analysis of constructive politics for online deliberation if it is not directly connected to political decision making.

The four additional categories showed interesting results. First, bargaining was nearly excluded from the communication. This makes sense, because the debates dealt primarily with conflicts of values and not of competing interests about public goods (Holzinger 2001: 245). This shows that arguing and bargaining are not condemned to intermingle. In distinct conflicts of value there seems to be no space to bargain. One third of the contributions included stories. It becomes clear that on the one hand stories are an instrument of a larger group but not of the majority. On the other hand results show that there is a great variety of stories. 7% of the stories do not have any connection to an argument. 8% of the stories serve as only justification for the point made. 19% of the stories hold deliberative standards most, while supporting a concrete argument. We see a similar result for the individualization of talk. At first it is observable that there isn't a vast majority referring to itself. 33% of the contributions have a dominant or inferior due of self-expression through personal pronouns. It is an interesting insight that there is no notably effect on deliberative quality observable. At last it became obvious that distinct rhetoric is very common in writing online-comments. 71% per cent showed the presence of rhetoric. A strong connection to the quality of deliberation was not obvious. There are posts including rhetoric with a very low level of deliberation as well as with higher level. That confirms that the use of rhetoric has to be

analysed with focus on its systemic effects (Dryzek 2010: 335). The presence of rhetoric couldn't serve as an indicator for (non) deliberative online-comments. Resuming, results from additional indicators provide mixed implications. The significant amount of individualization and storytelling could be interpreted as an argument for the expressive use of online-comments. Increasing self-expression is a main characteristic of demonstrative democracy (Kersting 2014: 62-63). Telling stories could support deliberation but it is also a way of introducing emotions into the debate (Young 2000: 71-77). This counts for the use of rhetoric as well. All together these indicators show a big amount of expressive, emotional behaviour. But it is also true that for every indicator there isn't a vast majority using the comments in a decided demonstrative way. Deliberative stories prevail these ones clearly missing deliberative standards. Rhetoric and individualization do not determine low deliberative quality and even the absence of bargaining is preferable for deliberative democrats5.

Conclusion: The Online Comment and Blended Democracy

It was the aim of this paper to map online-comments in an overarching theoretical framework to conclude about its democratic usability. Moreover it should provide a basis to locate the online-comment in the debate about the democratic potential of online participation. This paper used Kersting's four types of participation: representative, direct, deliberative and demonstrative participation. It was reasoned that discursive participation online should be ideally related to the sphere of deliberative democracy but that there is strong evidence that it is maybe more suitable with the sphere of demonstrative democracy. The study applied an extended version of the DQI to measure deliberative quality of the sole contributions. It is striking that online-comments could not meet high deliberative standards in controversial debates. Especially disrespect is extremely prevalent. While the quality of justification is not very sufficient and efforts to find compromises are nearly absent, the levels of common good orientation and argumentative interactivity are much higher. Our additional categories showed a relevant amount of self-expression, but only rhetoric was used by a vast majority. To sum it up, online-comments analysed in our study are predominantly relatable to the sphere of demonstrative democracy. Self-expression, protest and out-group-hostility dominate justification rationality and search for mutual understanding. But it is also evident that this does not determine total absence of deliberative quality. It seems possible that mass media publicity leads to stronger common good orientation. That is of course not a revolutionary but a delectable result from the perspective of democratic and even deliberative hopes. Moreover, the interactive potential of online comments seems to mobilize exchange of arguments, what is a very desirable outcome. But the research design was merely descriptive so that this paper only could set up rough assumptions for explanation. In a next step it ought to be very fruitful to set up an explanatory research design. Online-comments on professional news media webpages come up in different appearances and connections. A larger comparative study makes sense here and will light up if further research has to find a meaningful political use for digitally metamorphosed demonstrative "dialogue" or a proper framework for deliberation.

Taking the results into account, political usability of mass media online-comments is debatable but should not be underestimated. Online-comments can provide an outlook on the polarizing potential of a special issue. Just as well they could deliver some information about the current

[5] The tabular results of the 129 comments coded are available as online appendix from the authors.

polarization. But it is important to keep in mind that digital participation and the readership of a special media platform is not representative. Online-comments could give voice to minority positions and might have limited egalitarian effect. But the amount of disrespect and the low justification rationality indicate relevant potential for radicalization. Though, common good orientation and efforts to justify positions denote some democratic potential. Demonstrative behaviour could help to disclose problems of political process like mismanagement or corruption. It is less prone to influence and manipulation of political and economic actors. And it may highlight best practices. Meanwhile participatory democrats perceive protest behaviour as a necessary element in modern democracy (Rucht 2007: 720). Results become extra interesting integrated into a systemic understanding of (deliberative) democracy, where deficits of one part could be balanced by another (Mansbridge et al. 2012). In recent years there is a trend that diverse forms of political participation were blended. Online and offline participation is combined. People decide situational for participation and a special instrument. Representative democracy has to be complemented from the other spheres wherever it fails to produce acceptable input- and/or output-legitimacy. Online-participation shows great potential for the creation of group identities, mobilization and dispersal of information. But it still lacks in question of deliberation and sustainability. The analysis of online-comments underlines this conclusion. That is why democratic innovation should integrate various forms of political participation, traditional and online as blended democracy (Kersting 2012: 21; Kersting 2014: 82-83). This paper provided some evidence of the role online-comments could play here.

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About the Authors

Norbert Kersting

Prof. Norbert Kersting is holding the chair for Local and regional politics at the Department of Political Science at the University of Muenster (Germany). He is chair of International Political Science Association's (IPSA) Research Committee 10 on „Electronic democracy". He edited the book "Electronic democracy" (2012) in the Ipsa series. His research focuses on comparative political science and on modern instruments to promote political participation and discourse, local politics, parliamentarism and e-democracy.

Tobias Zimmermann

Tobias Zimmermann is Ph.D. candidate at the Graduate School of Politics and lecturer at the Institute of Political Science, University of Münster (Germany). His research activities concentrate mainly on political participation and deliberative democracy. In his Ph.D. project he focusses especially on digital participation and online-comments.

Developing Citizens' Observatories for Environmental Monitoring and Citizen Empowerment: Challenges and Future Scenarios

Marcos Engelken-Jorge*, Jonatan Moreno*, Hans Keune**, Wim Verheyden**, Alena Bartonova***, CITI-SENSE consortium

*Iritziak Batuz coop., Bizkaia, Spain, info@ibatuz.com
**Research Institute for Nature and Forest, Brussels, Belgium, Hans.KEUNE@INBO.be, Wim.VERHEYDEN@INBO.BE
***NILU Norwegian Institute for Air Research, Kjeller, Norway, Alena.Bartonova@nilu.no

Abstract: *The EU-co-funded project CITI-SENSE defines citizens' observatories as communities of users that participate in both environmental monitoring and environmental governance. This paper concentrates on the latter dimension. It introduces the current challenges faced by this project in developing said observatories, as well as the general approach used to deal with them. It then proceeds to sketch four different future scenarios, which permits to identify the probable consequences of these observatories under each of them. It is argued that in those contexts where citizens' observatories are expected to play a limited role, their beneficial consequences for democracy are straightforward and the risks associated to them slight. In contrast, a more ambitious objective such as integrating them into governance mechanisms might not only be impossible in some places, but also normatively undesirable.*

Keywords: *Citizens' observatories, environmental governance, participatory governance, citizen participation, democratic innovations.*

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Citizens' Observatories and the CITI-SENSE Project

CITI-SENSE is a collaborative project partly funded by the European Seventh Framework Programme (FP7), involving 28 partner institutions from Europe, South Korea and Australia. It is one of the five Citizens' Observatories Projects which are being supported

by FP7 under the topic ENV.2012.6.5-1 "Developing community-based environmental monitoring and information systems using innovative and novel earth observation applications".[1] CITI-SENSE, in particular, started in October 2012 and lasts over a period of four years. Its main objective is to develop citizens' observatories, which are intended to empower citizens to participate in environmental governance and to support and influence societal and policy priorities, as well as the associated decisions. These observatories are defined as

> *"communities of diverse users that will share technological solutions, information products and services, and community participatory governance methods using appropriate communication solutions (e.g., social media), and who will by these activities complement established environmental data and information systems and improve local decisionmaking about environmental issues" (Bartonova & CITI-SENSE Consortium, 2012)*

The basic idea behind this concept is that the citizenry can, and should, be involved in environmental monitoring, data production and interpretation, and decision making on environmental matters. Namely, CITI-SENSE seeks to develop and test sensors for distributed monitoring of environmental exposure and health associated with outdoor air quality and the physical environment, as well as the quality of indoor environment in schools. These sensors should also enable community evaluation and planning of public spaces. In this regard, one of the distinctive elements of CITI-SENSE's approach is that said sensors are expected not only to collect 'objective' data, but also citizens' perceptions of their immediate environment, that is, 'qualitative' or 'subjective' data. Moreover, the project aims at developing and testing information and communication technologies (i.e. platforms) with which to process the data gathered through the aforementioned sensors. The third goal is to transform these data into useful information products for citizens. To accomplish this task, the project seeks to engage citizens in defining what they consider to be useful information products. Finally, concerning citizen participation in environmental governance, the objectives are to learn from citizens' experiences and expectations, raise environmental awareness, motivate citizens and stakeholders to participate in the decision making process, and provide a transparent link between this decision making process and the citizenry.

To establish these observatories, CITI-SENSE is currently working with citizens, non-governmental organisations and public representatives, as well as with representatives of the established environmental information collection systems, aiming at identifying current priorities, interests and needs. The consortium also works with the technological community to find out how to meet these needs. Although the project is structured to address all these issues, due to space limitations, in this paper we will concentrate solely on the participatory dimension and leave aside all those questions regarding the development of new technologies and the technicalities related to the collection of environmental data.

The reasons justifying the creation of citizens' observatories, as well as participatory environmental governance more generally, are based on both practical and normative considerations. As for the former, it has been argued that citizen participation has the potential to enhance the efficiency of public policies. Through citizens' involvement in governance networks, local knowledge and information about citizens' interests, values and concerns can be inputted into the decision making process, allowing decision makers to draw from a larger set of

[1] For more information on these projects, visit www.citizen-obs.eu.

information and permitting them to consider a greater number of interests and perspectives. This should lead to more inclusive decisions as well as reduce opposition and implementation problems. Besides, participatory governance might foster compromise among stakeholders and lead to more creative solutions. There are, furthermore, normative reasons for promoting citizens' observatories. The most important one is that engaging citizens in governance networks, and therefore enhancing their voice, is a way of acknowledging and respecting their moral and political autonomy.

All these considerations are, however, rather abstract and generic. Ultimately, it is an empirical matter whether participatory arrangements in a specific context actually live up to the practical and normative expectations put on them. So only with hindsight is it possible (if at all) to assess adequately whether citizens' observatories are in fact capable of delivering what they promise. In any case, it is already possible, and sensible, to reflect upon what the probable outcomes of these citizens' observatories might be under different scenarios. These considerations, although speculative, are relevant as they address the problem of the second-best (Goodin, 1995); that is to say, they help to identify what the consequences of political ideals and their institutionalisation (in this case through citizens' observatories) might be in a specific context. In this way, they enable us to assess whether citizens' observatories really constitute a desirable institutional innovation in all (probable) settings or, in contrast, whether under specific (and also probable) circumstances their pursuit should be tempered given their probable consequences under these specific conditions.

In the remaining of this paper, we will, first, present how CITI-SENSE is currently trying to implement the concept of citizens' observatories, the challenges it is facing and the general strategy adopted to deal with them. As stated earlier, we will concentrate solely on its participatory dimension. In the second part of the paper, we will assess the probable consequences that citizens' observatories might have under different scenarios conceived of as ideal-types (in the Weberian sense of this expression). Some consequences about the desirability of citizens' observatories under these different scenarios will be drawn.

CITI-SENSE's Approach to Creating Citizens' Observatories

In this CITI-SENSE project, 'empowerment initiatives' (EIs) are used to develop and test citizens' observatories. EIs concentrate on the measurement of just one or few elements of the immediate environment, and they, too, seek to engage citizens and stakeholder in the monitoring of their environment, raise environmental awareness, and provide channels through which societal and policy priorities can be influenced. EIs related to three environmental issues of societal concern are being organised at the moment. These include:

- Community planning of public spaces including issues such as noise prevention, thermal comfort and urban landscape perception. An EI on this issue will be held in Vitoria (Spain).
- Quality of indoor environment in schools. Oslo (Norway), Belgrade (Serbia), Edinburgh (Scotland) and Ljubljana (Slovenia) are the locations where EIs on this topic will be held.
- Environmental exposure and health associated with urban air quality and the physical environment. EIs on this issue are being organised in Barcelona (Spain), Belgrade (Serbia), Edinburgh (Scotland), Haifa (Israel), Ljubljana (Slovenia), Oslo (Norway), Ostrava (Czech Republic) and Vienna (Austria).

This heterogeneity of locations, although beneficial in some respects, poses a crucial challenge. On the one hand, a robust demonstration of the feasibility of the concept of citizen's observatories and of the technical solutions developed for them requires that they are tested in a wide variety of settings and in relation to different environmental and governance issues – in this regard, this heterogeneity should be welcomed. However, it also creates considerable difficulties. Not only do these locations diverge as regards their political culture and political system, but different environmental issues are also expected to attract different social groups and stakeholders, with different expectations, different ways of engaging the public and interacting with political and administrative authorities etc. This is connected to another challenge, namely what can be called the myth of best practices.

This challenge is related to the difficulty with which good practices and participatory institutions travel (for a discussion of this problem, see Smith, 2009). Whereas some of these participatory institutions such as deliberative polls have been organised successfully in a wide variety of places, others, for instance participatory budgeting, have been 'exported' with less success. This is probably related to the fact that the first kind of participatory-cum-deliberative institution, deliberative polls, is based on a model of intensive participation during a short period of time (usually one or two weekends), during which participation is closely supervised by trained facilitators. Participatory budgeting, in contrast, requires not only prolonged participation, but if we pay attention to successful cases such as Porto Alegre's, it also demands greater involvement on the part of social actors as well as greater social self-organisation. For example, the existence of a vivid civil society and experienced political activists willing to 'teach' newcomers how to participate effectively has been cited among those factors which make Porto Alegre Participatory Budgeting so successful (Baiocchi, 2001). In this regard, citizens' observatories and EIs resemble participatory budgeting more closely than deliberative polls, namely they extend over a long period of time and are thus dependent upon a number of contextual factors which cannot be modified at will or neutralised through the use of trained facilitators. Attention to these contextual factors means that there are no ready-made solutions or a set of good practices which can be applied straightforwardly to every case. Granted, it is usually possible to learn from other participatory institutions and locations, and to draw from them some lessons as to how these institutions should be, or should *not* be, set up. The point, however, is that concerning some participatory institutions, these lessons that one can draw from other cases provide almost a ready-made formula which can be applied to a wide variety of settings. In contrast, they offer less guidance regarding other participatory institutions which are more sensitive to contextual variations. The latter is the case of participatory budgeting and, presumably, of citizens' observatories. This means, then, that regarding the organisation of citizens' observatories and EIs, we are always forced to attend to the specificities of each setting and think anew what can be most feasible in each context.

Apart from this, a survey conducted among EI-coordinators reveals that there are a number of challenges specific to the different locations where EIs will be held. In some places, local governments not only refuse to take measures toward better air protection, but also voice doubts over the very significance of air pollution. Moreover, some public administrations are reluctant to share data on air pollution and noise levels, and they are unwilling to share their decision making capacity with citizens. Besides, in some cities industrial actors question publicly the health impact of environmental degradation, while portraying environmental protection as causing unemployment and leading to economic inefficiency. This results in a decline of public interest in

air pollution and readiness to support public action. Last but not least, underestimation of air pollution and distrust and general feelings of political disaffection can lead to difficulties in involving and retaining a sufficiently large number of EI participants.

In order to respond to these challenges, CITI-SENSE draws from previous participatory experiences and research on this topic, but for reasons mentioned earlier, it has to do without recourse to simply copying and pasting best practices and ready-made models of citizen participation. In contrast, the general strategy has to be more flexible and complex enough to allow for the specificities of each EI. At the moment, this general strategy consists in creating 'learning organisations' within the CITI-SENSE consortium, as well as converting the whole consortium into a learning organisation. This, we believe, should deliver this required level of complexity and flexibility.

Taking this concept from Senge (1990), O'Farrell & Anderson (2010) have extended it beyond the realm of economics. They define learning organisations

> *'as organizations that share and develop knowledge, resources and ideas towards a common goal and are constantly transforming themselves in order to meet this goal. They are typically informal temporary groups, assembled to focus on a particular problem, however they are not excluded from being attached to formal institutions (depending on the nature of the problem). Such organizations would serve to make research socially relevant and user-informed and simultaneously serve the ends of stakeholder empowerment.'*

In a nutshell, learning organisations are expected to promote mutual learning through cooperation and interaction among different actors in an iterative process. The basic idea is that EIs are implemented in parallel fashion, each focusing on its own challenges and solutions, but at the same time communicating with the others. EIs are structured in different iterative cycles or cycles of participation: a pilot study, the main study, an optional awareness study or follow study etc. The partners of the CITI-SENSE consortium, in turn, are divided into specific Work Packages and expected to monitor and provide common solutions to the EIs in terms of technological devices, practical guidance and advice, as well as assistance tailored to the specific needs of each case.

This learning organisation approach to implementing EIs and citizens' observatories shifts the focus from identifying best practices and developing standardised models of citizen participation to managing communication and mutual learning within the CITI-SENSE project. For this purpose, several measures have been agreed:

1. Implement the EIs in parallel fashion, so as to maximise mutual learning opportunities.
2. Develop surveys and semi-structured questionnaires intended to collect information systematically from the EI-coordinators and the participants in these initiatives. These tools are especially oriented to monitor progress and detect challenges and potential risks early on.
3. Semi-structured interviews and informal conversations both online and offline are also expected to contribute to monitoring progress and detecting challenges and risks.
4. Elaborate and disseminate documents and semi-structured forms providing a common but open framework to guide these diverse EIs.
5. Prepare and distribute documents disseminating within the CITI-SENSE consortium the most relevant information collected from each EI.

Future Scenarios: Perils and Promises of Citizens' Observatories

Ideals such as citizen participation and public deliberation have usually been conceived of as "regulative" standards; that is to say, as ideals "to which, all else equal, a practice should be judged as approaching more or less closely", even when these standards are admitted to be "unachievable in [their] full state" (Mansbridge et al., 2010, p. 65). The problem, however, is that all other things are not usually equal, which brings to the fore the problem of the second-best (Goodin, 1995). In a nutshell, what the theory of the second-best states is that first-best ideals may well be undesirable guides to action under non-ideal conditions, given their probable consequences under these non-ideal circumstances. For instance, citizens' active participation in politics (first-best ideal) might well be unwelcome when there are heightened ethnic tensions (non-ideal conditions), for it might trigger inter-ethnic violence. In these cases, one can argue for second-best ideals (e.g. forms of consociational politics among elites) instead of trying to maximise first-best standards. In principle, the problem of the second-best can arise in relation to any normative ideal or, as is the case with citizens' observatories, when one promotes new institutions in order to pursue some normative standards. This is the reason for foreseeing future scenarios, for they provide a way of predicting under which probable (non-ideal) circumstances citizens' observatories are likely to lead to undesirable outcomes and, hence, under which circumstances one should instead pursue second-best standards.

Given the challenges mentioned thus far and the locations where EIs are being held, four possible scenarios for citizens' observatories can be identified. The first one is, obviously, that of failure. Certain factors cannot be changed nor counteracted easily; for instance, the influence exerted by major industrial actors or citizens' belief that environmental regulation might increase unemployment or their feeling that environmental governance is not a sufficiently relevant matter. The upshot of all these elements might be the failure of citizens' observatories – i.e. we might not succeed in creating them in the first instance or we might create citizens' observatories which are too weak, that is, whose policy and societal influence is negligible or which are easily co-opted and manipulated to legitimise decisions already taken.

Failure, however, is an ever present and well known risk when trying to institutionalise new forms of participatory governance, so there is little theoretical interest in dwelling upon this possibility. More interesting are the three remaining scenarios, since they allow to assess the perils and promises of citizens' observatories in more detail. Borrowing from Chambers and Kopstein's (2006) introduction to the notion of civil society, we will distinguish the following possible scenarios:

1. (failed institutionalisation of citizens' observatories);
2. citizens' observatories *against* the state;
3. citizen's observatories *in dialogue with* the state;
4. citizens' observatories *in partnership with* the state.

As regards the second possibility, this scenario is likely in those locations where strong industrial or political interests hold sway over environmental policies and/or public authorities are unwilling to cooperate or enter into dialogue with (non-industrial) stakeholders, citizens and associations interested in environmental issues. Although relating to public authorities in an agonistic way might not look like a promising scenario at first sight, it might have positive outcomes. Essentially, it might empower citizens' voice, promoting both greater accountability and responsiveness to citizens' demands.

As regards responsiveness, however, at close examination it can be objected that public authorities are not obliged, nor should they be, to cooperate with, or satisfy, all social groups interested in a specific topic as they might not represent generalizable interests. Thus, responsiveness per se shall not be considered an asset – what matters is to promote the responsiveness of the political system to the right demands and for the right reasons.

Concerning accountability, it can be argued from a normative perspective that public authorities are obliged to give satisfactory reason for their decisions no matter what, essentially because the justification of collectively binding decisions amounts to acknowledging the moral and political autonomy of citizens and their concomitant "right to justification" (Forst, 2007). In practical terms, in contradistinction to normative ones, it can be objected that too much accountability might be counter-productive as it might foster blame-avoidance behaviour on the part of public authorities, inhibiting creative thinking as well as risk taking, and encouraging conformity to routines (Papadopoulos, 2008). In the case of citizen's observatories, however, this is an unlikely scenario given the weak issue salience of environmental matters among Europeans. For instance, according to a recent Eurobarometer (nº 79, May 2013), only 4% of EU citizens regard "the environment" as one of "the two most important issues facing [their country] at the moment", in stark contrast to other topics such as "unemployment" (51%), the "economic situation" (33%) or "rising prices/inflation" (20%). Even before the beginning of the economic crisis in 2008, environmental issues did not rank high among Europeans' primary concerns – just 3 to 7% of the interviewed in 2006 and 2007 considered them to be among the two most important issues facing their countries. In this scenario, then, citizens' observatories can be expected to promote greater, but not excessive, accountability.

Besides, they can be expected to produce reliable data on air pollution, noise levels, thermal comfort, etc., which can be made available to inform public debate, raise environmental awareness and identify socio-environmental problems. In sum, in this 'citizens' observatories *against* the state' scenario, the contribution of citizens' observatories to public life can be regarded as mostly positive and worth pursuing.

In the third possible situation, i.e. citizens' observatories *in dialogue with* the state, they can also be expected to empower citizens' voice, promote greater public accountability and possibly greater responsiveness, contribute with reliable environmental data to public debate, raise environmental awareness, and identify environmental problems. As regards their effects on the efficiency of the political system, concern can be voiced over the risk of slowing down the decision making process with so much 'talk'. This is, for instance, one of the negative effects of participatory and deliberative processes pointed out by local authorities in England (Lowndes et al, 2001, p. 212). Nevertheless, it is also true that according to this study by Lowndes et al. almost two-thirds of the authorities surveyed reported that their experience of participation initiatives was largely positive – so this risk of making the political system more inefficient should not be overstated. In fact, the opposite case has also been made: greater deliberative interaction with public authorities can input new perspectives into the decision-making process, stimulating creativity and efficiency (e.g. Fung, 2004). Then again, it should be granted that this is not always the case either – as Mendelberg (2002, p. 177) puts it, "two heads are not better than one. Two heads can become better than one". In the final instance it is an empirical matter whether citizens' observatories can actually enhance the problem-solving capacity of the political system or whether they will simply slow down the decision making process.

Be it as it may, one of the most important assets of this scenario is that in it, citizens' observatories can be expected to provide a channel through which the citizenry can influence the decision making process while retaining the autonomy of both the state and civil society. Unlike the latter, that is, unlike those citizens and associations participating in citizens' observatories, public authorities are endowed with the legitimacy that derives from having been authorised by the citizenry through free, inclusive and fair elections. The crucial point is that free elections provide a means of attesting in an undisputed way the representative claim of public authorities. Furthermore, through them, political representatives are held accountable for their decisions, at least in principle. In contrast, although there are good reasons to see many citizens' associations, groups and individuals as representative of widely shared interests and concerns (Urbinati & Warren, 2008), we lack the means of settling controversies over their representative character in case they are questioned – which they usually are. Moreover, neither individuals nor citizens' associations are accountable (neither in principle nor in practice) to the citizenry as a whole. Last but not least, for all the controversies about the concept of civil society, political theorists still admit that the existence of a sphere of liberty, solidarity and cooperation independent from the state is fundamental for a well ordered democratic society: it contributes to protecting civil and political liberties, as well as the critical scrutiny of political power, and it allows social actors to organise themselves for political or non-political purposes in a relatively free and spontaneous way (Cohen & Arato, 1992).

In conclusion, citizens' observatories *in dialogue with* the state are able to channel communication between civil society and public authorities, while preserving the autonomy of both spheres. They can, furthermore, input the perspectives of social actors into the decision making process, while restricting decision making to public authorities who are accountable and whose representativeness can be gauged in an undisputed way. Finally, it is an empirical matter whether citizens' observatories will enhance the efficacy of public decisions or whether they will simply slow down the decision-making process, but this risk is largely offset by the contribution of citizens' observatories to public life in terms of promoting public accountability, producing reliable environmental data, raising environmental awareness, identifying environmental problems and, as argued at the beginning of this paper, allowing citizens to express their concerns and interests, respecting in this way their moral and political agency.

The fourth possible scenario is the most ambitious one, in the sense that it expects citizens' observatories to be granted some formal or de facto decision-making capacity in the formulation of public policies, and possibly an active role in their implementation and evaluation. Paradoxically, this scenario offers the greatest benefits, but it also poses the greatest risks.

On the positive side, it can be argued that engaging citizens in policy making is a way of avoiding paternalism and allowing social actors to take responsibility for their own affairs. Besides, it might enhance the efficiency and efficacy of public policies. First, it might be a way of engaging "key stakeholders" and taking their interests and concerns into account. As Bryson (2004, p. 23) puts it, "Key stakeholders must be satisfied, at least minimally, or public policies . . . will fail." Second, it has been argued that engaging citizens more directly in policy-making enhances the efficiency of public policies as it allows to approach collective problems in less bureaucratic and more flexible and creative ways. Yet, this is an empirical matter, and empirical evidence is split in this regard (e.g. Blanco & Gomà, 2002; Fung, 2004).

On the negative side, concerns over the representativeness of social actors participating in citizens' observatories as well as over the difficulty with which this representativeness can be gauged in an undisputed way, raise doubts about the desirability of involving citizen's observatories directly in public decision making. In fact, empirical research suggests that environmental issues are particularly interesting for 'post-materialist' citizens, which means, younger citizens and citizens who have been socialised in a context of economic security, that is, middle and upper-class individuals (Inglehart, 1998). In other words, granting citizens' observatories too much influence over public policies might mean granting younger, middle and upper-class citizens too much influence over the policy process, to the detriment of older and poorer citizens. Moreover, several risks have been associated with an increase in the number of actors involved in decision making. Political theorists, for instance, cite as characteristics of governance networks the "dilution of responsibility" and the erosion of the "imputability of actions" (Rummens, 2012, p. 39) – which, in turn, might weaken citizens' support of public authorities, as they increasingly fail to understand opaque governance processes. 'Comitology' in the EU is a case in point. Besides, a crucial argument questioning the desirability of this fourth scenario is related to what we argued earlier about the importance of preserving the autonomy of both the state and civil society. Apart from privatisation and third-sector bureaucratisation, Chambers & Kopstein cite the danger of compromising one of civil society's main functions, namely scrutinising state activity. According to them, "the problem is that in taking on state functions, civil society may begin to act and look like the state" (Chambers & Kopstein, 2006, p. 375).

Empirical research suggests, however, that the problems associated with this fourth scenario might not be so acute. For example, from their study of drug policy in Switzerland, Wälti et al. (2004, p. 108) conclude that "Drug policy is likely to remain under the scrutiny of popular and representative control when it comes to deciding on fundamental questions, no matter how decisions are made". In the particular case of this study, criticism of governance mechanisms is considered "relevant, albeit not entirely justified" (Wälti et al., 2004, p. 83), although, as the authors suggest, this might well be the case because of the deliberative and participatory setting of Swiss democracy, which "may simply provide sufficient safeguards against the potential democratic drawbacks of governance mechanisms" (Wälti et al., 2004, p. 108). This echoes our earlier discussion of the significance of contextual factors for citizens' observatories and participatory processes more generally.

Conclusion and Future Work

CITI-SENSE is a four-year, EU-co-funded project seeking to develop and test the concept of citizens' observatories, which are defined as communities of citizens' involved in environmental monitoring and environmental governance. To achieve this goal, empowerment initiatives are being organised in a number of mostly European cities, focusing on the quality of indoor environment in schools, environmental exposure and health associated with air quality and the physical environment, and community planning of public spaces. Given that these EIs require prolonged citizen and stakeholder participation, which makes them more sensitive to contextual variations, a flexible and learning-by-doing approach has been adopted vis-à-vis their organisation.

The first results from pilot studies, concentrating especially on the technological solutions developed for these citizens' observatories, are expected to be available by October 2014. More reliable data on these technological solutions, as well as on the engagement strategies deployed and the participation of citizens and other stakeholders in these observatories, shall be available by October 2015 approximately.

As argued in the introduction to this paper, ultimately it is an empirical matter whether citizens' observatories will actually live up to the practical and normative expectations put on them. So, only with hindsight will it be possible to assess (if at all) whether they are indeed capable of promoting the normative goals that they are intended to promote. Nevertheless, in this paper we have taken seriously the normative dimension of citizens' observatories and, associated to this, the problem of the second-best; namely the possibility that first-best values might provide bad guidance for action under non-ideal circumstances. To deal with this question, four probable future scenarios have been foreseen. We have contended that in those contexts where citizens' observatories will be able to play only a limited role – i.e. *oppose* the state or be *in dialogue with* it – their beneficial consequences for democracy can be expected to be straightforward and the risks associated with them quite limited. Paradoxically, in those other contexts where citizens' observatories will be able to play a more active role in the formulation, implementation and evaluation of public policies, their contribution to democracy might be more ambiguous, possibly resulting in serious democratic shortcomings. This, however, needs not be the case in all settings. However, our discussion suggests that integrating citizens' observatories into governance mechanisms might not only be highly unlikely in some locations, but also normatively undesirable unless we have good reasons to believe that contextual conditions offer enough safeguards against the possible democratic drawbacks of citizens' observatories and governance mechanisms.

It is a well-known idea that *empirical* research cannot resolve *normative* controversies, as claims to empirical truth and normative rightness are of a different nature (Habermas, 1999). Nevertheless, this does not foreclose the possibility of empirical research enlightening normative discussions in several ways (Thacher, 2006). Future research shall address the following questions if it is to be useful for debates about the normative issues raised in this paper. First, it shall assess the validity and reliability of the data produced by citizens' observatories, as well as evaluate how this data is communicated (if at all) to the general public and used to inform public debates. Besides, it should analyse the influence of citizens' observatories on policy-making and on the relation between public authorities and the citizenry, concentrating, in particular, on whether the policy recommendations of actual citizens' observatories inform public policies, and whether these observatories encourage public authorities to provide 'better' justifications for their policy decisions (in the eyes of the citizens). Equally important is to study who participates in these observatories, with a view to determining whether they help to correct, or in contrast reproduce, existing inequalities in political participation. A methodologically more challenging question is to study what happens with public responsibilities once citizens' observatories are in place, which should help to find out whether responsibilities for policy decisions are indeed diluted, as critics convincingly argue, and if so, under what circumstances. Last but not least, future research shall pay attention to two interrelated issues; namely how the efficiency of environmental policies is affected by citizens' observatories, and second, whether they diminish the public contestation of political and policy decisions on environmental matters, as authors such as Chambers and Kopstein fear.

To conclude, our discussion also suggests that we should be prepared to face normative trade-offs when setting up citizens' observatories. For instance, these institutions might well contribute to engaging citizens in policy-making and encourage them to take responsibility for public affairs, but this is likely to come at the cost of reinforcing inequalities in political participation. We have claimed implicitly that political equality should prevail over the former goals, but strictly speaking we have not provided an argument why this must be the case. These are controversies which neither empirical research nor experimentation with novel institutions can solve, and which shall continue to foster normative speculation.

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About the Authors

Marcos Engelken-Jorge

Dr Engelken-Jorge is a political scientist specialising in the study of democratic innovations, contemporary political theory and political sociology. He is research assistant at Iritziak Batuz.

Jonatan Moreno

Jonatan Moreno is one of the founding members of the Spanish consulting company Iritziak Batuz. His main areas of expertise are citizen participation and open government.

Hans Keune

Dr Hans Keune is a political scientist working at The Research Institute for Nature and Forest (INBO), the Belgian Biodiversity Platform and the Faculty of Applied Economics, University of Antwerp-Belgium. He also is an associate member of the Namur Center for Complex Systems (naXys).

Wim Verheyden

Wim Verheyden is researcher at the Research Institute for Nature and Forest in Brussels, specialising in participatory processes in the area of environment, health & well-being.

Alena Bartonova

Dr Alena Bartonova is research director of the Norwegian Institute for Air Research at Abu Dhabi University and coordinator of the CITI-SENSE project.

Refining IT Requirements for Government-Citizen Co-participation Support in Public Service Design and Delivery

Renata Mendes de Araujo*, Yehia Taher**

*Federal University of the State of Rio de Janeiro, Rio de Janeiro, Brazil, renata.araujo@uniriotec.br
**Université Versailles en Saint-Quentin-en-Yvelines, Versailles, France, yehia.taher@prism.uvsq.fr

Abstract: *This paper moves towards the description of an approach to specify co-participation requirements in the domain of public service delivery in order to allow flexibility in the high-level requirements identification for citizen-government supporting tools according to targeted co-participation (citizen - public administration) levels. It discusses how fine-tuned collaboration support, public service information transparency and social memory can be designed over a service-oriented view for public service design and delivery to progressively enhance government-citizen interaction levels.*

Keywords: *service-oriented computing; public service delivery; eParticipation; ICT support.*

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Introduction

Governments have, as one of their objectives, to deliver public services to their citizens regarding their general interest. To perform these services, public bodies typically use several cross-organizational business processes, transactions and resources operating on an Information and Communication Technology (ICT) platform. Service-Oriented Computing (SOC) is the computing paradigm (Papazoglou, 2003) leveraging the technical value of solutions in the public service area. Current trends in improving the relationship between governments and citizens aim at exploiting the development of tools and collaborative platforms for supporting formal analysis, conceptualisation, modelling, implementation, publishing, and further provision of e-services.

In this sense, previous work defines a systematic methodology, named COCKPIT, for empowering the role of citizen in the service design and delivery process (Taher, Heuvel, Koussouris and Georgousopoulos, 2010). The COCKPIT methodology relies on open innovation strategies to capitalize citizen involvement in public sector, materializing them into ICT components integrated into a SOA architecture (Christos et al. 2013). It comprises the definition of a governance model to the design, construction and operation of public services based on a co-production approach to shape public service offerings around the citizen's experiences; a formal

representation (metamodel) to express the structural and behavioural characteristics of public services while keeping in mind the balance that should be achieved between government and citizens; and an integrated toolkit architecture providing the main functionality to support citizen involvement over this service-oriented architecture.

However, citizen involvement in public service design through ICT does not consist of an easy target, being often kept to a minimum in most situations. One reason for this is that information technologies are deployed internally to public organizations, not for interaction with the citizens, as IT tools for business process modelling are still too difficult to be leveraged by citizens with no IT background. Another reason is that citizen participation is usually addressed optimistically, with the assumption that the ready availability of an interaction channel during service provision will promote participation. The issue addressed in this research is that interaction tools should be carefully designed if the intention is to effectively provide citizen participation and empowerment.

Recent work discusses the extension of the COCKPIT methodology to refine its potential to strengthen government-citizen ties in public service delivery (Araujo et al., 2013) This extension takes into account different government-citizen relationship support aspects – collaborative interaction, public services information transparency and understandability, and social memory management. The present paper details the proposed extensions by describing how the governance model can be refined in its flexibility to cope with different government-citizen interaction levels or behaviour, adapted to each application context. As a result, it is expected to start the definition of an approach to identify high-level requirements for effective and adaptive government-citizen interaction support aligned with distinct participation contexts.

The remainder of the paper is organised as follows. Section 2 describes the COCKPIT methodology for public service design and delivery, focusing on its governance model, metamodel and supporting ICT infrastructure. Section 3 highlights the aspects to be considered as a strategy to systematically build stronger government-citizen ties for eParticipation solutions. Section 4 proposes how requirements for citizen engagement can be designed while progressively increasing participation levels. Section 5 concludes the paper outlining issues for future work.

The COCKPIT Citizen-Centered Methodology for Public Services Design and Delivery

Before detailing the COCKPIT methodology, it is important to explain that this paper uses the term ´public service´ or ´service´ to address a set of electronic services provided over service-oriented architectures (SOA) in the public domain. Service design and delivery are common electronic services governance activities, i.e. activities related to exercising control over services in a service-oriented architecture (SOA). In public domains, public service design and delivery process entail the activity of planning people, infrastructure, communication, and material components of a service in order to improve its quality, the interaction between the service provider and citizens, and the citizen's experiences (Kousouris, et. al. 2007).

The main purpose of the public service design activity is to create a service to meet citizens´ needs and expectations. To make the service design and delivery traceable to service providers and consumers, a governance model, a reference model and an integrated ICT toolkit have been defined for the COCKPIT methodology (Christos et al. 2013).

The Governance Model

The COCKPIT Governance Model (Koussouris et al., 2011)(Kokkinakos et al, 2012) aims to present a more participative approach to decision-making for service design and deployment, with the use of advanced ICT tools and technologies, where services are built by citizens for citizens and are subject to rapid changes on the fly and optimisation, based on active and real-time monitoring of their impact on society, as they are expressed by the majority of citizens through the new communication media offered in a Web2.0 internet.

It spans four different layers (or stages) based on the logical flow of a service lifecycle - from its conceptualisation to post-operational evaluation – from which public bodies may have direct feedback in fine-tuning or revamping their services (Figure 1): i) *Service Conceptualization and Implementation Decision:* opinion mining is proposed as a direct way to collect citizens' opinions on the services under consideration. This stage comprises elements which may result in a decision to investigate the deployment strategy for a service; ii) *Service Modelling:* citizens´ opinions, selections and preferences are translated to service requirements and features, while being presented with a visual representation of their decisions' outcomes; iii) *Service Deployment:* highly sophisticated profiling mechanisms for services may be provided to automatically adjust themselves to citizens' preferences; and iv) *Service Delivery Evaluation:* opinion mining is once again used, to directly assess citizens´ opinions and receiving feedback.

The Meta-model

The Public Service Formal Representation (Taher and Heuvel, 2011), COCKPIT Meta-Model, was proposed to deal with the integral parts of every service description - to formally describe what the service is able to do, and how the consumer is able to consume what the service provides. The COCKPIT meta-model underpins the public service governance model supporting iterative development of public services; starting from identifying abstract citizen needs, and subsequently aligning them with the public body strategy, law and regulation through a stepwise reconciliation and refinement process until they can be modelled, simulated, and evaluated (Taher and Heuvel, 2011). Services are described following a service description template based on previous methodology, which guided service selection and the modelling procedures (Lampathaki et al., 2007) and various eGovernment service delivery projects for local administrations (Koussouris et al., 2007). COCKPIT Meta-Model has been organized into a stratified architecture comprising layers, each of which focuses on a particular aspect, taken as a view, of overall service representation (s*ervice concept view, service stakeholder view, service requirement view, service interaction view, service operation view, service cost view).*

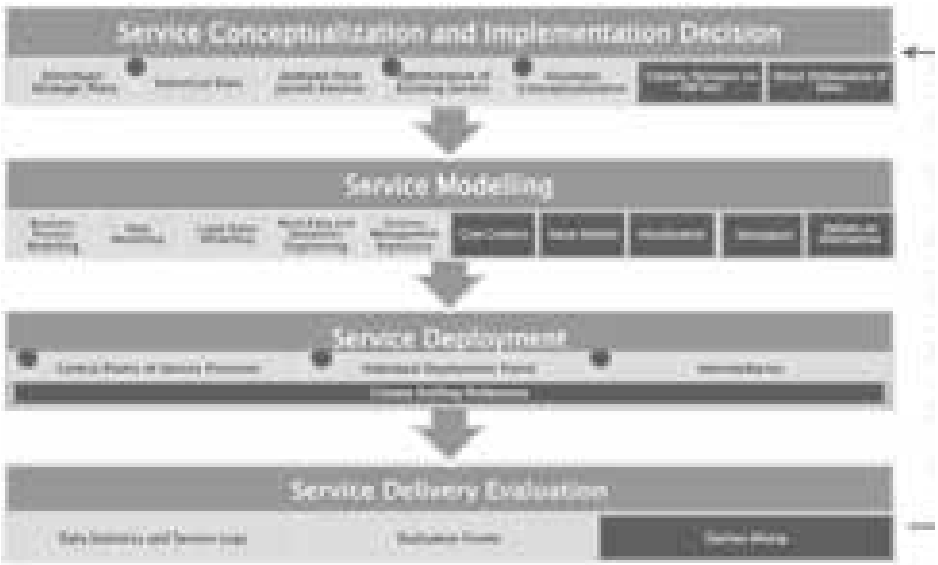

Figure 1: Public service design and delivery governance model perspectives (Taher and Heuvel,2011)

COCKPIT Supportive Integrated ICT Toolkit

The COCKPIT ICT toolkit (Kokkinakos et. al., 2012) consists of a number of distinct loosely-coupled components, following the SOA paradigm, andincluding (Figure 2): i) *Opinion Mining*: automatic extraction of ctizens´ needs on public service delivery from Web 2.0 mass collaboration applications based on ontology-based opinion mining techiques; ii) *Policy and Law Retrieval Tool*: a document repository system with advanced search mechanisms to support maintenance, searching and retrieval of documentation related to policy and legal frameworks; iii) *Citizens´ Deliberative Engagement Platform*: a front-end interface for deliberative dialogue between citizens and public service decision-makers through the use of specific forums for the public services under design/development; iv) *Service Engineering Tool*: the core module where the design of public services primarily takes place; v) *Service Cost & Value Estimation Tool:* capitalises upon the input of service architecture models, value categories and cost factors to create service cost and value models; vi) *Service Simulation and Visualisation Tool*: supports the execution, visualization and interactive simulation of the models generated by the Service Engineering Tool.

COCKPIT sets forth the basis of an innovative approach to engage citizens in the public service delivery decision-making process. The issue arising is how this can be adapted to improve its effectiveness to support citizen engagement when used in different participation contexts. Citizen participation cannot be treated as an absolute aspect. There can be a variety of participation contexts bearing different supporting requirements. The challenge is how to balance different sets of functionalities at each interaction component so as to cope with different citizen-government collaboration levels.

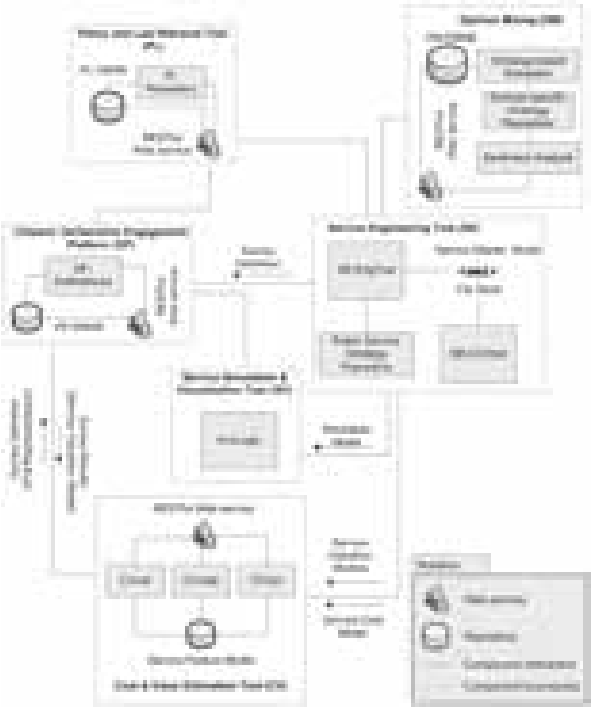

Figure 2: Conceptual view of COCKPIT integrated toolkit architecture (source: Christos et al., 2013)

IT Requirements for Citizen-Government Co-Participation

The challenge of designing tools to support government-citizen interaction lies on how to identify effective requirements for ICT support, taking into account the specific characteristics of every interaction context – the expected participation level, public organization policies and strategies; social, cultural and economic aspects of the target audience; regulations; and IT infrastructure available. It is very common to see a government-citizen interaction platform relying on general and popular social software products – wiki, blogs, social networks etc – or relying on very simple communication channels, such as 'contact us' and ombudsman processes (Olphert and Damodaran, 2007).

Our view to address this issue is to avoid believing that a unique solution will be adequate for all citizen-government co-participation contexts (Slaviero, Garcia and Maciel, 2011)(Scherer and Wimmer, 2011)(Scherer and Wimmer, 2012). Effective IT support is the result of careful requirement identification, similar to that which has been done for information systems development over the years.

Towards a framework for citizen-government IT Requirements identification

The literature suggests that citizen participation should follow an increasing scale where, at each level, citizens are empowered in their possibilities for participation, discussion and decision-

making in government processes and issues (Grönlund, 2007). Through this scale, different relationships between government and citizens can be configured, in which, at the lower levels, government and citizens have very distinct responsibilities and roles; and at higher levels, roles and responsibilities are mixed and interchanged. Initiatives to provide interaction between government and citizens should start with practices and tools which provide basic participation levels, being continuously improved to reach higher participation levels.

Diirr, Araujo and Cappelli (2009) suggest an approach to systematize virtual environments specification and development of to support electronic participation combining decisions on a desired participation level and the identification of different sets of supporting requirements grouped into three key aspects: i) *Collaborative support*: advanced and suited collaboration requirements regarding communication, coordination and awareness functionalities, for each interaction context (Magdaleno, Araujo e Borges, 2009) ii) *Transparency of information*: requirements that suggest the ability of an organization to publish information according to access, use, presentation, understanding and auditability characteristics (Leite and Cappelli, 2010); iii) *Social Memory:* requirements for managing social memory, past discussion and decisions (Conklin, 1996).

A scale to establish closer ties between citizens and between society and government through public services is proposed, starting from service provision, following a gradual increase in citizen participation through opinion gathering, service accountability, deliberative decision making, and finally, direct participation in service design and delivery issues. Orthogonally, an in-depth view of collaboration, transparency and social memory requirements could provide tool designers with a source of ideas on where to classify the participation level of a specific public audience.

Requirements might also be impacted by existing culture and specific domains which can determine different audience profiles – education, age, nationality, experience etc. These aspects will not be discussed in-depth in this paper, although it is recognized that this step is absolutely essential for cutting out the frontiers of effective target audience participation, as well as to help to prescribe which participation level may be expected and identify citizens´ goals. Public policy making, economic and social studies methods could be customized and systematized to be included here as part of this approach (Hoefsted, Hoefsted and Minkov, 2010).

Organizations and service providers' business goals – compliance with rules, image improvement, service relevance/obligation, strategic advantages for participation and disclosure etc - are also input for requirements identification and analysis. Strategic and business goals are usually dealt with in policy making, strategic management and business process management initiatives (Dumas et. al, 2013) with their corresponding artifacts – strategic plans, enterprise architecture descriptions and business process models being the main source of information for requirements definition (Sharp and MacDermott, 2008). Although outside the scope of this paper, this research recognizes the need for integrating business goals and business processes analysis into an overall methodology for designing co-participation tools.

Service domain analysis (Hjørland and Albrechtsen, 1995) may also be a source of requirements, particularly if we consider domain concepts, vocabularies and specific practices. Domain experts might be a fair source of information about the specificities of the domain in this case, which should also be another dimension to be organized into a methodology.

The literature on IT requirements definition (Sommerville and Sawyer, 1997) classifies requirements into two basic types - functional (input and output functions available to users) and non-functional (users and technical expected quality) – and in different levels – business

requirements (high level user need definition) and system requirements (low level inputs definition, processing and outputs for each business requirement identified). The main concern of this paper is firstly on ICT artifacts and their business and functional requirements identification, i.e., which functionalities the ICT tools should have to adequately support users in public service design co-participation.

At a glance, the systematic approach could start with the decision on which participation level should be targeted, considering the service providers´ goals, citizens´ needs, existing culture and the specific service domain. For each participation level, a set of collaboration, transparency and social memory requirements could be elicited, defining the scope of a supporting tool (Figure 3).

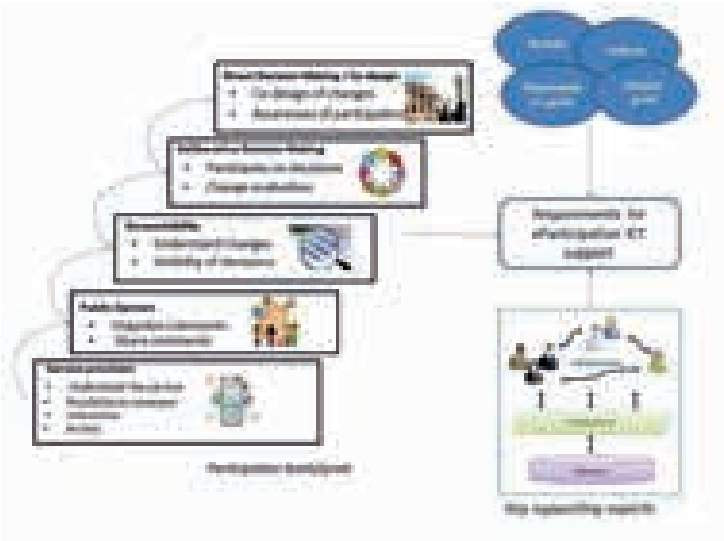

Figure 3: Sources of ePartcipation support requirements

Evolving Citizen Participation Requirements for Public Service Design and Delivery

The systematic approach is illustrated in this section by showing how it could be applied to the COCKPIT governance model (Figure 1) and its integrated ICT toolkit (Figure 2) so as to cope with the identification of detailed ICT functional requirements for the design of citizen-government co-participation supporting tools according to each participation context (Figure 3). The goals of each participation level are mapped into the objectives of each COCKPIT´s governance model stage. This leads to the identification of a set of high-level support requirements to enhance COCKPIT ICT toolkit components, considering collaboration, transparency and social memory aspects. The requirements described are not exhaustive, whereas the whole idea is to demonstrate how a structured view of participation levels and requirements dimensions can help designers think about functionalities.

Participation levels and their corresponding requirements are not independent of each other. ICT solutions for citizen-government co-design can merge goals and requirements of more than one level. The point here is mainly to structure the designers´ and policy makers´ knowledge on

what should be provided, establishing a framework for public service co-design support specification. The framework provide a path to evolve ICT solutions with improved participation requirements whenever it is recognized that citizens can follow the proposed progression.

Addressing Public Service Provision. At this level, access to online services comprises the basic objective (access). This implies government/service providers present information about public services and their execution, while citizens can request their use without having to go to a government agency. At this stage, citizens have very limited or no possibility of direct collaboration. Citizens can use mechanisms to follow the service provision process, being informed of service status on predefined and specific points (interaction). They can pose pre-classified comments (votes, suggestions, praise, criticism etc) about public services via narrow, directed, often one-way channels like "Contact us" or ombudsman online offices (possibility to comment).

In COCKPIT governance model , these requirements would affect primarily the Service Deployment Requirements stage. They could encompass service availability and follow-up through a web portal for use by the main agents; a channel to directly input doubts (collaboration); and a list of most-asked questions about service provision and delivery (social memory). Service Delivery Evaluation could be addressed in a ´passive´ mode with the publication of opinion mining results performed over the most-used social media channels by the area citizens.

Finally, transparency could be achieved by providing information details about service objectives, outcomes and process; enhancing citizens´ possibilities to criticize the service being delivered (understand the service). Social memory is reduced to structuring information about the most frequent interaction purposes. In summary, requirements for this level encompass a participation expectation where citizens are more concerned in having the service provided without great hurdles, directing their interaction to spot activities involving doubts or complaints. Citizens are not really willing, or not skilled, to participate and/or service providers do not envision participation as a strategic issue.

Service Conceptualization and Implementation could also be addresed for service transparency and understanding matters by providing links to the most relevant laws, policies or strategic plans justifying or motivating the services available. If these requirements were to be implemented into the COCKPIT integrated toolkit (see Figure 2), the focus would be on the service provision itself, on the opinion-mining tools and on the policy and law retrieval tool, where refined requirements could be identified, based on the main business goals and skills of the target audience and specificities and less understandable aspects of the application domain.

Addressing Public opinion. Tools must be scoped in order to cope with citizens willing to participate not only with their complaints and doubts but also with suggestions and viewpoints about the service. Collaboration among citizens about the service is permitted, thereby creating possibilities to share experiences, information and ideas (sharing comments); and different ways for summarizing and visualizing information shared among citizens (social memory) are provided (organize comments), so as to raise citizen awareness of public opinion in respect to the service.

The goal here is to improve citizens´ possibility to describe their experiences with the service delivery - Service Delivery Evaluation. This could be reached both by allowing them to enrich their comments as well as by sharing experiences and viewpoints with other citizens (collaboration). In the toolkit, requirements for the Citizens´ Deliberative Engagement Platform could be refined, for instance, to provide ways to input opinions directly associated to specific aspects of the service being rendered. Information sharing among citizens brings new requirements on how this

information can be organized in order to be both useful for process improvement as well as useful for citizen collective understanding of service users´ opinions and suggestions (transparency and social memory). In the COCKPIT toolkit, requirements for opinion mining could be refined so as to present richer information about social conversation on the service – organization of tagged themes and most commented topics could be possible improvements).

Addressing Public Service Accountability. Transparency is the main dimension at this stage. After being provided and skilled on bringing opinions, citizens may feel even more interested in service details and evolution. Information retrieval about service outcomes and underlying execution (process) are welcome. Citizens would be interested in service evolution and how this affects their daily activities, which brings the need of one being aware of decisions taken and the changes performed in the service (visibility of decisions). Naturally, service changes should be provided in a easily-understood format to citizens, in addition to their impacts on service performance (understand changes). Process description and simulation are key to this understanding.

Changes can be related to service definition, implementation and delivery (Service Conceptualization and Implementation, Service Modeling and Service Deployment stages). Being aware of changes (transparency) will lead to citizens´ comments, which can be again collected and shared (collaboration and social memory). The issue is how to explain services to users, both in terms of their definition as well as their execution and changes. Ideas to face this challenge have been addressed, for instance in Diirr, Araujo e Cappelli (2011) and Engiel, Araujo e Cappelli (2011). The Service Simulation & Visualization and the Cost & Value Estimation tools could be refined, where alternatives for understanding the service and its underlying process could be provided. This information, associated with the Deliberative Engagement requirements provided at the precedent participation level could leverage citizen participation by making both their understanding as well as their possibility to comment more precise.

Addressing Deliberative Decision Making: At this stage, citizens are able to express their opinions considering different aspects of the service, including its evolution and change (change evaluation). Together with service providers, citizens may decide on how to prioritize service changes which will then be deployed and made visible to society (participation on decisions). Collaboration is deployed at this level in terms of more sophisticated ways of following and commenting on service changes, even technical ones.

Decisions about service design and delivery are shared with citizens´ representatives who have the required skills to discuss service design (Service Conceptualization and Implementation and Service Modeling stages). Government and citizens´ representatives should have channels for sharing and discussing artifacts and opinions (collaboration) while experts and decision makers´ suggestions and deliberation (social memory) should be provided for citizens´ awareness in an understandable manner (transparency). The challenge here is how to easily explain service changes to citizens. Moreover, how to explain the relationship among changes, policies & laws, and service design deliberation activities. Requirements to cope with this issue would probably lead to different functionalities on the COCKPIT Citizens´ Deliberative Engagement Platform.

Addressing Direct Decision Making/Co-design: This final stage comprises the co-design of public services. Requirements here could be similar to those available in open source software development communities, where citizens could directly suggest improvements to public process service definition and implementation. Therefore, citizens are provided with more sophisticated views about each player´s participation (citizen or government) and its impact on service change

(awareness of participation); they are allowed, and have ways to collaboratively design/test new ways of service execution (service innovation or co-design).

Citizens are provided with a high level of empowerment both for direct deliberation about services (Service Conceptualization and Implementation and Service Modeling) and for co-designing and participating in service innovation (collaboration and social memory). Effective co-design and co-creation of services will probably demand new requirements from the Service Engineering Tool, especially for supporting this design community/ecosystem. An essential point in this view is that requirements can be progressively added while following higher participation level goals, i.e. requirements on a specific level should comprise the set of requirements of the levels below it. Following this path, it is argued that citizens will progressively be able to perform their role as participative agents in the public service design and delivery more consciously.

Conclusion

The particular message this paper aims to bring forth is that there is no single platform or set of tools or functionalities which will effectively support all the existing different citizen-public administration dialogue contexts. Being opportunistic and relying on social media for obtaining data on citizen opinion comprises a good strategy, but worthless if citizens do not use this media, or else if the information obtained is not effective enough to help decision-making. This ongoing research argues that citizen engagement is a progressive path and, most importantly, the manner by which ICT is provided for this support can be an instrument for improving citizens´ education on democratic and participation activities, as well as for evolving public administration into more transparent, collaborative and democratic organizations.

The variety of citizen-public administration dialogue contexts makes us understand that building supporting tools for this collaboration requires approaches for ICT requirements elicitation at least commensurate with what has been done for the identification of organizational information systems requirements. This paper addresses this issue by discussing the overview of an approach to identify requirements for citizen engagement support in public service design and delivery according to desired participation levels. The approach was illustrated to envision enhancements into the COCKPIT governance model and integrated ICT toolkit to extend them in order to increase participation.

The contribution of this paper lies on outlining a framework for balancing goals, requirements and the desired or expected citizen participation level in different public service delivery contexts. This primary description of the framework and its use leads an open path to the definition of a sound methodology for designing co-participation tools. The definition of such methodology incorporating the following: methods for business goals, culture and domain analysis; detailed functional requirements specification procedures; non-functional requirements specification methods; and integration with SOC methodologies, subject to future research work.

Future work also comprises the specification and use of participation tools integrated into the COCKPIT or other SOA infrastructures based on its governance model, metamodel and toolkit. This could bring enhancements to COCKPIT formal specification and implementation infrastructures so as to allow for flexible composition of e-services aligned or compliant with an expected participation level.

Finally, the convergence of open innovation, the large scale use of mobile ICT, and the future of service composition and adaptation in the cloud renders the context of public service delivery a special kind of "systems-of-systems" (Nakagawa et a., 2013). Approaches for dealing with its emergent behaviour and the need to dynamicaly adapt its supporting requirements and architecture shall be an issue for the near future.

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About the Authors

Renata Araujo

Renata Araujo obtained her D.Sc. in Computer Science from Federal University of Rio de Janeiro (2000). She is an Associate Professor Federal University of the State of Rio de Janeiro, Brazil. Her experience and research work focuses on Information Systems, Business Process Management, Computer-Supported Cooperative Work and e-Democracy. Her current research focuses on how to render organizations more democratic by the use of business process management, collaborative support and social tools.

Yehia Taher

Yehia Taher obtained his PhD in Computer Science from Claude Bernard Lyon 1 University and Joseph Fourier University, France (2009). He is an associate professor at University of Versailles Saint-Quentin-En-Yvelines, France. His experience and research work focuses on Service-Oriented Architectures, Business Process, Cloud Computing, E-Government, E-Commerce and Complex Event Processing. His current research focuses on how to adapt business processes using services in the cloud environment.

‘Hyperlocal E-participation’? Evaluating Online Activity by Scottish Community Councils

Peter Cruickshank*, Bruce Ryan**, Colin F Smith***

*Institute of Informatics and Digital Innovation, Edinburgh Napier University. p.cruickshank@napier.ac.uk
**Institute of Informatics and Digital Innovation, Edinburgh Napier University. b.ryan@napier.ac.uk
***Institute of Informatics and Digital Innovation, Edinburgh Napier University. cf.smith@napier.ac.uk

Abstract: *This paper is motivated by the need to understand the reality of the use of the now well-established opportunities offered by the internet to engage with citizens. Building on previous research this paper derives a framework tailored for evaluation of e-participation and internet usage by representative bodies at the community or hyperlocal level which was applied in a survey of the use of Scotland’s Community Councils (CCs). The survey found a generally low level of use and engagement with citizens with evn the actually existing websites hosting one-way communication, with only a small minority hosting online discussion and opinion-gathering. A significant factor in the richness of contet is association with other local community groups. Findings are contextualised with reference to other European examples and research indicating a number of contributing factors. The report concludes by suggesting an agenda for further research.*

Keywords: *representation, communication, internet, hyperlocal, e-participation, community, Scotland*

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Introduction

Community or hyperlocal-level democracy is important; it has a place in community life alongside hyperlocal media and other local third sector and campaigning groups. This is the non-‘political’ level of politics, concerning local planning, street lighting, annual fêtes, potholes and road crossings. Following partially from Metzgar, Kurpius and Rowley (2011) we define the emerging term ‘hyperlocal democracy’ as ‘the smallest official levels of democracy: geographically-based, community-oriented, and intended to promote civic engagement’. This definition serves to distinguish these units which must be given audience by higher tiers of democracy, from pressure groups which can be ignored by those in power.

In the light of the now well-established opportunities offered by the internet we became interested in how community-level government uses the internet to engage with citizens. A motivation for this report is to put some facts in place to validate expectations of performance: and gain an initial understanding of the actual level of use of the internet by CCs. This paper

establishes an evaluation framework which is applied in a survey of the use of the internet by Scotland's Community Councils (CCs) and contextualised in references to other European examples of its use. The report concludes by suggesting an agenda for further research.

Literature Review

This section broadly uses the classic description of levels of e-participation with their consideration of the requirements for successful e-democracy and e-participation, to identify factors that are relevant to the evaluation of e-participation and citizen engagement in hyperlocal democracy.

Concepts of E-Democracy/E-Participation

E-participation generally defined as being about the use of internet technologies to support the engagement of citizens with day-to-day governmental activities and decision-making, as opposed to periodic voting in traditional representative democracy. It has been suggested that despite nearly 15 years' research and intervention, e-participation is only slowly beginning to materialise (e.g. (Norris, 2010) (Freeman & Quirke, 2013)). There are several models describing the different levels of e-participation e.g. (Macintosh, 2004) (Mulder & Hartog, 2013), but all start at the lowest level with one-way information-provision by governments to citizens, with further levels leading up to full active two-way participation.

Although it is acknowledged that the existing digital divide may lead to e-participation acting to *increase* democratic equality (Macintosh, Coleman, & Schneeberger, 2009), it is still possible to suggest that e-participation will increase in significance, even though it will not engage everyone or solve every problem with democracy (Groβe, 2013). Instead, it can help with communication between increasingly online citizens and politicians, and hence can help with politicians' decision-making, and can include those who don't vote but do have political opinions. Some also suggest that e-participation will supplement traditional democratic processes when government information, civic participation and regulatory transformations intersect (Freeman & Quirke, 2013).

Other necessary qualities for successful e-participation mechanisms are eligible participants, communication mechanisms and actual influence on policy (Fung, 2006). Even countries which have high commitments to – and relatively high success rates in – e-participation, forums fail if they run up against technical limits, absence of issues for discussion, weak sense of community and *lack of real influence* (Griessler, 2012). Further, permanent adoption of e-participation is likely only when there are clear financial and/or organisational benefits (Molinari, 2012). In short, e-participation tools by themselves are not a solution to the problems of (hyperlocal) democracy. Instead, governments and politicians need to risk ceding control to open processes and discourses (Freeman & Quirke, 2013) offline as well as online, while those who aim to 'fix' democracy by technical means are exhorted to get to know how to communicate with, not just at, their audiences (Lupia, 2012).

Communication: Hyperlocal News and Hyperlocal Politics?

The initial rung of e-participation is a one-way relationship in which government produces and delivers *information* to citizens (Macintosh, 2004). In this area, the often close relationship between local representation and community/citizen journalism needs to be remembered (Bruns, 2010): the topics that are addressed by citizen journalist such as local planning often overlap with politicians' interests (in fact, at this level, they may be the same people). The role of a pre-prepared platform (e.g. myHeimat.de) can be important in allowing representatives to focus on communication, rather than the details of technology. Such platforms can also provide resources to engage, motivate and train contributors – accepting that levels of activity will differ, and will vary over time, and also that the model may be better suited to small towns and rural communities – residents of larger cities do not have the same identification with their suburbs (Bruns, 2010).

Information consumption is essential to citizenship: most people use the internet as an information-gathering medium rather than a medium for dialogue or a tool for change. Although they appear to 'lurk' (Cruickshank, Edelmann, & Smith, 2010) a lack of evidence of online engagement is not evidence that there is no interest: communication can be taking place on a multiplicity of channels on and offline, public and private (Saglie & Vabo, 2009).

All these in different ways allow communication not just from government to citizens but attempt discussion and engagement between these parties. While decision-making remains ultimately with governments, the official channels which are at or near the top rung of the e-participation ladder (Macintosh, 2004), often seem to about big-city or national concerns. Even so, these channels may have little impact (Östling, 2011), perhaps reflecting their lack of influence (Griessler, 2012).

Local Geography of Representation

As already noted above, technology has often been found to provide further channels for the self-efficacious to communicate with power (Saglie & Vabo, 2009), thereby *reinforcing* the digital divide. A further challenge is therefore for society is to empower local government in deprived and marginalised areas of the country; this includes dealing with their geographical range. The digital divide has a double role to play – acting excluding both ordinary citizens, but also their representatives who themselves may not have the necessary skills and motivations to take advantage of the technology.

Larger geographical size (and numbers of constituents) can provide motivation for representatives to use technology by creating efficiencies of scale (Saglie & Vabo, 2009). On the other hand, citizens in smaller communities have been found to have higher incidences of internet-based participation, despite relatively poor connectivity. Younger and more educated people are more likely to use internet technologies.

At the hyperlocal level, the motivation to become a community representative might be different from political representation: for instance joining up can be a good way to get to know people (Nyseth & Ringholm, 2008).

Hyperlocal Democracy – a Kind of Voluntary Organisation?

Given the local and small scale nature of hyperlocal institutions, it is useful to look at other community groups for models of online engagement, local third-sector groups for instance who exist in a context of other local groups, official and unofficial, competing for space with governments agencies established at local level. This can be seen as part of the 'new governance process' which has been characterised by deliberative processes, informal channels and multiple organisations (Bingham, Nabatchi, & O'Leary, 2005).

Many charities have websites. Most of these are about raising awareness and providing information, rather than acquiring new supporters, raising funds or allowing beneficiaries/clients to interact (Goatman & Lewis, 2007). Charity websites can be useful for staff and fieldworkers, e.g. for submitting reports. Others have specific functions such as providing information about the charity, contact details, downloads, newsletters and news, feedback, links to other websites and campaigning and lobbying.

It seems clear that many of these are similar to the uses of an 'ideal' hyperlocal democratic presence. For example, it may be a priority to recruit new members and to provide information and feedback. They might use member-only systems to discuss confidential items outside of meetings. Small charity website development is subject to similar pressures, such as decisions over whether (and how) to outsource development or to keep it in-house. It could even be argued that local bodies compete for attention and funds in a similar ways to charities (Winterich, Zhang, & Mittal, 2012).

The Scottish Context

Context and Historical Background

Community Councils (CCs) are the lowest level of local government in Scotland, which in turn is a semi-federated constituent nation of the United Kingdom. Scotland has a population of 5.3 million; local government being divided into 32 Local Authorities (LAs) with populations varying between 20,000 and 600,000 and ranging between densely populated urban areas and remote rural communities.

All local authorities are obliged to develop schemes for CCs: the purpose of CCs is to represent small areas within local authorities. Their members ('Community Councillors') are unpaid volunteers, they have limited powers and small budgets: enough to hire a monthly meeting room, pay for some stationery and little else. In terms of impact, CCs have had mixed success at best (Goodlad, et al., 1999).

Not all possible CCs are actually active: in 2011, out of 1369 possible CCs, only 1156 existed, covering 84% of the population; this level of (in)activity has been the case since at least 1999 (Ryan & Cruickshank, 2012, p. 18). Uncontested elections and unfilled posts have been a feature of CCs throughout their existence. Community Councillors are generally aged over 40, and often are not representative of the demographics of their areas (Goodlad, et al., 1999). All this has combined to reduce their democratic legitimacy.

On the other hand, past research has showed that web-based tools can enable and encourage Scottish community councillors and citizens to participate, that there is significant appetite for

such tools and that electronic documentation is readily used given web access and relevant skills (Whyte, Macintosh, & Shell, 2006). An appetite for online engagement by citizens certainly exists in the UK. For example, 14% of UK adults have taken part in online discussions of civic or political issues (Office for National Statistics, 2011).

Although this paper focuses on the Scottish experience, it is worth contextualising the discussion with a review of two countries with some similar characteristics to Scotland: Austria and Norway. In both, municipalities actively use the internet to communicate with their citizens: for instance, in 2008, 98% of Austrian *Gemeinden*[1] had websites. Of these, 80% were under the 'official' Austrian Government '.gv.at' domain (Centre for eGovernment, 2009). As early as 2003, 90% of Norwegian *kommuner*[2] had websites (Haug & Jansen, 2003) and by 2011, 58% of *kommuner* had social media presences too – the major provider was Facebook, used by 38% of *kommuner* (Volan, 2011). Despite this, online engagement by citizens has not been widespread (Saglie & Vabo, 2009) showing that being active online should not be expected to be a panacea. This is in line with Groβe's (2013) more 'realistic' expectations for e-particiapation.

Representation and Service Delivery

Democratic government is about improving citizens' lives through responsive, accountable delivery of services, but Scottish CCs have no obligatory service-provision duties. Instead service-provision is associated with the 32 local authorities, central government and the arm's length outsourced organisations they fund, such as development companies and third sector organisations (Scottish Government, 2011).

CCs have three statutory *representative* roles relating to providing a channel for community opinions, and comments on building planning and (alcohol) licensing: even these lead to conflict with other locally powerful interests such as developers and higher levels of government who often see community objections as blocking their agendas (Parker, 2008).

Scottish CCs are largely composed of volunteers and exist in a context of other local groups, official and unofficial, competing for space with NGOs and other government agencies, which are often established at local level but exclude CC representatives. In this way, CCs in some ways appear and behave like third sector pressure groups. Indeed the City of Glasgow Council is explicit that CCs are not actually part of government (Glasgow City Council, 2013, p. 4) - and so are seen as NGOs or pressure groups, albeit ones with elevated rights of audience.

By contrast, the smallest local government units (often generically labelled *municipalities*) in other European countries generally provide services, and raise income to enable this. For example, Austria's *Gemeinden* provide services such as water, sewerage and recreation facilities. *Gemeinden* are funded from federal taxes, local taxes and charges, and even have a voice in European matters (Österreichischer Gemeindebund, 2013).

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[1] Austria is not too dissimilar to Scotland, having a population of 8.3 million and a large proportion of remote mountainous regions. Austria has 9 *Bundesländer* ('federal states'), divided into 84 *Bezirke* ('districts') and 15 Statutarstädte ('statutory cities'). *Bezirke* are subdivided into *Gemeinden* ('parishes'), of which there are 2346

[2] Norway has a population of 5.0 million. Its local government structure has 19 *fylker* ('counties'), divided into 434 *kommuner* ('municipalities').

Similarly, Norwegian *kommuner* provide services such as primary and lower secondary schools, nurseries and kindergartens, some social services, local land-use planning, roads and harbours, and work on agricultural and environmental issues. In 2003, *kommuner* spent approximately £20 billion on these services. *Kommuner* received 42% of their income from local income and property taxes and 47% from grants from local government and other sources (Ministry of Local Government and Regional Development, 2003).

In summary, although Scottish CCs have a function as representative institutions, they have no function in delivering (state or government) services. This creates a challenge for fitting in with conventional models of democracy and government. In terms of the use of technology, we have potential for e-participation without e-government.

Evaluation Framework

From this, one could expect that CCs online presences to be amateur (that is both lacking professional 'polish' and being voluntary and potentially part-time, piecemeal activities), to be based on free platforms and to concentrate on local news and issues, planning and licensing issues; however reflecting CCs' low profile, there has been a lack of concrete data on their actual online activity.

A survey of their internet presences allows evaluation of channel choice and the role of hyperlocal media, the extent to which they CCs as a government or community website, their place in the e-participation ladder and the impact of context - geography, deprivation and demographics. Service delivery function is not a feature of Scottish CCs so could not be investigated.

To this end, an evaluation framework was established for analysing websites using easily established indicators:

Level of activity: The existence and timeliness of content is an indicator of the weight given to the internet as a channel. Websites can be deemed up-to-date for our purposes if they have been updated in the previous two months, to allow for holiday breaks and minutes not being put online until they had been approved at succeeding meetings.

Content type (News, local information, minutes, information on planning documents). This allows measurement of similarity to NGO organisation and also the CC's place in the e-participation ladder, including the extent to which CCs are using the internet for achieving influence (primarily through effective participation in the local planning process).

Hosting decisions (self, community or LA) give a further indication of how the CC is presenting its place: as part of government, as part of community/third sector activity or as an independent body.

Finally, **demographics** of the locality can be indicator of likelihood of the digital divide being a significant issue. Although interesting, demographics of councillors is not available through an internet survey.

Research Approach

In July 2012, lists of known Scottish CCs were used to search Google. If a relevant-seeming hit appeared in the first two pages, the URL was investigated and the hosting and content categorised using a simple framework based on the above, looking for the presence of minutes, local area information, news and planning process. To ensure completeness, Local Authorities' CC Liaison Officers (CCLOs) were asked to validate the lists of CCs as some LAs listed online only those which were active. This led to the identification of additional websites.

To identify possible drivers and meaning behind this data, representatives of seven CCs were interviewed; this also enabled limited follow-up of previous research (Whyte, Macintosh, & Shell, 2006).

Analysis of Findings

Level of Activity

The results of our survey are summarised in Table 1 below3. 1156 CCs were found to function to some extent, of a potential 1369 (i.e. 85% exist). Of these, only 658 (57% of existing CCs) are online in any way; only about a quarter (307 or 27%) of all existing CCs were found to be up-to-date by our loose definition.

Table 1: Community Councils' online presences: total

	Inactive CCs	Active with online presences…			Total CCs
		…missing	…out-of-date	…up-to-date	
Total number	213	498	351	307	1369
Percent of all	*16%*	*36%*	*26%*	*22%*	*100%*
Percent of active	*NA*	*43%*	*30%*	*27%*	*100%*

This level of use of websites compares adversely with the 98% of Austrian *Gemeinden* and 90% of Norwegian *kommuner*.

Content Type

Looking at the content CCs with active web presences chose to include, content included minutes (recorded on 87% of active online sites), local area information, news, planning and 'other'. Only 38 CCs (12% of active online sites) had information to support engagement with the planning process, despite this being core to their mission. LA-hosted presences tended to have only minutes and CC contact details.

Only 50 (4%) of all CCs had Facebook pages - compare this to the 58% of Norwegian *kommuner* which use social media.

[3] A more detailed analysis is available elsewhere (Ryan & Cruickshank, 2012)

Variations Between LAs and Between Community Councils

Given Scotland's geographic and demographic diversity, a range of behaviour would be expected, and this was the case: the level of CCs with websites varied between LAs: in one, 100% CCs had online presences; 88% of these were up to date. At the other end of the spectrum at another LA, only 13% of CCs had presences, of which 3% were up to date.

However, we did not find a simple relationship between urban/rural measures and online effectiveness: while large/urban areas might have more resources for online communication, people in small and hence tight-bound (rural) areas are more likely to be involved with local politics (Saglie & Vabo, 2009). Therefore factors to explain this variation must include more than geography and demography and need to be investigated further – factors may also include policy and personality: it may be that some LAs have particularly effective Liaison Officers, or have a more proactive attitude to supporting their CCs. This needs to be investigated further.

Hosting Decisions

It was found that up-to-date internet presences can be naturally grouped into two categories that cover the majority of circumstances (86% of the CCs which are active and up-to-date). The first group can be described as *community-driven*: this was largest segment in which online presences were under the direct control of their CC or members of the local community, generally using free hosting services. Community-driven presences had a wide range of content and almost all (93%) were updated monthly. One interpretation is that CCs who have the drive to keep their sites up to date are similarly empowered to have wider ranges of content, hence informing their constituents and others outside their area. This fits the model of CC acting as third sector organisations.

The second was *LA-hosted* CC presences, found in 6 LAs. These almost always contained simply their minutes and contact details, though they were updated monthly. In short, although up-to-date and ensuring a presence for all the LA's CCs, the content was limited and inflexible, being restricted to a centrally imposed template.

Conclusions and Discussion

It might be expected that the majority of CCs would use online methods to reduce the costs of connecting with citizens where possible – acknowledging that they are still obliged to connect with offline citizens – if only because this could increase efficiency and decrease operating costs. Yet the opposite seems to be the case.

We found little evidence of activity, and much evidence of inactivity. There is some evidence that the internet is being used for *communication* – and there is some evidence that CCs work best in the context of other hyperlocal media activity, but the average CC is hardly on the first rung of the e-participation ladder (Macintosh, 2004). CCs are largely not using the internet as a tool for consultation or hence (e-)participation. In particular, the areas where there is a clear duty to gather and represent community viewpoints to other levels of government – planning and licencing – the internet's potential to engage is not being used, visibly at least.

It would seem that Griessler's (2012) *influence* condition is broken: so it can already be expected that there will be little or no effective (e-)participation associated with CCs. Without budget to

employ professional web-designers or set up sustainable e-participation schemes, CCs run up against the *technical limits* barrier, and by being tacitly restricted to spatial planning and licensing issues (and by being further limited by their voluntary and hence part-time nature), CCs might be considered to have a *lack of issues.* Civic enthusiasm is not high according as evidenced by the lack of contested elections.

That is, CCs lack real power so are unlikely to set up e-democracy/e-participation schemes, even if they had the required expertise and budget. There is an understandable reliance on free services such as blogs and LA-hosted pages. Further, there is no obvious financial advantage for CCs to set-up e-participation, thus failing one of Molinari's (2012) criteria.

Service delivery: as would be expected, no was evidence found – but evidence (e.g. of voluntary activities) was not specifically sought.

Scotland's CCs provide an unusual example of representation without taxation or government duties. It may be that the consequences can be seen in low levels of citizen engagement with the Councils, and low levels of engagement by CCs with new open forms of communication provided by the internet. Nevertheless, it is hoped that this paper will be a contribution to the emerging study of hyperlocal (e-)democracy across Europe, if only to highlight some of the restrictions and limitations that can be encountered at this level.

Although this is more than a problem of e-participation, it seems likely that there are lessons from this field that could be applied to improve the process from the bottom up, even while a broader dialog on the purpose and function of CCs continues.

Research Limitations

The approach taken in designing the research can be situated in the e-participation tradition, which historically has had an assumption that technology can be used to solve problems (in this case) with democracy, and that direct participatory democracy is superior to representative democracy (Susha & Grönlund, 2012). This approach to modelling the success of e-participation also tends to measure technological maturity rather than impact on citizens' lives or democratic practices.

Further Work

The work here has thrown up a number of additional research directions:

Where is the engagement? It cannot be assumed that a weak or non-existent online presence automatically implies lack or engagement with citizens in other ways, for instance it is possible that online activity also takes place elsewhere, e.g. via closed mailing lists or Facebook groups.

What are the drivers? Further work could provide analysis and explanation at the institutional and individual level; both need to be addressed (Saglie & Vabo, 2009). This could include the processes and factors behind the choices made by individual CCs and Councillors to use internet technologies – and their relationship with local third sector and community groups.

What are the patterns of change? We intend to resurvey the situation in early 2014, looking for both overall changes and changes within LAs. We are also building tools to contextualise CCs within geographic and demographic factors – these will allow comparison with previous research

in similar contexts, for example (Saglie & Vabo, 2009) and insights into other factors influencing CCs' online performances.

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About the Authors

Bruce Ryan

Bruce Ryan has just completed his MSc in Information Systems Development. He is a former Community Councillor, and now works with two Edinburgh Community Councils, while continuing research in e-democracy in this area.

Peter Cruickshank

Peter Cruickshank teaches Information Systems, researches e-participation and has a background in business, accountancy, IS Audit and information governance generally.

Colin F Smith

Colin F Smith's research examines the relationships between new ICTs, strategic innovation and organisational change, particularly in the contexts of e-government and e-democracy.

In Search of Quality of eGovernment - A Conceptual Discussion on Impartiality in eGovernment.

Elin Wihlborg*, Mariana S. Gustafsson**

*Professor, Department of Management and Engineering, Linkoping University, Sweden.
elin.wihlborg@liu.se
**PhD-candidate, Department of Management and Engineering, Linkoping University, Sweden.
mariana.s.gustafsson@liu.se

Abstract: *Core elements of high quality of governments are high levels of participation on the input side and high degree of impartiality on the output side of the political system. When governmental practices are digitalised both these dimensions are challenged. This paper argues that there is a need to complement the study on the quality of government by including the implications of the new and growing practices of eGovernment. We have in this paper used Easton's flow model of political system in combination with Rothstein's quality of government model and have accommodated these to include some eGovernemnt dimensions, with the aim to start a conceptualisation of the quality of eGovernment. Our arguments conclude that eGovernment has a potential to further improve and strengthen the quality of government in general and in particular regarding input-side participation and impartiality in implementation of policies at the output side. But these improvements rely on that the design of the systems is coherent with democratic values and efficient administration.*

Keywords: *eGovernment, Quality of Government, Impartiality, Public E-Services.*

Introduction

The increased use of ICT in governments and not at least the government's on-line relations to its citizens can even challenge the ideas of quality of government, since it has a potentially re-frame governmental practices and relations to citizens. Governments seek to improve their governance strategies and enhance trust and support for their policies. This is made through both high participation of citizens and openness on the input-side and high quality and trustworthy public services on the output-side of the political system. Quality of government (QoG) is in general terms seen as a form of good governance. Good governance is more normative expression and a related concept that is used in many disciplines, providing a modelling of empirical analysis of for example economic growth (Jamali, Wandschneider, & Wunnava, 2007), conflict solving and prevention of civil war (Öberg & Melander, 2005), public administration and bureaucracy (Evans & Rauch, 1999).

Quality of government is often framed in normative approach focusing on procedural rules. On the output-side of public services a particular focus is put on the impartiality principle in the

exercise of public authority. Impartiality as a basic principle has key implications on the public administration as a key service provider in the relations between citizens and government. The core meaning of impartiality is to treat citizens equally and base decisions on objective criteria, rather than on the basis of bias, prejudice, or preferring the benefit to one person over another for improper reasons. The principle focuses on impartial behaviour, and it has, for governments, implications on how the public administration is framed and how administrative activities are conducted and organized.

Quality of government is a key issue for legitimate governmental power. The increased use of on-line relations among governmental agencies also demands new ways to gain legitimacy through quality of government. These new governmental institutional arrangements and the tools provided the new technology we will argue here have a potential to improve impartiality and thereby quality of government. Impartiality has shown to be a key component in Quality of government, in particular in extensive welfare states (Rothstein & Teorell, 2008a).

Thus there is a need to elaborate on the meanings of quality of eGovernment and how better governmental activities and governing structures are achieved through the use of information technologies. We will address these challenges through a search for a conceptualisation of Quality of eGovernment by focusing on impartiality in particular in public e-services.

Aim of the Paper

In this paper we aim to initiate a conceptualisation of the quality of eGovernment. Two main assumptions are guiding this discussion. Firstly, that quality of government is fundamentally re-shaped by emerging eGovernment practices. Secondly, that impartiality in e-services, as a core of quality of government, has a potential to be even further improved by the development of eGovernment.

Outline of the Paper

This paper proceeds in three main steps. First, in this introduction we will also discuss some methodological considerations. In the next section, we discuss the general model of the political system and how eGovernment can be added to that model and open for new conceptualisations. In the third section we add and deepen the meanings of quality of government and relate it to the meanings of legitimacy of government. In the fourth section we combine the concepts to search for a conceptualisation of quality of eGovernment at both the input and output side of the political systems. Finally, we draw some more general conclusions and open up for further questions on how and where quality of e-government can be conceptualised.

Methods for a Conceptualization

Overall the method can be described as emerging from three steps. Firstly, the inspiration for the paper emerges from the experience of several case studies and field-works in relation to eGovernment in Sweden (Jansson, 2013a; Wihlborg, 2014). We hereby take off from a context where eGovernment is developed in relation to high quality governments with extensive public services and generally high trust in government (Rothstein, Samanni, & Teorell, 2012).

Secondly, the conceptualisation will relate eGovernment to the field of quality of government, and thus enter into discussions related to normative political science. By this we find a lack of perspectives on the influence of technology and the social constructivist approach of technology that underlines most eGovernment studies. In spite of these ontological differences we try to combine the approaches. By discussing QoG in the context of eGovernment and vice versa, we will hereby hope to fill a part of the theoretical gap identified in the field of eGovernment research (Bannister & Wilson, 2011; Heeks & Bailur, 2007; Susha & Grönlund, 2012).

From Government to eGovernment

The introduction of eGovernment is not just about adding new information technological tools to established models of governments. It has been argued that it is a fundamental change of the grounds of governmental institutions and structures (Dunleavy, Margetts, Bastow, & et al., 2006; Fountain, 2001). In order to make this clear we will take off from a basic model of the government in the political systems and than add to this some implications on how the use of information technologies can extend such a model. We do this by starting in the classical model of the political system as it was described by Easton (Easton, 1965). Than we add the eGovernment into this classical model of the political system to ground the discussion of eGovernment in a basic model of the political system.

Easton's Classical Model of the Political System

A political system is defined as a set of processes through which values are authoritatively allocated in a society, operates in a constant and dynamic relation with its environment. This classical model of the political system distinguished input processes and variables from output processes and variables in relation to its surrounding environment (Easton, 1965). Figure 1 illustrates this model, which is also called a 'flow model' due to the continuous processes that feed in and out the system through information and reaction feedback loops. The political system is thus conceived as a perpetual conversion process. It shows how governmental institutions are part of the society and how the political relies on the interplay of governmental and non-governmental actors and activities. The model takes in demands and support that are shaped in the environment and produces outputs out of them, in form of decisions, actions and policies.

Figure 1: A simplified flow model of a political system (adapted from Easton 1965)

In this model input of demand and input of support are considered as most important components into the political system. Political demands represent the most sophisticated form of input based on wants, needs, interests, motives, expectations, preferences, ideologies and cultures of the members of the society. Political demands differ from other types of demands due to their authoritative claim on resulting authoritative, binding solutions that would apply on the entire society. Support is the other major components that influences the relations between the political system to its environment (Easton, 1965). Support is defined by favourable actions and attitudes of the members of the society towards the political system, and more specifically towards the political community, the regime and the authorities (Easton, 1965). Without support for the political system, demands cannot be processed into outputs and vice versa, failure to respond to the demands will influence the level of support.

Legitimacy is perceived by Easton to be central in assuring stable support for the government and assures compliance and approval from society with respect to the adoption and implementation of outputs in general. Legitimacy is rooted in the individuals beliefs that the political regime is morally right and appropriate (Easton, 1965). Legitimacy is a key aspect of quality of government that is gained through the demands and support at the in-put side of the system.

Networked Governance as the Setting of eGovernment

Contemporary processes in the political system are most often characterized by networked governance (Sørensen & Torfing, 2007; Torfing, 2012). Networked governance is a way of describing the contemporary fundamental shift from government to governance including private-public partnerships and flexible and open forms of policymaking. Networked governance is a complementary structure for traditional governmental structures. It has to function in addition to hierarchical government structures, where governmental actors and agencies can play a more dominant role than other actors of the networks (Sørensen & Torfing, 2007; Torfing, 2012). In a networked context there is a continuing negation of meanings and resources in contrast to the more stable and given setting in a governmental context (Pierre & Peters, 2005).

Networked governance is an open and collaborative form of governance (Kooiman, 2003) collaboration of private and public partnerships is a core aspect of the networked governance, focusing on the complex policy making through horizontal interaction among actors and organizations. This structuring of governance opens for eGovernmental arrangements and new institutions. It is involving private-public partnerships and active participation among citizens and users of public services.

eGovernment – More than Just Adding ICT to the Political System

eGovernment initiatives and programs are common today in most states in the Western world. They are commonly intended to strengthen a citizen-centric government and make public administration more cost-efficient (Worrall, 2011). The still emerging information technologies are re-framing societies and promote networked structures new forms of transparency and arrangements of the information society (Castells, 2001, 2008).

There are different definitions of eGovernment and they all relate to the contextual setting where they are used. In these settings eGovernment (Fountain, 2006; Heeks & Bailur, 2007) and digital era government (Dunleavy et al., 2006) appear as new labels of how governments interact and approach citizens. eGovernment is here used as an overview labelling to refer to all use of ICT within governmental organisations and authorities (OECD, 2003). Since eGovernment often uses and builds on ICT-systems similar to process management in firms, e-commerce has been a reference point. According to this view, eGovernment is meant in terms of the e-services provided by public authorities and the technical infrastructure connected to that (Brown 2005). eGovernment can also be seen as an all-embracing descriptive definition of all types of electronic use and on-line activities in relation to governmental institutions. Such a meaning of eGovernment includes all aspects of e- in relation to governmental institutions as e-democracy, e-services, e-administration and e-participation.

In practice eGovernment has emerged after the widely spread use of New Public Management (NPM) in western democracies and is considered as adding value with the implementation of the ideas of user-choices, result-orientation, transparent and effective and efficient public administration. Researchers have argued that the concept of digital era government as a form of eGovernment has a potential of "being widely adopted or forming a coherent new direction for government" (Dunleavy et al., 2006). NPM in combination with widespread digitalisation of public services provide thus also a ground for shaping the quality of government. The examples inspiring this study are brought from the Nordic welfare states but governments from advanced democracies worldwide engage increasingly in similar types governance arrangements.

Implementation of eGovernment is often associated with increased citizen availability to public e-services, but it also implies a fundamental organizational change of public organizations (Grönlund, 2001; Lindblad-Gidlund, 2010; Worrall, 2011). The development of eGovernment will also require changes in urban and social planning. A common development of eGovernment is one-stop government function as the single entrance – both on-line and through physical offices – to local government regardless of demands (Andrews & Van de Walle, 2013; Jansson, 2013b).

eGovernment in the Political System

Following Easton's model of the political system, we mean that eGovernment is exercised at the input and output sides of the system (See Figure 2). eGovernment activities may include everything from simple information provided by governmental agencies to more advanced services like making income tax declarations, application for welfare or public procurement in relation to the different actors in society. eGovernement happens in the internal processes of the political system, where for example information systems, databases, platforms are shared between the governmental agencies, that can be called "through-put". The internal use of ICT in governmental bodies has in most governments been a take of for the development of eGovernment. At the input side, eGovernment is practiced in various forms of e-democracy and e-participation activities aiming to facilitate citizens' and other societal actors' access to power. But here our main focus is on how public e-services can improve impartiality through exercise of public administration and services.

Figure 2: eGovernment in relation to the political system (Based on Easton, 1965)

All these processes take place and frame eGovernment in a networked governance context. Hereby the governmental agencies are far from the single drivers of the development of eGovernment and cannot be fully accountable for the development of eGovernment, neither on the input nor at the output side of the political system. Hereby legitimacy and trust in government can be developed and thereby also improve the quality of government.

Quality of Government

Quality of government (QoG) has been a hot topic for research during the last decades (Acemoglu, Johnson, & Robinson, 2012; Carter & Bélanger, 2005; Easterly, 2002; Kurtz & Schrank, 2007; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1999; Thomas & Streib, 2003). High quality of government is shown to be a main source of economic growth and high social trust (Alesina & Zhuravskaya, 2011; Dahlström, Lindvall, & Rothstein, 2013; Ngendakuriyo, 2013; Rothstein &

Teorell, 2008b). In contrast low quality government institutions have tremendous negative effects on the health and wealth of societies.

Rothstein's QoG Model

The conceptualization of quality of government has emerged through studies of performance and evaluations of different models of governments. In contrast to previous conceptualisations, Rothstein's model of QoG builds on a pronounced normative foundation rather than taking into account the practices and outcomes of governmental activities. Rooting the assumptions in modern political philosophy on democratic theory and theories of justice, Rothstein and his colleagues argue that the quality of government should be treated as a normative problem (Holmberg & Rothstein, 2012; Rothstein & Teorell, 2008a, 2008b).

Similarly to Easton's logic, Rothstein's model (2007) consider inputs and outputs as fundamental dimensions that connect the government to its society. By associating with citizens' participation in democratic structures and access to political authorities and the pertaining regulatory principle of political equality at the input side there is a potential for quality of government to improve if it is organized with equality, democracy and transparency as basic principles. In an extension of the analysis and model Rothstein and Teorell (2008b) further argue that the corresponding and complementing principle at the output side of the system where the authority is exercised, it should be the impartiality principle. Both these two normative principles are legitimizing the power of government. Their normative QoG model requires both democracy in the access to power and impartiality in the exercise of power (Rothstein & Teorell, 2008b).

This model of QoG, we argue, also has a potential to guide a further modelling of how quality of eGovernment can be achieved and what aspects of quality of eGovernment can be further developed. In order to show this we also have to address the underlying conceptualization of legitimacy of governments, since it outlines pre-requisites for quality of governments.

Legitimacy and QoG

Rothstein and his colleagues argue that the output side legitimacy is based on the daily decisions made by street-level bureaucrats in governmental authorities that essentially affect the citizens' day-to-day lives and thus have a direct effect on their support and confidence in the government. In these daily practices impartiality, in particular in the personal meetings of street-level bureaucrats and citizens, is essential for governmental legitimacy. Rothstein illustrates it through this example: 'if the police would not protect you because you are an X-type of citizen; if the fire-brigade would not come to your house because you are a Z-type citizen; if your children would be systematically discriminated against in the schools because they are Y-type children; and if the doctors at the hospitals would ignore you because you are a P-type person, then you are in real trouble' (Rothstein, 2007). Impartiality principle is obvious in this example.

In line with this argumentation, legitimacy at the output side is mainly gained when street-level bureaucrats in political authorities are making decisions regarding issues close to citizens' everyday life and their use of public services. In the universal welfare states of Scandinavian type, upon which this model has been empirically developed, this is made by the local municipal councils. Here welfare policies as are turned into direct decisions regarding issues like distribution of child-care places, support for industries located in sparsely populated parts of the country, or

the compulsory care of drug-abusers – areas requiring daily and continuous decision-making based on specific knowledge of the case (Rothstein, 2007). Political legitimacy, and hereby quality of government, is in such an analysis created through impartial implementation of its policies by public officials dealing with daily, critical needs of the citizens. This implies that political legitimacy depends rather on the quality of government than on the quality of democratic elections or representation that are designed to channel equal access to power (Rothstein, 2007).

Impartiality as the Central Principle

The legitimizing principle at the output side of the system is according to this research the main way of sustain and improving impartiality of institutions through their exercise of political power in relation to citizens. Impartiality in the exercise of public power is, in this perspective, defined as a behaviour of political authorities that is not influenced by special relationships and personal preferences of the decision makers (Rothstein & Teorell, 2008b).

They emphasize that impartiality in the exercise of power should be kept separately from the impartiality in the content of the policies themselves and that it is the former that is the central component of the QoG. Hereby, they clearly distinguish the input and output side of government and give the normative grounding for such a separation. Impartiality is the guiding principle when authorities operate in these different spheres. QoG herby becomes clear and visible through the implementation of governmental policies, since it is how institutional arrangements are made visible and meaningful. According to this model they argue that political authorities and specifically individuals who exercise the public authority are not exclusively self-interested, but have the capacity to differentiate what norms are appropriate in the different spheres (Rothstein & Teorell, 2008b).

A Critique of Rothsteins QoG

While having gained considerable acceptance and use in the research on good governance that came to challenge the dominating economic and conservative models (Wilson, 2008) Rothstein's model of QoG has received a good dose of critique as well. One type of critique that has been raised is questioning the central importance of the impartiality principle and its apparent exclusion of other principles promoting QoG. An important complement or even substitute has been argued to be the accountability principle and the justification of trade-off between equally desirable but competing goals in the exercise of public authority (Agnafors, 2013; Wilson, 2008).

Rothstein and his colleagues are developing the model based on the criticism, and they have among other aspects included complimentary arguments based on principles such as democracy and majoritarian rule, the rule of law; effectiveness and efficiency, accountability, among others. We however don't see these principles as conflicting or mutually exclusive, but rather complementary in defining QoG. We argue that also the input-side processes are important for the quality of government, not the least since it relates in the long run to the outcome of public services. The demands and support of the political system hereby is often expressed in relation to the provision and distribution of public services.

Quality of eGovernment – New Meanings of Quality of Government

Our interest in this paper is to study how QoG model based on impartiality principle is affected by the emergence of eGovernement and whether there can be derived a quality of eGovernemnt (QoeG) model while discussing eGovernemnt in the context of QoG. eGovernment is indeed more than just adding ICT to governmental structures, it is opening for new institutional arrangements (Dunleavy et al., 2006; Fountain, 2001) that could open for new forms of quality of government. On this basis we hope to be able to start a first out-line of such a QoeG model.

We will now look closer on how eGovernment happens in terms of input and output sides of the political system and how this can inform a QoeG model. At the input side we will highlight applications of e-democracy and e-participation as forms of demands and support of the political system (See Figure 2). At the output side we will focus on the public e-services, including those e-services that are not the final service provision, but rather important systems for applying for and choosing among different service providers in particular in an NPM context.

Since impartiality is a key principle of quality of government it is essential that actors in the "environment" of the political system are treated and referred to equally. This implies that the government has to design and use eGovernment systems based on objective criteria (in line with political values and institutions). The environment and the users of the political system should be referred and related to without prejudice. A basic barrier for eGovernmental impartiality in general is digital divides that may exclude some citizens and make them into non-users without access to the political system at all. Thus inclusion and easy access closing digital divides is a first basic step towards quality of eGovernment.

E-participation and the Quality of eGovernment

The input side of the political system is characterized by legitimacy through institutional arrangement of the rule of law and processes of democracy and participation as arranged by constitutional rules and norms. In addition to these, eGovernment can extend the process through the governments' and citizens' use of electronic platforms and internet for e-voting, public consultations on government decisions, government officials' blogs on their activities, citizen e-petitioning among others. In this domain the relation between the state and the citizen, emerging from the use of technologies, is transformed (Brown, 2006).

Through new channels of access to the government officials and authorities, politicians and bureaucrats, the distance between the state and the citizens decreases, leading to changes in the roles both of bureaucrats and politicians as intermediaries. This enhanced and transformed relation between the state and the citizens has another legitimacy implication related to personal data. This may generate concerns connected to the collection, use and protection of personal data not only by the government, but also by the corporate actors, leading to new laws on personal data protection, and state strategies to cope with electronic threats.

The processes of eGovernment at the input side have a potential to improve quality of government through improved participation, transparency and openness. Even such processes have to be designed to promote impartial relations. A basic approach is to use accessible systems and describe and introduce them for everyone in several ways also off-line. There are indeed risks that certain groups, and thereby certain types of values and ideas, are excluded and hindered from influencing the political system by expressing their demands and support. On the other hand there

are possibilities for citizens to influence policymaking and making demands into the political system on more equal terms in some ways through e-democratic applications. For example citizens who will not or cannot participate in public meetings can still participate on-line in discussion groups, through e-mailing or other contacts with candidates and elected representatives.

Exercise of Public Authority through E-Services and the Quality of eGovernment

In the model by Rothstein and his colleagues QoG is mainly gained when public authorities exercised power, i.e. at the output side. It is in the daily interplay of users and street level bureaucrats that trust and legitimacy for government are sustained and built. Thus we can argue that also the quality of public e-services will play a key role for the quality of eGovernment and likely also the quality of government as a whole.

Accordingly, the impartiality principle should guide also the design of public e-services as they make up the interface as a outcome of the political system. Public e-services must thus facilitate implementation in line with the impartiality principle in the exercise of public authority when personal interaction and face-to-face meetings are decreasing. Information about public services as well citizen's rights and duties in relation to the state can be much more effectively provided and formulated on-line. Through e-services the possibility to improve communication and spreading of information in an adapted manner, conforming to special needs of the citizen, is created. Thus information can be provided in different languages, in large text, and by illustrative pictures or even interactive applications or films, thus increasing reception of it by the user. Such opportunities have to be considered and appropriately used in the public e-services design in order to reach a high quality of e-service and a high level of inclusiveness that can bring legitimacy for the eGovernment.

A particular form of eGovernemnt is the One-Stop Government Centre. These are local entry points for the citizens to the local, regional and central public administrations. It is increasingly possible both to visit One-Stop Government Offices on-line and in physical places, like libraries and other public buildings (Bernhard & Wihlborg, 2014). Nordic countries have all launched online versions of such centres. In Sweden such a service is called 'Mina meddelande' (eng. My Messages), which is a mailbox connecting citizens and corporate actors with government authorities and their respective e-services (Näringsdepartementet, 2012). The equivalent service is provided by 'borger.dk' in Denmark and by 'Suomi.fi' in Finland. These are both a model for administrative reform and an approach to reach out in communities, include more and gain trust towards governmental authorities and local government in particular (Jansson, 2013b). Also in this perspective the digital divides have to be considered and managed. Combination of both on-line and physical forms of governmental access may come to sustain an even higher level of quality of government. This thus may also imply that QoG is sustained by QoeG.

Another key aspect of eGovernment that can have implications on the impartiality principle lies in the automated decision making for standardized issues. In particular in larger public authorities and organisations managing many standard welfare applications, like applications for- and payments of social security benefits such as sick-leave, parental leave, unemployment insurance, allowances. These have indeed potentials to benefit in respect of QoG by developing eGovernmental tools and applications. Services used on-line often improve impartiality since they have to be re-designed and framed to focus on key principles that can build on equal treatment (Axelsson et.al. 2013). This could both improve "through-put" effectiveness of authorities and can

improve the impartiality in the decision making, if the system is trustworthy, acts on objective variables and is designed to follow the rules and regulations.

Tentative Conclusions and Potential Contributions

This paper has argued that there is a need to complement the study on the quality of government by including the implications of the new and growing practices of eGovernment. We have in this paper used Easton's input-output model of political system in combination with Rothstein's QoG model and accommodated these to include some eGovernemnt dimensions, with the aim to start a conceptualisation on the QoeG.

The main contributions by such a model we identify as three-folded. eGovernment fundamentally challenges all aspects of governmental actions in the networked on-line society and thereby also for the interpretations of quality of government. The first potential criteria identified, as a core of quality of eGovernment is that the closing of digital divides is essential for the possibility of addressing and also improving the impartiality principle. The second potential criteria is equal access to power at the input side of the political system, where there are potentials to improve quality of eGovernment in particular on the local governance level and if systems for participation are designed to pay specific attention also to aspects of impartiality.

Thirdly, public e-services seem to have important input for interpretation of quality of eGovernment, due to their implications on impartiality in implementation of public authority and to their proximity to the citizens' and companies' daily needs and interests at the output side of the system. The design of public e-services and information is essential and has to be both impartial and in line with the rule of law, stemming from citizens needs for- and facilitating their exercise of rights and obligations towards the state. Local one-stop governments or contact centres are complimentary but important since these can catch up users and issues not fitting into standardized on-line services. Last but not least, we discussed how automated decision-making systems as a form of e-services can manage standardized errands and thereby improve impartial decision and equal treatment in the exercise of public authority.

If eGovernment is designed to strengthen the quality of the political system, it will probably also improve and develop quality of government in general, by being in line with institutional arrangements and core values of the political system as a whole. This may also take place in a more and more complex networked governing context, where private and public actors collaborate. As society grows to be more informed and digitalised, a consequence of access to information on-line, and thereby more demanding and sometimes also less supporting of the political system, have complex implications upon the quality and legitimacy of eGovernment as well.

This paper is so far a very first outline of a conceptualisation of QoeG - of how and why we can analyse quality of eGovernment. It has to be developed by further theoretical grounding and not at least by providing empirical support through both qualitative and quantitative studies. There is an obvious need for further research, but we hope that this model has provided a beginning for an analysis of the quality of eGovernment based on normative principles such as impartiality and equal access to power.

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About the Authors

Elin Wihlborg

Elin Wihlborg holds a position as professor in Political Science at the Department of Management and Engineering, (IEI) Linköping University, Sweden. Her research focuses on public administration, in particular regarding regional development, urban planning and e-government. Her research has been published internationally in journal and books. She also frequently presents for policy makers and has published handbooks on policy implications in municipalities and regions in Sweden. She is a member of the faculty board and supervises a number of PhD-students in different areas.

Mariana S. Gustafsson

Mariana Gustafsson is currently a PhD student at the Department of Management and Engineering, (IEI) Linköping University. She has worked in a number of FP5 and FP6 research projects in the area of innovation, labor market research and information society, based at Lund University. Subsequently she has joined Oxford Research to work with evaluations and consultancy in the areas of innovation and organization development. Her research interest is currently focused on politics and economy of high technology and consequences of these upon society.

Citizens' Inclusion and eParticipation Initiatives in Russia

Evgeny Mamay

Nizhny Novgorod, Russia, mamai_ea@mail.ru

Abstract: *Following the worldwide trend of putting strong political emphasis on eParticipation the Government of the Russian Federation recently presented some initiatives in that sphere. In the article the author observes general framework, achievements and disadvantages of the measures taken by the federal government. On the basis of analytical approach he provides a general overview of e-information sharing, e-consultation and e-decision making features in Russia. As the main comparative criteria for different online resources he uses the relevant list of key factors ("digital tools") and methodology measuring the willingness and capacity of Russian national administration to use information and communication technology to enable public participation in policy-making processes.*

Keywords: *eParticipation, e-information, e-consultation, e-decision making, e-government*

Introduction

The role of digital technologies is characterized by a wide range of functions ranging from the establishment of standards for public administration, citizens' access to the public services and to the participation of communities in administrative relations. In modern Russia as in other countries of the world the role of ICT (Information and Communications Technologies) in governance is growing rapidly. This trend is reflected in science, legislation and practice of public administration in putting a strong emphasis on features of e-government, e-information, e-consultation, e-voting and e-decision making.

This study is different from most of the existing literature on eParticipation because it provides information about the current situation in Russia regarding eParticipation issues. Since this theme is relatively new for Russian governmental practices, and most of the existing foreign surveys provide only a high-level overview, the article describes important insights on this topic. As the main comparative criteria for different online resources the study uses the relevant list of key factors, such as Social networking, Blog-platforms, Online surveys, etc., and methodology measuring the willingness and capacity of Russian national administration to use information and communication technology to enable public participation in policy-making processes.

In order to examine citizens' inclusion and eParticipation, this article is divided into several sections. The first section briefly discusses the previous findings on the theme. It also outlines the existing regulation and action plans in the European Union and the Russian Federation to indentify the current stage of its development. Second, an overview of on-line survey results is provided, which describes some of the more notable observations from this data set. Third part

presents analysis how eParticipation practices are applied in Russia. The article pays attention not only to achievements but also disadvantages of the measures taken by the government. The last section provides recommendations and conclusions.

Existing Theoretical and Empirical Evidence of eParticipation Adoption

Many studies proved that the Internet is one of communication tools that has the potential to radically change the face of government in the 21st century. *Reddick* concludes that there has been some movement from what has been commonly labeled, street-level bureaucracies to system-level bureaucracies because of information and communications technology (ICT)[1]. *Wagner, Cheung, Lee, Ip* (2003) argued that for every country, the development of e-government has been an evolutionary process[2]. They identified an evolution sequence of e-governance similar with the same process of e-commerce. Evidence suggests that e-government matures along a similar development path that first witnesses broadcasting, then interaction, then transaction, and finally integration[3].

At the same time while e-government is a well-established field in research and practice, eParticipation trails behind with only a low number of studying and programs. Modern international experience represents perspectives to employ ICT for the optimization of governance and implementation of direct democracy. In this context, it is imperative that information and services are geared toward promoting user uptake, addressing the needs and concerns of the citizenry, especially the vulnerable. It also requires viewing the citizens not only as passive receivers of information through web based services, but also as active partners who are engaged and supported to interact with the government through ICT-based dissemination of relevant government information.

The development of e-democracy in Europe started in the late 1990s. Since 2006 then the European Commission launched the eParticipation Preparatory Action Plan (2006 – 2008) national governments began to pay more attention to this theme. At the present moment the European Union finance and support projects, aiming at enhancing the participation of citizens and contributing to better legislation and policy-making.

Unlike Europe, Russian doctrine, legislation and practice still consider concepts of eGovernment, eGovernance, eDemocracy and eParticipation as a relatively new. There aren't wide scientific researches on that topic and most of the papers about e-government are incidental articles based on foreign papers, international rankings and shared experiences.

Nevertheless, according to international surveys over the past decade the Government of the Russian Federation has been actively improving the regulations concerning eGovernance. As an example *Ease of Doing Business 2014* rank of Russia (benchmarked to June 2013) is 92 (out of 189

[1] *Reddick C.G.* Citizen interaction with e-government: From the streets to servers? // Government Information Quaterly. - № 22 (2005). - P. 38.

[2] *Wagner C., Cheung K., Lee F., Ip R.* Enhancing E-government in Developing Countries: Managing Knowledge through Virtual Communities: The Electronic Journal on Information Systems in Developing Countries, 2003. URL: http://www.ejisdc.org/ojs2/index.php/ejisdc/article/viewFile/89/89

[3] Benchmarking E-government: A Global Perspective / United Nations - Division of Public Economics and Public Administrations, and American Society of Public Administration. http://unpan1.un.org/intradoc/groups/public/documents/un/unpan021547.pdf

economies) rising from 111th position. The changes in the sphere of eParticipation are not so obvious. *United Nations E-Government Survey 2012* shows big improvements in the accessibility of eParticipation for citizens in Russia but there is much to do, yet. According to World e-gov. development ranking, the Russian Federation has shifted to 27th place in 2012 from 59th in 2010.

Many people in Russia use digital technologies actively, regularly and confidently. However, while pure e-government initiatives such as online tax declarations, e-applications for passport or driver's license, online payments, etc. are clear for citizens, the usage and the meaning of «eParticipation» are not understandable, both for the citizens and officials. At the concept of e-government the main focus is turned to the public authorities who provide the relevant services. Both in terms of information and public services, the citizens are increasingly viewed as passive customers of e-services. As it is mentioned at *the United Nations E-Government Survey 2012*, for eParticipation to contribute to sustainable development and the socio-economic uplift of the people, the role of government requires a shift from that of a controller of information and services to that of a proactive facilitator. In this context, it is imperative that information and services are geared to promoting user's uptake, addressing the needs and concerns of the citizenry, especially the vulnerable. Potential benefits from transparent eParticipation practices include, for example, increasing government legitimacy and improving civic satisfaction with political processes. Such benefits cannot be achieved without government's readiness to test new forms of democratic involvement (Freeman, Quirke, 2013)[4].

Survey Methods

The aim of this study is to present the current state of citizens' inclusion and eParticipation in Russia. This goal predetermined research strategy via online survey and its limitations.

The methodological approach to investigate the degree to which eParticipation is integrated in Russian governmental strategies, practices and programmes consisted of two main stages. The first stage of survey focused on previous findings. We scanned wide range of international rankings and publications such as Ease of Doing Business, United Nations E-Government Survey, ITU publications and collected data relevant to e-Government programmes. In the second stage we selected basic points for assessment ("digital tools") and analyzed general methodology applied for online surveys. In the next stage of this survey we faced a dilemma to identify the specific sites for survey. While Russia is a federal republic we decided to limit the list of on-line resources for investigation only by the federal level of authorities. Considering that major political powers are transferred to the federal level of government and they are backed by budgetary discretions, as general rule web-sites of federal ministries and other authorities represent best practices of the country. Respectively if the federal authorities don't present willingness and capacity to use information and communication technology to enable public participation in policy-making processes, the same situation or even worst would be presented on regional and local level. This conclusion predetermined limitation of this survey. As the gateway or starting point for research we chose the Server of the State bodies of the Russian Federation "Official Russia" which provides

[4] *Freeman J., Quirke Sh.* Is E-Democracy a Myth? Civic participation and Democratic reform / CeDEM13 Conference for E-Democracy and Open Government (Revised Edition) 22-24 May 2013 Danube University Krems, Austria / Edited by Peter Parycek, Noella Edelmann. – Krems: Donau-Universität Krems, 2013. – P. 38.

links to all relevant authorities of the federal level. The online survey has assessed the existence, easiness, integration, user-friendly interface of relevant online tools. For instance, some web-sites formally present multilingual features (at least English version), but in fact only headers were translated into foreign languages. Considering such features relevant digital tools weren't taken into account. In the fourth stage the major areas for implementing of eParticipation concept were investigated:

- facilitating public access to the official information («e-information sharing»),
- stakeholder engagement («e-consultation»),
- Citizens' participation in formal decision-making (« e-decision making »).

Because few Russian authorities endorsed regulation of online inclusion of citizens in provision of information, e-consultation, feedback and inclusion of citizens' views in active decision-making, the scope of this research was limited by existed practices.

Research Findings

Given the lack of empirical evidences about the adoption of eParticipation tools by the Russian government, a research was based on comparison of web-sites of authorities which belong to all three branches of power on the federal level. For compatibility the paper used the list of fifteen digital tools, which enable citizens to get official information and public participation in policy-making processes. These indications are: 1) Privacy statement and security policy online; 2) Listservs; 3) Newsgroups; 4) Social networking (at least one); 5) Blog-platforms; 6) Online surveys; 7) RSS-chanels; 8) SMS-alert; 9) Mobile version; 10) Multilingual version; 11) Advanced search; 12) Online petitions; 13) Glossary, 14) Version for people with disabilities, 15) involvement in an «Open Government» strategy.

Overall, 26 web-sites of federal authorities were selected for research. Among them, one is presidential, two represent Chambers of Legislative authority (Council of the Federation and State Duma), one web-site belongs to the Government of Russia (Committee of Ministers), 20 are ministerial, two web-sites belong to the Constitutional Court and the Supreme Court respectively. The table 1 shows the results of research. The last column represents the rank of relevant web-site according to general number of scores. Because some authorities got equal number of pluses they were ranked equally.

As can be recognized, the best practice is represented by the web-site of the Government. All ministerial web-sites can be grouped into two types. Ministries of Defence, Emergencies, Foreign Affairs, Interior and Justice are subordinated to the President of the Russian Federation. They show relatively low level of eParticipation tools. Generally they are less involved in the «Open Government» strategy because it is coordinated by the Prime-Minister.

The programme "Open Government" (http://большоеправительство.рф/opengov/)[5] is now on the starting point and includes new mechanisms for interaction between government, expert community and civil society. It creates platforms for collecting and analyzing information ("Open Data", online surveys, feedback forms, etc.), discussion and decision-making (projects "Open region", "Open Ministry", special blog-platforms, etc.).

[5] An Internet address of the web-site an "Open Government" is "большоеправительство.рф". It is the Russian abbreviation used within the Russian national domain ".РФ".

Table 1. Web-sites of the Russian authorities (Federal level) and ICT-tools provided on them

Web-sites of Russian authorities	ICT-tools															
	Privacy statement and security policy online	Listservs	Newsgroups	Social networking	Blog-platforms	Online surveys	RSS-chanels	SMS-alert	Mobile version	Multilingual	Advanced search	Online petitions	Glossary	Version for people with disabilities	**«Open Government»**	Rank
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	**15**	
President of the Russian Federation (kremlin.ru)	+	+	+	+	-	-	+	-	+	+	+	+	+	+	-	2
Legislative Branch																
Council of the Federation (council.gov.ru)	-	+	+	+	-	-	-	-	+	+	+	+	+	+	-	3
State Duma (duma.gov.ru)	-	+	+	+	-	-	+	-	+	-	-	+	-	+	-	5
Executive Branch																
Government of the Russian Federation (government.ru)	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	1
Ministry of Agriculture (mcx.ru)	-	-	-	+	-	-	-	-	-	-	+	+	-	-	+	8
Ministry of Communications and Telecom (minsvyaz.ru)	+	-	-	-	-	-	+	-	-	-	+	+	-	-	+	7
Ministry of Culture (mkrf.ru)	+	-	-	+	-	-	-	-	-	+	+	+	-	+	-	6
Ministry of Defence (stat.mil.ru)	-	-	-	-	-	-	+	-	-	+	+	+	+	+	-	6
Ministry of Economy (economy.gov.ru)	-	-	-	+	-	-	-	-	+	+	+	+	-	+	-	6
Ministry of Education and Science (минобрнауки.рф)	+	-	-	+	+	-	-	-	-	+	+	+	-	+	+	4
Ministry of Emergencies (mchs.gov.ru)	-	+	+	+	-	+	+	-	+	+	+	+	+	+	-	2
Ministry of Energy (minenergo.gov.ru)	-	-	-	+	-	-	-	-	-	-	+	+	-	-	+	8
Ministry of Finance (minfin.ru)	-	+	+	-	-	-	-	-	-	+	+	+	-	-	+	6
Ministry of Foreign Affairs (mid.ru)	-	-	-	+	-	-	+	-	-	+	+	+	-	-	-	6
Ministry of Health (rosminzdrav.ru)	+	-	-	+	-	+	+	-	+	-	+	+	-	+	+	3
Ministry of Industry and Trade (minpromtorg.gov.ru)	+	-	-	+	-	-	+	-	-	+	+	+	-	-	+	5
Ministry of Justice (minjust.ru)	-	-	-	-	-	-	-	-	+	-	+	+	-	+	-	8
Ministry of Labour and Social Protection (rosmintrud.ru)	-	-	-	+	-	-	+	-	-	+	+	+	-	+	-	6
Ministry of Natural Resources and Environment (mnr.gov.ru)	-	-	-	+	-	-	+	-	-	+	+	+	-	+	+	5
Ministry of Regional Development (minregion.ru)	-	-	-	-	-	-	+	-	-	-	+	+	-	+	+	7
Ministry of Sport (minsport.gov.ru)	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	10
Ministry of the Interior (mvd.ru)	-	-	-	+	-	+	+	-	+	+	+	+	+	+	-	3
Ministry of Transport (mintrans.ru)	-	+	+	-	-	-	+	-	-	-	+	+	-	-	+	6
Ministry on the development of the Far East (minvostokrazvitia.ru)	-	-	-	+	-	-	+	-	-	-	-	+	-	-	+	8
Juditial Branch																
Constitutional Court of the Russian Federation	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	10
Supreme Court of the Russian Federation	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	9

E-information Sharing

In 2002 the Government of the Russian Federation adopted the Federal Target Programme eRussia (2002-2010) to improve efficiency of government operations and enhance public services. Information management systems and general standards were created and put in place; governmental agencies were interlinked and integrated.

Each state agency started web-sites to provide citizens' access to public information. There is one portal which plays the role of an integrated point of access: the Server of the State bodies of the Russian Federation "Official Russia", http://gov.ru (available in Russian and English). It has links to portal of the Government of the Russian Federation, Presidential web-site, to all federal and regional public authorities, ministries, agencies, courts, state commissions including the Central Election Commission of the Russian Federation, the Commissioner for human rights of the Russian Federation, etc.

A new step towards the creation of open government was made with the introduction of the official portal of legal information "www.pravo.gov.ru". Since November 2011 all Acts of the Russian Parliament (the Federal Assembly, Federal'noe sobranie Rossijskoj Federacii) have to be published not only in official newspapers, but also on this web-site. As an alternative way of obtaining the official information many citizens and professional lawyers use commercially. Sold databases such as «ConsultantPlus» (www.consultant.ru), «Garant» (www.garant.ru), «Kodeks» (www.kodeks.ru), received the legal documents directly from the issuing agencies before official publication under special direct agreements with different authorities. They are more convenient to use, don't have technological limitations for volume of information and sometimes available for customers free of charge with certain restrictions.

Since 2010 the portal of public e-services (www.epgu.gosuslugi.ru) was launched as the key element of the project "electronic government" in the country. The portal claims to perform the function of a single point of access to all references on state and municipal services through the Internet and provides citizens and organizations with the opportunity to receive these services electronically (*integration* stage of e-government). The general number of registered users of the public services portal increases from 200,000 in January 2011 to 4 million in February 2013. Unfortunately infrastructural and organizational troubles make most of regional and municipal services unavailable electronically, but the Government takes actions to solve them.

Nevertheless at the present time all federal, regional governments and most of municipalities have the virtual presence on the Internet. At least the authorities secure simple presence with static web pages and one-way communication *(broadcasting mode* of e-government). At the same time most of websites are able to exchange information or services with citizens. One of the most advanced databases launched recently is the United Electronic Register of property rights and the Public Cadastral map (http://maps.rosreestr.ru/PortalOnline/). The creation of similar e-services eliminated the need for applicants to visit state agencies in person, they can inquire, and obtain some resources from database backed websites.

Some portals shifted to the *transaction* stage of e-government. For instance, the portal of public services can carry out financial transactions with the government. Citizens can pay fines for traffic offences, pay fees for e-services etc. Unfortunately in contradiction with businesses citizens are not able to use digital signatures for processing on payment gateways, but relevant commercial online services provided by banks are available and perform such functions with high level of security.

On the basis of the above mentioned data we can make a conclusion that the Government of the Russian Federation provides wide opportunities for sharing e-information with citizens. According to the Law № 59-2006 citizens have individual or collective right to petition the State agencies, local governments and their officials, state and municipal institutions and other organizations who are responsible for performing publicly important functions. Fulfillment of these requirements is under direct control of the Prosecutor's Offices and every decision, actions or even an answer of authorities may be challenged in court. Most of the websites have special online blanks for an application, some portals provide opportunities for tracking current status of your application, but chapters FAQ (Frequently Asked Questions) are published very rarely. For example, the website of the President of the Russian Federation and the portal of the Government publish just statistical reports about the general number of petitions and their topics. Publications of petitions with specific information are limited by the Privacy Act of the Russian Parliament. As exclusion we can name the web-site of the Ministry of Communications where applications are pre-moderated and are published without any private information (available only in Russian).

E-consultation Tools

E-consultation tools are the weakest point in eParticipation policy of the Russian Government. A small number of portals provide chat room features, while listservs and newsgroups are available more widely. For instance, the website of the President of the Russian Federation and the portal of the Government of the Russian Federation provide the opportunity to get information from RSS channels. Once users subscribe to a website RSS removes the need for them to manually check all content of web-sites, news, documents, etc. Some websites allow users receive news headlines at the moment they are published on the site via SMS-alert. Sometimes daily and weekly email updates are available.

The use of other interactive tools such as social networking (Facebook, Twitter, Вконтакте) helps to promote online participation of citizens, especially of the younger generation whose members are the main users of these networks. Unfortunately, such tools are not widely used by people because of the low level of awareness about them.

The tools of direct contact with public officials such as online offices and blog-platforms are not represented by the Government of Russia. Our nearest neighbor country, the Republic of Kazakhstan, shows us a good example of such features. There is the official site of Blogs of government agencies (www.blogs.e.gov.kz/en/site), where citizens can directly send messages to public officials. That experience can be adopted in Russia.

The forum sections are a common method of online public consultation on the questions related to business processes in Russia. Some websites contain a forum section that allows users to send comments and suggestions regarding e-government, appearance and usefulness of portals. Most of portals provide technical support on different questions via hot-lines available free of charge on the basis of 24/7 regime.

While some regulations are very difficult for fulfillment, customers of public services require provision of discussion platforms among users and/or administrations of web-portals. As a good examples we can name Forum «Theory and practice of placing orders for government procurement» on the Web-portal of public procurements of the Russian Federation

(www.zakupki.gov.ru). Similar services are available on the Federal Tax Service portal (www.nalog.ru) which integrates web-sites of all regional departments.

Other forms of e-consultation are even less developed. Some agencies have some means of collecting citizens' opinion online. As a general rule they are only simple feedback forms. The results of online surveys are often not published, and it isn't even clear whether the agency takes them into account or not.

E-Decision Making Initiatives

Unlike previously described types of communication – e-Information sharing and e-Consultation, in its essence EParticipation is an interactive two way process that encourages participation, exchange of ideas and flow of conversation. It reflects willingness on part of government to make citizens a partner in decision making. Ideally, citizen engagement requires governments to (DE&IT, 2012):

- Permit participation in agenda-setting, and
- Ensure that policy or project proposals that are generated as a result of this engagement are taken into account while making a final decision.

There is no established practice of citizen engagement in e-decision making nowadays in Russia. Russian government practiced online participation during public discussions of two Federal Laws: «About Police» and «About Education in the Russian Federation». For that purpose special web-platform (www.zakonoproekt2010.ru) was created. Firstly the public discussions were performed as experiments and legislative basis was formed later, in 2012. According to the Presidential Executive Order № 159-2012 the public discussion of the bill was held as a general rule once in a period of time not exceeding 30 days, but the bills mentioned above were discussed a little longer.

The Draft of the Federal Law «About Police» was available for discussion and comments from August 7 to September 15, 2010. During that time the site was visited by more than 1.5 million people and about 21 thousand comments were received. The Draft of the Federal Law «About Education in the Russian Federation» was discussed from December 1, 2010 to February 1, 2011 and received about 11 thousand comments.

Russian Public Initiative

Unfortunately, the described public participation initiative is not being put into practice any more. As an alternative way to monitor people's concerns a new online platform «Russian Public Initiative» (www.roi.ru) has been launched since March, 2013. This is a new online resource presented by the Government of the Russian Federation within the Programme of expanded public participation in governance widely known as the Open Government. «Russian Public Initiative» is administrated by «The Informational Democracy Foundation» (Russian NGO). It helps people to participate in governance by opening and signing electronically petitions to the Russian Government. People call it unofficially in English «We are the People» analogically to the same platform on the White House website in the USA. This resource allows citizens to petition the Government, emphasize the actual social, economic, political and other problems, support or oppose a petition, propose amendments to the existing legislation and receive support from other citizens.

The legislative basis for the described online platform is the Presidential Executive Order № 183-2013. Similar to the US site «We are the People» Russian eParticipation procedure consists of four easy steps.

As the first step it is offered to look through the open initiatives in order to find a petition related to your personal issue.

The second step: if the petitioner's issue is not currently represented by an active petition, the citizen can start a new petition. In order to create a petition you have to be registered on the E-government web-site www.gosuslugi.ru. It allows to individualize each vote sent for the particular initiative and to avoid double counting.

On the third step the initiative has to undergo moderation. According to the Law there are some restrictions for petitions. It has to be published in the Russian language. The petitioners can't post defamatory or fraudulent statements, threats of unlawful violence or harm to any individual or group; use obscene, vulgar, or lewd material; etc.

The fourth step is the process of voting. All the initiatives are divided into three groups: federal, regional and local. Discussions continue during a year. In contradistinction to the similar US web-site Russian Public Initiative doesn't require a petition to cross two thresholds. There is only one. For initiatives of federal level a petition must reach at least 100,000 signatures within a year. Regional and local petitions have to meet the signature goal of 5 per cent of regional or local citizenry respectively within the same designated period. If the population of the particular region exceeds two million people the petition must reach 100,000 signatures.

If a petition meets the signature threshold, it will be reviewed by the Government and it will issue a response. For instance, in this way it was proposed to ban purchases of cars costing more than 1.5 million rubles ($ 45 000) for officials and other public servants. Since the launch of that platform many legislative initiatives collected tens and even hundreds of thousands of signatures. Unfortunately it isn't clear enough how the Government must respond if the petition meets the signature threshold. In addition, the advanced search capabilities and features of the pre-moderation often lead to duplication of the initiatives. Nevertheless since April 2013 about three thousand initiatives were published and six of them were realized in the form of the proposed legislation bills or effective regulations.

It should be noted that some online resources provide alternative platforms for citizens to discuss their concerns and problems. For instance, the Communistic Party of the Russian Federation funds the web-site «People's Initiative» («Narodnaja iniciativa», www.ni.kprf.ru). Vast range of NGOs also suggest alternative bases for open interaction between citizens, public authorities and local governments, organizations, parties and social movements (for example , Internet-projects «Demokrator» (www.democrator.ru), «Public Council» («Obshhestvennaja Duma», www.oduma.org).

Unfortunately, the alternative platforms for petitions to the Government very often blur the consolidated efforts of citizens, as the result the initiatives don't meet the respective signature goals and that leads to dissatisfaction of the citizens with such projects.

At the same time some politicians use e-decision making features to increase their personal popularity and fame. They choose the citizens' petition supported by a large number of votes and propose it as a bill. The regulations of legislative process in the Russian Federation contain some requirements for a bill: economical grounds, fiscal analysis, potential influence on the budget obligations of the Russian Federation, impact on other branches of the legislation, etc. For the

mentioned reasons, a bill might be returned to the initiator (sponsor) of the bill who had introduced it. Some politicians are not really interested to pass the bill, and they withdraw it for the interim examination.

Conclusions and Recommendations

This article has investigated very narrow in scope of eParticipation adoption. The study has examined how Russian authorities supply information to citizens, share best practices and get feedback, etc. So far this paper is one of the first it should be assessed less critical. It is vital to understand that other pre-requisites for eParticipation development: ICT-infrastructure, technology access, a favorable political regime, citizens' awareness about such opportunities, ability and willingness of population to use them, - require further researches.

Despite the limitations mentioned in the section "Survey Methods", the results of this research show that there are essential pre-requisites for eParticipation in Russia, but the Government of the Russian Federation constantly faces new demands and challenges. According to official statistics (Federal State Statistics Service, Rosstat) three out of four Russian citizens live in cities. It means that Internet technologies are potentially available for 100 million people and all of them might be easily engaged into the implementation of direct democracy. The proportion of people under the age of 25 accounts for almost a third part of the population of Russia. They are inclined to use digital technologies actively and might form a potential social base for the development of e-democracy, eParticipation, e-voting, etc.

The legislative, organizational and technological basis for the development of institutions of e-democracy and eParticipation was established in Russia. For future development and dissemination of the launched programmes the Government of the Russian Federation has to take further actions. They are as follows:

- To overcome the impact of the digital divide, which has hindered information-use and knowledge-creation;
- To expand and actively exploit all possible channels of communication with citizens in order to reach out to as many people as possible;
- To extend established channels of communication with citizenry (mobile applications, social networking, etc.);
- To develop public-private partnerships and coordination of mutual efforts with the civil society and the private sector to provide e-services and expand eParticipation;
- To enhance e-consultation means to measure how citizens use public services and how e-government might be improved;
- To change over to a more consumer demand-driven policy and greater emphasis on citizens' usage.
- To increase levels of transparency and accountability of governance;
- To utilize e-government and eParticipation initiatives for the achievement of wide economic, social and environment goals.

Over the past years the Government of the Russian Federation made great achievements for promoting e-government and eParticipation initiatives but it has much to do, yet.

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About the Author

Mamay Evgeny Alekseevich

Mamay Evgeny Alekseevich works as the Assistant Professor of the Department of Theory and History of State and Law at the Nizhny Novgorod academy of the Ministry of the Interior (Russia). The spheres of his scientific interests are: e-governance, eParticipation, e-voting, effectiveness and efficacy of public administration, public services. He speaks English, Russian, reads Tatar, Ukrainian.

E-Voting

Just Like Paper - A Baseline for Classifying E-voting Usability

Damien Mac Namara*, Paul Gibson**, Ken Oakley***

*Department of Information Technology, Dundalk Institute of Technology, Dundalk, Ireland,
** Le département Logiciels-Réseaux (LOR) Telecom Sud Paris, 9 rue Charles Fourier, 91011 Évry cedex, France, Paul.Gibson@it-sudparis.eu.
***Department of Information Technology, Limerick Institute of Technology, Limerick, Ireland,

Abstract: *This work presents a feature-oriented taxonomy for commercial electronic voting machines, which focuses on usability aspects. We analyze the incremental differences in functionality – the features - between voting systems and how that functionality differs from 'traditional' pen and paper based voting. Based on this analysis, we propose a 'Just-Like-Paper' (JLP) classification method. We validated the JLP classification method to the ongoing development of our novel DualVote eVoting system, where its application led to the development of a passive feedback protocol which improved the usability features.*

Keywords: *ICT, Classification, eVoting, Usability*

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Introduction

This paper is based on previous work on the Dual Vote system. (MacNamara et al., 2010), (MacNamara et al., 2011), (Gibson et al., 2011). It extends and completes the work that was previously reported as ongoing (MacNamara et al., 2013). The main novelty of Dual Vote is that a voter's preference is simultaneously recorded on both electronic and paper media. Whilst the user casts a vote using a pen and paper interface the system interface simultaneously records the vote electronically using an optical sensor array. This duality is made possible by a capacitive-based electronic pen whose operation is identical (from the users' point of view) to a traditional non-electronic pen. This novel user interface (UI) addresses the crucial issue of how to achieve both usability and verifiability, which is recognized as one of the most difficult challenges in the development of modern e-voting systems.

During the DualVote development process, we were interested in how functionality (features) could be added to the system– in an incremental fashion - without weakening our most fundamental requirement: that our system be just like the traditional pen and paper method of voting used in the Republic of Ireland. The need for high usability was central to the development of DualVote and its *raison d'être* was in providing a familar pen and paper (albeit electronic)

interface to the voter. While we were able to demonstrate high usability for the system during various field studies, DualVote still only provided basic functionality. Voters could simultaneously cast their vote electronically and on paper but no feedback, confirmation or otherwise was given to the voter. . To help us understand how to improve our basic machine functionality we analysed twenty-six commercial eVoting systems primarily used in the United States and catgorised the systems in terms of their interface features and functionality. From the resulting JLP classification, we understood that providing feedback was an important factor for instilling confidence in the system amongst the electorate. Adding a feedback feature – without compromising the JLP approach – is one of the main results reported in this paper.

Alternative classification models have been developed for eVoting schemes based on differing criteria, each providing a different focus. One such classification – which is close to the JLP classification - defines systems based on how the voter submits their vote to the tallying authority. Systems are then classified as: Hidden voter (anonymous voter) hidden vote (encrypted vote), hidden voter with hidden vote. (Sampigethaya et al., 2006). However, such classifications abstract away from usability issues. Other research has classified privacy and verifiability requirements in an attempt to define such requirements of eVoting systems in less formal language while retaining precision. (Langer et al., 2009). Recent previous work in this area has also looked at commercial systems based in the US while including those intended for disabled voters. The work offers a four-layer classification structure: 1)Core technology, 2) components, 3) voter interface and 4) ballot presentation; and it is termed the Electronic Voting Classification Structure (EVCS). The motivation for the work was to create a 'universal language' for eVoting systems technology which may help in the procurement and classification of such systems. Franklin and colleagues omit remote based voting systems but include significant work in this area in the US Election Assistance Commision's Survey of Internet Voting (Franklin et al., 2012).. The EVCS is very different from the JLP classification system: EVCS is very broad, examining a very wide range of criteria, but JLP is quite narrow, focusing on usability aspects and interface design.

Our motivation for this work was twofold: Firstly, to examine how to apply additional functionality to our system without weaking our 'just-like-paper' requirement and secondly, to develop a straightforward numeric classification for commercial eVoting systems which could ultimately be reused by evoting system developers and procurers. As we were developing a commercial eVoting system with a novel user interface, the JLP classification examines systems in terms of both interface features and the design decisions that implement those features. Section 2 describes the JLP classification, Section 3 defines the system interface features and categorises each system in terms of its similarity to our pen and paper baseline, Section 4 outlines the particular design decisions relating to each interface feature, Section 5 presents a discussion and conclusion.

JLP Classification

The JLP classification arises from a feature-oriented analysis of e-voting interface design and usability requirements. We analyzed the interface features of twenty-six commercial systems and ordered them within a feature based classification. Each system was then ranked in accordance with the number of interface features that it had in common with a pen and paper baseline. The baseline system that we chose is that of the current, completely non-electronic, pen and paper system used in the Republic of Ireland where the voter uses a pen and paper to cast their vote

before depositing the paper ballot in the ballot box. (We chose this baseline as this was the system that Dual Vote was hoping to be able to replace, or demonstrate its superiority against). Ultimately, our goal is to develop our DualVote system to the extent where the usability of pen and paper –as demonstrated in the baseline - is preserved while having some of the extended functionality of electronic voting. The JLP classification thus starts with systems which are closest to our baseline. To rank the systems, we use the postfix JSN (JLP System Number) followed by the appropriate ranking. Our baseline system is therefore JSN1. The next classification - JSN2, builds on the functionality of JSN1 while sharing some of its features and so on. The higher the system classification the less the system has in common with the baseline but the more functionality that it offers. For each system, our classification employs the following steps: (i) Specification of Interface Features and (ii) Specification of Design Decisions.

Specification of Interface Features

The first step in our classification was to analyze the commercial eVoting systems in terms of their interface features. We identified five broad categories of interface features: Error-Feedback, Ballot-Confirmation, Machine-Activation, Duality Generation and Interface Modality.

Error-Feedback. This is the ability of the eVoting system to provide feedback to the voter in the case of a detected voter error. We have identified two subcategories of error-feedback:

I. **Basic Feedback.** Basic feedback occurs when the vote is only accepted or rejected by the voting machine. No further information is given to the voter. For example, the ES&S Accuvote[1] will return the ballot paper via the optical scanner interface if an error is detected on the ballot but no further information is given to the voter.
II. **Detailed Feedback.** Detailed feedback occurs when the voter is told why their vote was rejected by the voting machine. For example, the ES&S Inkavote[2] will print out a detailed report of the errors made by the voter on the ballot paper.

Ballot Confirmation. This interface feature category refers to all aspects of the interface which allow the voter to confirm the electronic interpretation of their vote before it is cast. Some optical scan systems will only ask the voter to confirm their vote once there are detected errors on the ballot - this is often coupled with detailed feedback which gives an explanation for the ballot rejection.

Machine Activation. An activation interface activates the voting machine. This is done by either the voter or the poll-worker. On optical scan systems, the ballot paper activates the voting machines once it is inserted into the scanner. Therefore the scanner has a double function; firstly to activate the machine and secondly to interpret the vote. We can therefore define a subcategory of machine activation:

[1] US Department of State. (n.d.). *ACCU VOTE Voting Equipment for Jackson County*. Retrieved 1 9, 2012, from Department of State: http://www.michigan.gov/sos/0,1607,7-127-1633_8716_45458-163260--,00.html

[2] Los Angeles County. (n.d.). *Registrar Recorder/County Clerk InkaVote Video Demo*. Retrieved 1 9, 2012, from Los Angeles County : http://www.lavote.net/Voter/VIDEOS/Default.cfm?VideoID=3

I. **Dedicated Machine Activation.** We define a dedicated activation interface as an interface that the voter interacts with for the sole purpose of activating the voting machine. The voter will not perform any other task on this interface. For example, on optical scan voting systems such as the HART eScan[3], the machine is activated when the voter inserts a ballot into the optical scanner. On other systems such as the MicroVote Infinity[4] the voter is required to insert an 'activation token' into a specific port or slot on the voting machine in order to activate it. This port/slot is not used for any other purpose and is therefore a 'dedicated' activation interface. On the HART eScan, the optical scanner also processes the vote and is therefore not 'dedicated' to machine activation.

Duality Generation. This is the ability of the eVoting system to generate another copy of the vote (from paper to electronic or from electronic to paper). Duality Generation is further broken down into two subcategories:

I. **Simultaneous Generation.** This refers to the generation of a paper vote and electronic vote at the same time.

II. **Multiple Generation.** This refers to the generation of an electronic vote or paper copy through multiple user actions (for example; touch-screen then printing or writing and then scanning).

Interface Modality. This refers to the number of interfaces that a voter must interact with in order to generate their vote. Most systems require a single user interface and are 'uni-modal' however a few systems (SEAS 4000[5], ELECTronic 1242[6] and the iVOTRONIC[7]) are 'multi-modal' requiring the voter to interact with more than one interface– for example selecting candidates on a push-button interface while confirming them on a touch-screen. One further distinction for interface modality is the use of non-standard interfaces which are classified as follows:

I. **Standard and Non-Standard Interfaces.** We define a standard interface as one the following: Touch-screen, Push-button, Pen and Paper. We have encountered some interfaces which we describe as 'un-common' or non-standard in eVoting systems. For example: Navigation-dial (eSlate), Vote-recorder apparatus (InkaVote), Pen-stylus for touch screen (Populex[8]).

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[3] HART Intercivic. (n.d.). *How To Vote*. Retrieved 1 12, 2012, from HART Intercivic Company Website: http://www.hartic.com/pages/360

[4] MicroVote General Corporation. (n.d.). *Microvote Corporatio*. Retrieved 1 10, 2012, from Home Page: http://www.microvote.com/products.htm

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[7] Jefferson County. (n.d.). *Jefferson County*. Retrieved 1 10, 2012, from Jefferson County iVotronic Demo: http://www.jeffersoncountypa.com/ivotronic.htm

[8] Populex. (n.d.). *Populex Digital Paper Ballot System Voting Process*. Retrieved 01 15, 2012, from Populex Digital Paper Ballot System: http://www.populex.com/DPB_Voting.htm

From our review of the eVoting systems we found fourteen distinct interface features of eVoting interfaces which fall under the various five broad categories. We use the prefix 'IF' followed by a number to index the interface features.

Error-Feedback

IF1: No feedback interface features. The voter will receive no feedback if an error is detected on the ballot;

IF2: Basic feedback interface features. The voter will be informed that an error has occurred without any information concerning the type of error;

IF3: Detailed feedback interface features. The voter will be informed that an error has occurred and is provided with additional information concerning the type of error;

Ballot-Confirmation

IF4: No ballot confirmation interface features. The voter is never required to confirm their vote;

IF5: Error-related confirmation interface features. The voter is required to confirm their vote only when an error is detected on the ballot;

IF6: Compulsory confirmation interface features. The voter is always required to confirm their vote;

Machine Activation

IF7: No dedicated-activation interface is present or the poll-worker activates the voting machine;

IF8: A dedicated-activation interface is present.

Duality Generation

IF9 Interface features support simultaneous vote generation;

IF10: Interface features support duality generation with multiple voter actions;

IF11 No duality generation interface features are present;

Interface Modality

IF12: The vote creation interface is uni-modal;

IF13: The vote creation interface is multi-modal;

IF14: The interface features consist of a non-standard interface technology or apparatus.

Ordering of features

Features within each category are ordered in terms of their commonality with our baseline. Our baseline does not have any error feedback, ballot confirmation, activation interface or duality generation features. Furthermore the vote creation interface is uni-modal. The ordering of interface features is described as follows:

Error Feedback. Our baseline has no error-feedback interface features. The next functionality increment is 'basic' error feedback, offering some feedback functionality. This is followed by the 'detailed' feedback, which offers more functionality than both 'basic feedback' and 'no feedback'.

Ballot Confirmation. Our baseline has no ballot confirmation. The next functionality increment is 'some confirmation' (in the case of a detected error) followed by 'always confirmation' where the voter must always confirm their vote.

Activation. This is a binary choice between 'voter activated' and 'not voter activated'. The ordering is therefore straightforward.

Duality Generation. Our baseline has no simultaneous vote generation features. The next functionality increment is simultaneous duality generation - where the voter can generate both an electronic and paper vote with one action. This is followed by duality generation with multiple voter actions.

Interface Modality. Our baseline is uni-modal offering one vote creation interface. The next functionality increment is multi-modal offering two vote creation interfaces followed by systems offering non-standard interfaces.

Because the baseline offers little in terms of functionality, the ordering of the features can also give an indication of the functionality and interface modality of the system. The features are ordered in terms of functionality - no functionality, some functionality and full functionality. For interface modality, the ordering is in terms of modality (one interface, two or more interfaces, non-standard interface). The ordering of the features in this way also allows us to further differentiate between systems. In Figure 1, we show the first twenty-five classifications. If a classification of machine contains a particular feature, that feature column contains a '1' otherwise it contains a '0'. Our baseline is first in the list and is numbered JSN1. In total there are one-hundred and sixty-two possible classifications. We calculated this figure by documenting every possible combination of features. The entire list is not presented here for readability purposes. In addition, not all of the possible classifications are mapped to a commercial system.

IF14	IF13	IF12	IF11	IF10	IF9	IF8	IF7	IF6	IF5	IF4	IF3	IF2	IF1	Common Feat.	Diff. Mag	Classication
0	0	1	0	0	1	0	1	0	0	1	0	0	1	5	0	JSN1
0	0	1	0	0	1	0	1	0	0	1	0	1	0	4	1	JSN2
0	0	1	0	0	1	0	1	0	1	0	0	0	1	4	1	JSN3
0	0	1	0	0	1	1	0	0	0	1	0	0	1	4	1	JSN4
0	0	1	0	1	0	0	1	0	0	1	0	0	1	4	1	JSN5
0	0	1	0	0	1	0	1	0	0	1	1	0	0	4	2	JSN6
0	0	1	0	0	1	0	1	1	0	0	0	0	1	4	2	JSN7
0	0	1	1	0	0	0	1	0	0	1	0	0	1	4	2	JSN8
0	0	1	1	0	0	0	1	0	1	0	0	0	1	4	3	JSN9
0	0	1	0	0	1	0	1	0	1	0	0	1	0	3	2	JSN10
0	0	1	0	0	1	1	0	0	0	1	0	1	0	3	2	JSN11
0	0	1	0	0	1	1	0	0	1	0	0	0	1	3	2	JSN12
0	0	1	0	1	0	0	1	0	0	1	0	1	0	3	2	JSN13
0	0	1	0	1	0	0	1	0	1	0	0	0	1	3	2	JSN14
0	0	1	0	1	0	1	0	0	0	1	0	0	1	3	2	JSN15
0	0	1	0	0	1	0	1	0	1	0	1	0	0	3	3	JSN16
0	0	1	0	0	1	0	1	1	0	0	0	1	0	3	3	JSN17
0	0	1	0	0	1	1	0	0	0	1	1	0	0	3	3	JSN18
0	0	1	0	0	1	1	0	1	0	0	0	0	1	3	3	JSN19
0	0	1	0	1	0	0	1	0	0	1	1	0	0	3	3	JSN20
0	0	1	0	1	0	0	1	1	0	0	0	0	1	3	3	JSN21
0	0	1	1	0	0	0	1	0	0	1	0	1	0	3	3	JSN22
0	0	1	1	0	0	1	0	0	0	1	0	0	1	3	3	JSN23
0	0	1	1	0	0	1	0	0	1	0	0	0	1	3	4	JSN24
0	0	1	0	0	1	0	1	1	0	0	1	0	0	3	4	JSN25

Figure 1: Mapping of Commercial Systems to Interface-Features

From the table we can see that there are two extra columns next to the classification number. The first column labeled 'Diff. Mag' refers to the difference magnitude or by how many features is this system different from our baseline. The column next to this is called 'Common Feat.' or Common Features; referring to how many features this system has in common with our baseline. We add these columns in to make clearer distinctions between classifications so the JSN will more closely represent the differences in functionality between systems. As an example, Figure 2.0 shows the JLP Table entry for the ES&S Accuvote (JSN22).

	IF14	IF13	IF12	IF11	IF10	IF9	IF8	IF7	IF6	IF5	IF4	IF3	IF2	IF1
ES&S AccuVote-OS with Ballot Box	0	0	1	1	0	0	0	1	0	0	1	0	1	0

Figure 2: ES&S Accuvote JLP Table Entry

From the table, we see that the system has three features in common with our baseline (IF4, IF7 and IF12). Therefore the Common Features equal to three. The Difference Magnitude is calculated by subtracting the unmapped feature number from the corresponding baseline feature number. For the ES&S Accuvote, this is (IF2-IF1) which is equal to 2-1, which is 1 and then (IF11-IF9) which is equal to 11-9, which is 2. We then add the 1 and 2 together to get a difference magnitude of 3. Because the features are ordered in terms of functionality, a higher difference magnitude represents higher functionality or a more complex modality and subsequent difference to pen and paper.

Specification of Design Decisions

To get a better understanding of how the differences in functionality or modality are implemented across the systems, we categorized what we term 'design decisions'. A design decision represents the selection of a particular hardware or software option and determines how the interface feature is implemented The specification also allows us to separate the abstract interface features from specific hardware, allowing the classification more robustness with regards to future technological developments.

D_X_0: Feature not installed / applicable;

Decisions relating Voter Feedback Features:

D_F_1: The voter receives feedback via an electronic visual display;
D_F_2: The voter receives feedback via an optical scanner / optical scanner information panel;
D_F_3: The voter receives feedback via a push-button interface;
D_F_4: The voter receives feedback via a printed receipt.

Decisions relating to Vote Confirmation Features:

D_C_1: The voter confirms their vote using a touch-screen;
D_C_2: The voter confirms their vote using a push-button;
D_C_3: The voter confirms their vote on the optical scanner / optical scanner information panel.
D_C_4: The voter confirms their vote using a pen with an attached push-button;

Decisions relating to Machine Activation Features:

D_A_1: The voter machine activates using an activation token;
D_A_2: The voting machine activates using the ballot paper;
D_A_3: The voting machine activates using a poll worker interface or is permanently activated;

Decisions relating to Duality Generation Features:

D_P_1: The paper audit trail interface consists of a ballot box;
D_P_2: The paper audit trail interface consists of a printer;
D_P_3: The paper audit trail interface consists of a printer and ballot box;
D_P_4: The paper audit trail consists of an optical scanner with attached ballot box;

Decisions relating to Interface Modality Features :

D_I_1: The vote creation interface consists of a touch-screen;
D_I_2: The vote creation interface consists of a push-button
D_I_3: The vote creation interface consists of a pen and paper;
D_I_4: The vote creation interface consists of a touch-screen and push-button
D_I_6: The vote creation interface consists of a push-button and pen and paper;
D_I_7: The vote creation interface consists of a pen and paper and non-standard technology;
D_I_8: The vote creation interface consists of a touch-screen and non-standard technology;
D_I_9: The vote creation interface consists of a push-button and non-standard technology.
D_I_10: The vote creation interface consists of a hybrid electronic pen and paper.

From our analysis of the eVoting systems we discovered twenty-five distinct design decisions which allow for the interface features to be implemented. The decisions are split into six categories represented by the prefix D and followed by the category prefix. We feel that this list can continue to expand with developments in technology without adversely affecting the classification.

Discussion and Conclusion

Discussion

From our analysis of the twenty-six commercial systems, we found that these mapped to fifteen distinct classifications which are shown in Figure 3.0. We first looked at the lowest and highest classification numbers to get an understanding of the extremities of current commercial systems. The lowest classified system is the Bhorat Electronics EVM[9], (JSN2) which originated in India. This is a rudimentary eVoting system which offers little in terms of functionality. It is the baseline in terms of electronic eVoting machines, offering only basic feedback to the voter via a push-button LED panel (D_F_3). The system with the highest classification is the HART eSlate which has nothing at all in common with our baseline in terms of functionality or modality. It features detailed feedback, compulsory confirmation, machine activation, duality with multiple actions and a non-standard vote creation interface implemented by a navigation wheel (D_I_9).

9 Chief Electoral Officer Delhi. (n.d.). A Guide For Voters. Retrieved 1 10, 2012, from Cheif Electoral Officer Delhi: http://ceodelhi.gov.in/WriteReadData/Voters/A%20guide%20for%20voters.pdf

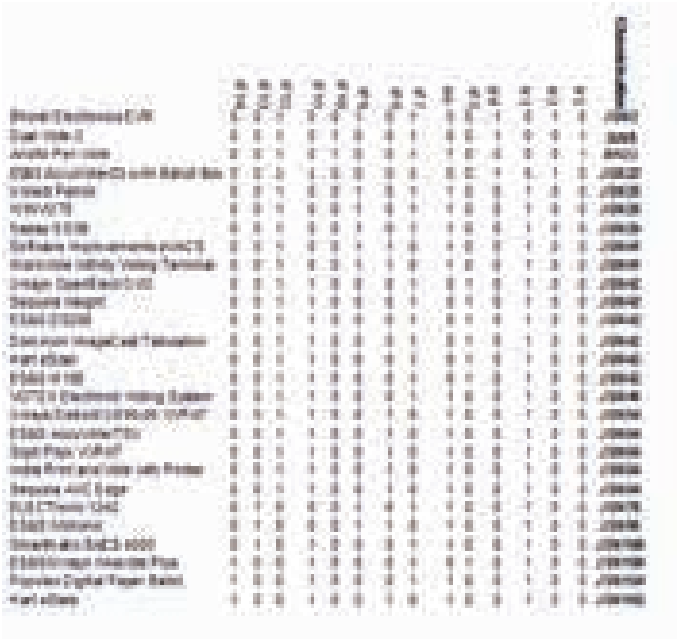

Figure 3: Commercial Systems within the JLP Table

The basic functionality of the Bhorat EVM appealed to us as it gave the voter at least some feedback that their vote was correctly interpreted. Although the EVM's basic feedback was passive, the LED did not give rise to the spoiled/unspoiled nature of the vote. We knew that to implement basic feedback with a spoiled/unspoiled indicator, we needed to use additional LEDs. The HART eSlate was on the opposite end of the spectrum, and interestingly it mapped to the highest possible classification – JSN162. Unlike the EVM, the eSlate offered detailed feedback via an LCD screen (D_F_1). We could also consider detailed feedback which was passive in nature for the DualVote machine but we didn't want to introduce an LCD as we believed it may complicate the voting process. With regards to other functionality, the Bhorat EVM had nothing to suggest, however the HART eSlate included confirmation of the vote via D_C_2, activation of the machine via D_A_1, in terms of duality generation it offered nothing new over DualVote as multiple user actions were required in order to vote (unlike the simultaneous generation of DualVote). Finally, the eSlate had a non-standard interface (D_I_9). Neither D_C_2, D_A_1 or D_I_9 were appealing to us as they all weakened our 'just like paper requirement'. As expected, nothing could be taken in terms of interface features from a commercial system that was in essence 'least like paper'.

Our next step in our efforts to expand the functionality of DualVote was to find some middle-ground between JSN2 and JSN162. We next looked at JSN21 which was the only other digital/hybrid pen-based voting system on the list. In the Clackmannanshire trail election of 2006, the Anotto[10] pen provided confirmation to the voters via a push-button interface (D_C_4) on the pen itself. We knew from a subsequent report from Clackmannanshire Town Council that most

10 Anoto. (2007, November 23). Archives. Retrieved from Anoto: http://www.anoto.com

voters forgot to push the button after voting[11]. No other functionality was offered on this particular Anotto-pen system.

We had an intuition at this stage that without introducing a full LCD screen to provide voter feedback – detailed feedback would weaken our most fundamental requirement beyond what was acceptable to us. We began to look at other classifications which offered basic feedback, namely – JSN22, the ES&S Accuvote with ballot box. The obvious problem here of course was the Accuvote was an optical scan system that gave binary feedback via D_F_2. The ballot was either accepted or rejected by the scanner. This was not applicable to the passive scanning nature of DualVote.

Regarding vote confirmation, we knew from our analysis that this would require the addition of an LCD screen (or at the very least the implementation of D_C_4 which did not appear successful to date). We came to the conclusion that more in-house usability testing could give a clearer indication of how this would work for DualVote.

Finally, machine activation, duality generation and interface modality were an easy call. Considering that DualVote had a high usability score with little extended functionality (in particular vote confirmation and feedback), implementing activation or a multi-modal interface would likely lessen the usability score without providing extra functionality. As far as we were concerned, DualVote already offered simultaneous duality generation which we considered advantageous as it (ideally) required less user actions and there was no current scope of improvement in this regard.

We did however extend the functionality of DualVote to include passive voter feedback via a three-color LED panel, we have reported extensively on this protocol in other work (Gibson et al., 2011).

Conclusion

The JLP classification shows how twenty-six commercial systems incrementally differ from each other in terms of functionality and subsequently how each system differs from our baseline. Naturally, this list of commercial systems is not intended to represent every commercial eVoting system, but it is presented as a representation of the most common systems found in use at the time of writing. Whereas many other commercial and experimental systems exist, it was beyond the constraints of this work to facilitate each design into this classification. The JLP facilitated understanding of how we could build on the usable but less functional DualVote system. It helped us to further classify voter feedback, confirmation, activation, paper audit trail technologies and the vote creation interface in itself. Analysis showed our system lacking feedback and confirmation features, but rich in terms of duality generation, activation and interface modality.

The JLP classification is an initial attempt to classify systems in terms of interface features and functionality. We have shown that this classification can also be applied to usability. As future work, it would be interesting to explore the number of ideal actions for each voting system and apply it to the classification. We are aware that this has been done on a smaller scale in other work (Conrad et al., 2009). It may be feasible to deduce that an optimal interface would minimize the number of voter actions. However, this needs further exploration as different actions have different degrees of complexity, and different voters may have profiles more suited to some types

[11] Clackmannanshire Council (2006). Retrieved from:
http://www.clacksweb.org.uk/council/press/?release=933#

of actions rather than others. In particular, our DualVote feedback mechanism has shown that there is a significant difference between active and passive verification.. Further improvements on the JLP may give another perspective on usability - the well-established Systems Usability Scale may be shown to be too generic. In cases, like e-voting machines, it may be better to uses a scale that is specific to the problem.(Brooke et al., 1996)

It should be noted that the abstract nature of our interface features, hides the lower hardware level (in contrast to the EVCS developed by Franklin and colleagues). We believe that this abstraction is a more robust classification that is less likely to become obsolete due to the fast moving technological innovation in electronic voting system and user interface design.

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About the Authors

Damien Mac Namara

Dr. Damien Mac Namara is currently lecturing in computer science at Dundalk Institute of Tehcnology and lectures in usability at the National College of Ireland. Damien was the PI in the DualVote project.

Paul Gibson

Dr. Paul Gibson is a Maître de conferences at TSP, Evry, France. He has been carrying out research into all aspects of e-voting for the last 7 years.

Ken Oakley

Dr. Ken Oakley is a senior lecturer in information technology with the Limerick Institute of Technology. He has over 20 years of system engineering experience.

Five Years of Internet Voting for Swiss Expatriates

Micha Germann* **, Flurin Conradin*, Christoph Wellig*, Uwe Serdült*

*Centre for Democracy Studies Aarau (ZDA) at the University of Zurich, uwe.serdult@zda.uzh.ch
* Centre for Comparative and International Studies at ETH Zurich

Abstract: *Initially targeted at residential voters only, Swiss internet voting trials have recently been extended to expatriates. In this paper, we review the Swiss experience with internet voting systems for expatriates. After a short overview of the Swiss internet voting roll-out focusing on the recent trials involving expatriates, we present newly collected data on the usage of the electronic voting channel. We find that internet voting is rather popular among expatriates. Already, every second Swiss abroad eligible to e-vote makes use of the electronic channel, with increasing tendency. Moreover, we inquire about the socio-demographic characteristics of the expatriate online voter. Most of the known socio-demographic correlates of electronic voting - in particular male gender, IT skills, political knowledge, and possibly young age - seem to replicate for the case of expatriates. The only factor specific to expatriates is that the probability of casting the vote electronically increases with geographical distance to the home country.*

Keywords: *Electronic voting, internet voting, online voting, expatriates, Swiss abroad*

Introduction

Switzerland ranks among the electronic voting[1] pioneers. Already since the early 2000s, several Swiss cantons (the second-tier political units in Switzerland) are experimenting with the new remote voting channel. Initially, internet voting trials were restricted to Swiss residents, but recently they have been extended to expatriates. Expatriates constitute a significant and dynamically growing share of the Swiss electorate. In 2012 more than 700,000 Swiss nationals resided abroad (Federal Department of Foreign Affairs, 2012), and a continually increasing number of Swiss expatriates wishes to participate in the electoral process. Already, more than every seventh Swiss abroad is registered to vote, a number that equals the size of a middle-sized canton (Lutz, 2012).

In this paper, we review the Swiss experience with the introduction of internet voting systems for expatriates. There are at least two reasons which render the case of the Swiss internet voting trials for expatriates worth studying. First, in many Swiss cantons the introduction of e-voting for expatriates is considered a precursor to a possible general introduction of internet voting. Therefore, we should closely examine the lessons that can be drawn from the expatriate trials.

[1] We use the terms 'electronic voting', 'e-voting', 'internet voting', and 'online voting' interchangeably. Also note that by 'referendum' we broadly refer to both mandatory and facultative referendums as well as citizen's initiatives.

Second, and more generally, it is conceivable that other countries will follow the Swiss lead and begin to experiment with online voting for expatriates. Citizenship in modern democracies continues to be defined on the basis of the nationality principle, and one of the major implications of the nationality principle is that *all* nationals should have access to the electoral process. From there it is only a short way to arguing that also nationals residing abroad should be allowed to participate. However, traditional remote voting channels, such as postal voting or consular voting, often fail to effectively empower expatriates to vote. By implication one can argue that the increasing transnational migration flows pose a challenge to the political legitimacy of modern democracies. Internet voting offers an obvious and attractive remedy to this challenge.

The review is structured as follows. First, we trace the evolution of the expatriates' voting rights over time, noting an increased demand for the introduction of online voting. In the second section we go on to provide an overview of the Swiss internet voting trials, with a focus on the recent trials involving the Swiss abroad. The third section inquires about the frequency with which the electronic voting channel is used. The fourth section investigates the socio-demographic characteristics of the Swiss online voter from abroad. The final section concludes.

The expatriates' demand for online voting

Until well into the second half of the 20th century the Swiss living abroad were fully excluded from political participation. Not surprisingly, political enfranchisement has therefore always been a core demand of the Swiss expatriate community. The first success could be celebrated in 1977, when political participation in federal elections and referendums became legally possible for the Swiss abroad. However, because voting still required physical presence in the country, the 1977 reform was essentially meaningless for most Swiss abroad (Thurnherr and Messerli, 2002). The second and more substantial success came about in 1992 with the introduction of postal voting for federal elections and referendums. At least in principle, postal voting allows expatriates to cast their vote from abroad. The introduction of postal voting for expatriates can thus be considered a milestone in the enfranchisement of Swiss expatriates.

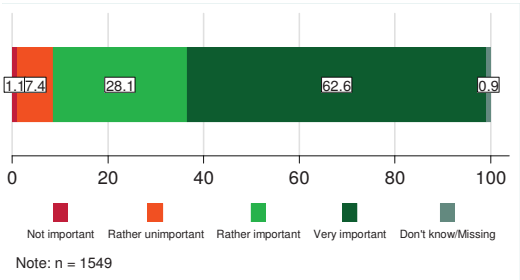


Figure 1: Attitudes towards the introduction of online voting among Swiss expatriates (in %)

However, despite the introduction of postal voting many expatriates continued to be pre-empted from the exercise of their political rights. Late dispatch of voting materials or problems with postal delivery often meant that expatriates remained effectively disenfranchised. With the emergence of the Internet and the relatively successful Swiss internet voting experiments beginning in the early 2000s, a substantial demand developed among Swiss expatriates for the

general introduction of electronic voting. A secondary analysis of a survey recently undertaken in the context of the 2011 Swiss national election study (Lutz, 2012) exemplifies the expatriate's strong preference for online voting. Out of 1,549 polled Swiss abroad, a clear majority of almost 63 per cent indicated a strong preference for the introduction of internet voting for expatriates.[2] Another 28 per cent deem it at least rather important. In combination this yields an overwhelming 91 per cent support rate for the introduction of online voting (see Figure 1). The expatriates' strong preference for online voting should not come as too big a surprise. Internet voting offers a potential solution for many of the problems expatriates face with postal voting, given that it substantially accelerates the return of the ballot and provides higher certainty that ballots actually reach their destination and are counted. Still, the survey results should be taken with a pinch of salt. First, the survey did not sample the entire expatriate population[3], and secondly there is a problem with self-selection into the survey[4] (Lutz, 2012: 83), which in combination makes it likely that the survey over-represents support for online voting.[5] However, it remains rather unlikely that the picture would change entirely in a fully representative survey, given the clear-cut figures and the amount of bias necessary to overturn them.

Internet voting for the Swiss abroad

The Swiss government has proven receptive to the expatriates' demand: the internet voting trials have recently been extended to expatriates. In this section, we trace the emerging internet voting offer in Switzerland, focusing mainly on the trials directed at the expatriate community. Similar to other Western democracies, Switzerland's history of online voting begins at the turn of the millennium when initial ideas to implement electronic forms of voting began to develop. However, in contrast to most other countries where these plans were soon to be abandoned, Switzerland can be said to have followed through on the initial idea, if only in a piecemeal kind of way (Mendez and Serdült, 2014). In Switzerland the organisation of elections and referendum votes is a cantonal (or in some cases even a communal) matter. Therefore the Swiss implementation of online voting is strongly determined by the federal structure of the country (Driza-Maurer, 2013). Rather than centrally-administered tests with a single internet voting portal the Swiss route involved the independent set-up of three distinct online voting systems in the cantons of Geneva, Neuchâtel, and Zurich. The first-ever binding online vote in Switzerland took place in 2003 in Anières, a small municipality in the canton of Geneva. Subsequently, more municipalities were included in online voting trials, with the cantons of Neuchâtel and Zurich joining the tests in 2005 (Gerlach and Gasser, 2009). Since then, hundreds of internet voting trials for both referendum votes and elections have taken place in the three pilot cantons. With the

[2] Specifically, respondents were asked about the importance they attributed to the swift provision of e-voting for expatriates.

[3] The survey designers invited a randomized sample of Swiss abroad who are registered to vote to partake in an online survey. Swiss abroad who were not registered to vote were not sampled at all, and these make up more than 80 per cent of Swiss abroad. Moreover, respondents were contacted via e-mail, and e-mail addresses were available for every second registered Swiss abroad only.

[4] Of the 7,000 Swiss abroad contacted by the survey team a mere 23 per cent actually took part in the survey.

[5] In particular, survey respondents can be expected to have higher interest in Swiss politics (those not interested are unlikely to take the burden of registering and/or to take an online survey) and higher internet affinity (Swiss abroad with low internet affinity are unlikely to have an e-mail address and/or to take an online survey). Both political interest and internet affinity are likely to correlate with support for online voting.

exception of the canton of Zurich where the programme was temporarily stopped in 2011 due to technical reasons the trials continue to date (Mendez and Serdült, 2014).[6]

In the initial implementation phase the Swiss abroad were not included in the internet voting trials. This began to change in 2006, when the Swiss government in its e-voting report explicitly acknowledged the major interest of expatriates in internet voting (Federal Chancellery, 2006). Several reasons can be cited for this policy change. The substantial lobbying efforts by the Swiss expatriates' main advocacy organization, the Organization of the Swiss Abroad (OSA), certainly constitute a significant factor.[7] Moreover, the extension of internet voting to expatriates was linked to hopes of boosting turnout among this segment of voters. However, a final, decisive factor is that by the extension the Swiss government is hoping to make way for a further expansion of e-voting amongst residents of Switzerland. Internet voting for expatriates is politically much less contested. High adoption rates would help to create a positive story that would eventually spill over to the domestic debate, where internet voting is periodically challenged by representatives of all political colours (see Mendez and Serdült, 2014).

Soon after the 2006 report the legal basis for the extension of the internet voting trials was laid (Driza-Maurer *et al.*, 2012), and in June 2008 Neuchâtel became the first canton to offer its expatriates the possibility to cast their vote electronically. Geneva followed suit in September 2009 and the remaining pilot canton, Zurich, in September 2010. Yet contrary to the situation with Swiss residents, the online voting for expatriates has not remained restricted to the three pilot cantons. In 2009, Basel-City became the first non-pilot canton to implement an internet voting programme for its Swiss abroad. Within less than two years nine additional cantons followed suit (see Table 1). Thus, with Zurich having stopped its programme in 2011, to date (end of 2013) expat online voting is available in 12 out of 26 cantons, and a total of 143 expat internet voting trials have been conducted.

[6] The proper interaction between the Internet voting system and the electoral management system could no longer be guaranteed due to problems with both hardware and software. Geneva also had to deal with a temporary stop in 2005 but has resumed again in late 2008. Namely, the Green Party has asked for an extended legal basis which was eventually granted in a referendum vote by a solid 70% majority in favour of internet voting (Mendez and Serdült , 2014).

[7] In response to the expatriates' demand for a swift introduction of internet voting, the OSA has become one of the most outspoken promoters of online voting. Among the more notable lobbying efforts is the handing over of a petition signed by more than 15,000 Swiss citizens for the comprehensive introduction of online voting for both Swiss abroad and Swiss residents in January 2012. See http://aso.ch/en/politics/petition-evoting (accessed December 28, 2013).

Table 1: Overview of the internet voting offer for expatriates (by federal votes and cantons)

	NE*	GE*	ZH*	BS	FR	GR	SG	SO	AG	LU	SH	TG	BE
01.06.2008	✔												
30.11.2008	✔												
08.02.2009	✔												
17.05.2009	✔												
27.09.2009	✔	✔											
29.11.2009	✔	✔		✔									
07.03.2010	✔	✔		✔									
26.09.2010	✔	✔	✔	✔	(✔)	(✔)	✔	(✔)					
28.11.2010	✔	✔	✔	✔	(✔)	(✔)	✔	✔	✔	✔	✔	✔	
13.02.2011	✔	✔	✔	✔	(✔)	(✔)	✔	✔	✔	✔	✔	✔	
23.10.2011				✔		✔	✔		✔				
11.03.2012	✔	✔		✔	(✔)	✔	✔	✔	✔	✔	✔	✔	(✔)
17.06.2012	✔	✔		✔	(✔)	✔	✔	✔	✔	✔	✔	✔	✔
23.09.2012	✔	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
25.11.2012	✔	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
03.03.2013	✔	✔		✔	✔	✔	✔		✔	✔	✔	✔	✔
09.06.2013	✔	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔	(✔)
22.09.2013	✔	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
24.11.2013	✔	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔	(✔)

Note: ticks indicate that internet voting was possible for all Swiss abroad residing in a EU member state, a state that has ratified the Wassenaar Treaty or one of the European microstates; ticks in brackets indicate that online voting was in addition restricted to Swiss abroad registered in selected municipalities; the asterisks denote the three pilot cantons; green denotes usage of the Zurich internet voting system, yellow usage of the Geneva system, and red usage of the Neuchâtel system.

For reasons of cost and efficiency, the newcomer cantons did not develop or buy their own internet voting solutions, but decided to draw on the existing ones (Driza-Maurer *et al.*, 2012). Two models emerged. On the one hand, seven of the newcomer cantons agreed to cooperate with the canton of Zurich in the form of a 'consortium'.[8] In Table 1 these cantons are shown green. The consortium cantons run a copy of the Zurich system, which is operated by a private company. The remaining three non-pilot cantons instead chose to cooperate with the canton of Geneva. In Table 1 these cantons are shown in yellow. The cantons associated with Geneva are hosted on the Geneva system, which is entirely owned and run by the canton of Geneva itself. Neuchâtel, the third pilot canton (in red), has not shared its system with another canton at least for the time being, mainly due to its peculiar setup with e-voting only being part of a larger e-government portal.

However, in both pilot and newcomer cantons there are some restrictions in the roll-out of internet voting to expatriates. Most importantly, by federal law in all cantons internet voting was restricted to expatriates residing in a country that allows the exchange of encrypted data (until the end of the year 2013). These are states that have ratified the Wassenaar Treaty[9], and certain European microstates, such as Liechtenstein, Andorra, and the Vatican. Data encryption is needed

[8] The consortium was initially managed by the canton of Zurich. The canton of Argovia took over as Zurich stopped its internet voting programme in 2011.

[9] The Wassenaar Treaty regulates export controls for dual-use goods and technologies, such as data encryption.

to guarantee the secrecy of the ballot. About 90 per cent of Swiss abroad live in a state that allows the exchange of encrypted data (Driza-Maurer *et al.* 2012: 7).

Second, in some of the newcomer cantons, such as Fribourg and the Grisons, the internet voting offer was initially restricted to Swiss abroad registered in selected municipalities. In all these cantons this distinction was soon abandoned and coverage extended to all municipalities. Finally, for technical and/or legal reasons the internet voting system of many cantons cannot accommodate referendum votes and elections at the same time. Thus for the 2011 federal elections online voting was offered in four cantons only, Basel-City, the Grisons, St. Gall, and Argovia. For the same reason Solothurn could not offer internet voting for the cantonal executive elections of March 2013. Because federal law stipulates that internet voting can only be offered if it is possible for all scheduled votes taking place simultaneously (Federal Chancellery, 2013), Solothurn could not offer internet voting for the referendum votes either. For similar reasons Berne could offer e-voting in selected districts only in June and November 2013.

Usage of the internet channel

As a consequence of the relatively high economic and organisational costs related to the introduction of the electronic voting channel, there is a certain political pressure that significant numbers of voters turn to the new voting channel from the beginning of the trials. Usage rates of internet voting are thus not a mere technicality; instead they are an important argument in the political debate. In this section we aim to provide an empirical basis for the debate, and gauge the popularity of the internet voting channel among both expatriates and Swiss residents. Inevitably due to the relatively short time period internet voting has been available the inferences we can draw are somewhat limited. However, not least given the unrivalled high frequency of referendum votes the Swiss case still allows for some interesting insights (Serdült, 2014).

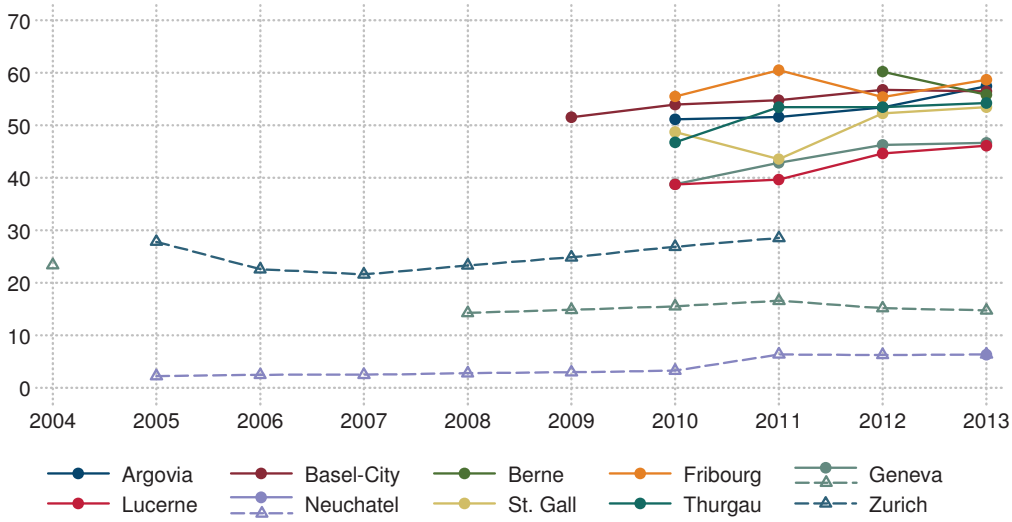
Our evaluation is based on a freshly collected data set on the usage of the internet voting channel in all federal votes, 2004-2013. Our data set has complete coverage of trials involving Swiss residents, i.e., we cover all federal votes where online voting was available in the three pilot cantons (Geneva, Zurich, and Neuchâtel). However, the data quality is slightly compromised in the case of Neuchâtel for the votes between June 2008 (when online voting for expatriates was introduced) and early 2013 since in this period our figures include not only residents but also Swiss abroad. This is due to the statistical office discarding most electoral data in the aftermath of each vote so as to safeguard the secrecy of the ballot, which makes it impossible to disaggregate the votes of Swiss residents and expatriates at a later stage. Fortunately, the resulting deviations are negligible, given that Swiss abroad make up only about 3 per cent of Neuchâtel's electorate.[10] Moreover, Neuchâtel has begun to provide us with the necessary data before they are deleted as of the June 2013 vote.

On the other hand, unfortunately we cannot cover the expatriate trials in all cantons since in four of them (Zurich[11], the Grisons, Schaffhausen, and Solothurn) the relevant data is not recorded

[10] A second issue is that up to early 2013 (and contrary to Geneva and Zurich) the figures for Neuchâtel also include foreigners (which in Neuchâtel have the right to vote in cantonal and local referendums) if there was a simultaneous cantonal or municipal vote. Judging by the three votes for which we have fully disaggregated data, the deviations to the figures for residential Swiss nationals remain minimal (between .1 and .3 percentage points).

[11] In the canton of Zurich expatriate votes are recorded in a single district (which also includes residential voters). In the three votes where this is relevant, this district was not included in the calculation of the residential e-voter share.

by the respective statistical offices. Moreover, for the reason stated above we have data for Neuchâtel as of June 2013 only.[12] Still, our data set covers 9 cantons and 89 out of the 143 internet voting trials involving expatriates. There is, however, some variation in the data quality. Recall that only Swiss abroad who live in countries that allow the exchange of encrypted data are allowed to vote via the Internet. Therefore the accurate online voter share can only be calculated if expatriate votes are recorded by the country of residence. Unfortunately, only four of the nine cantons in our data set do so (Basel-City, Berne, Fribourg, and Geneva). With the remaining five (Argovia, Lucerne, Neuchâtel, St. Gall, and Thurgau) the actual online voter share is higher than the one we report because also votes from Swiss abroad are counted who reside outside the European/Wassenaar context and therefore are ineligible to vote via the Internet. However, 90 per cent of Swiss abroad live in a country that allows the exchange of encrypted data; the biases should not therefore be dramatic.



Note: solid lines and dots denote Swiss abroad; dashed lines and hollow triangles Swiss residents.

Figure 2: Annualized share of online voters in federal votes (in %)

Keeping these smaller caveats in mind, we turn to the results. In Figure 2 we plot the annualized share of online voters by cantons and voter groups (residents or expatriates), whereby solid lines and dots represent expatriates, and dashed lines and hollow triangles Swiss residents (note that in 2013 the dot and triangle coincide for Neuchâtel because the figures for residents and expatriates are almost equal). An initial important observation is that a quite significant number of citizens casts their vote electronically; depending on the context from about 15 to 60 per cent of voters use the online channel. The only exception in this regard may be Neuchâtel, where the online voter

[12] In addition the first three trials in Geneva and the March 2012 vote in Fribourg are missing because the statistical offices were unable to provide us with the relevant data.

share is consistently below the 10 per cent marker. This is due to the fact that Neuchâtel's online voting portal – contrary to all other cantons – is integrated into a comprehensive e-government portal ('Guichet Unique') wherein citizens can directly interact with the government, for instance by filing tax reports. Therefore, in Neuchâtel eligibility to vote online requires signing up for the e-government portal as a whole. This involves significant costs, especially (but not only) for expatriates because it requires physical presence at the municipal administration. The extra burden to sign up for e-voting as part of the e-government portal appears to result in much lower usage of the online channel compared to the Geneva and Zurich systems used in the other cantons (which do not require pre-registration). However, Neuchâtel's online voter share is steadily increasing, and can be expected to increase further as more and more citizens will register for the portal.

For the remaining discussion we will leave aside the deviating case of Neuchâtel, and focus on the other cantons which all use comparable internet voting systems. The most obvious finding here is that residents and expatriates tend to differ significantly in the usage of the online voting channel. Excluding Neuchâtel, on average about every second Swiss abroad casts the vote electronically (50.3 per cent).[13] At 15.1 per cent for Geneva and 22.5 per cent for Zurich, the average rate is significantly lower in the comparable internet voting trials for Swiss residents. Of course, there is also inter-cantonal variation in the usage of the online channel. However, at least in the case of the expatriate experiments, these differences can largely be explained with variation in data quality. That is, the figures in low-performer cantons tend to be downward biased because they include Swiss abroad in non-European or non-Wassenaar states (who are not eligible to e-vote, see above).[14] Thus, the crucial take-home message remains that compared to residents, expatriates are more frequent users of the electronic channel.

A closer look at changes over time offers additional insights. In both Geneva and Zurich, the trials involving Swiss residents featured a sudden drop in the internet voting rate of up to ten percentage points, suggesting a novelty effect whereby voters partly revert to their traditional mode of voting after giving the internet channel a few trials (Mendez and Serdült, 2014). To the contrary, no such sudden drop in the internet voting rate appears to occur in the expatriate experiments. We should always be cautious with micro-level inferences based on macro-level data. But the macro-level patterns provide quite clear evidence against a novelty effect in the case of the expatriate trials. On the contrary, from the outset we can observe a slight but quite consistent upward trend in most cantons. On average the cantonal online voting rate in the expatriate trials increased by about 1.8 percentage points by year. This upward trend is significant at the .1 per cent level in a regression model of the online voting rate on the number of years the programme is running, controlling for time-invariant between-canton variation (i.e., canton fixed effects). At this rate of growth - all other circumstances being equal - some cantons would reach internet voting usage rates of 70% in about five years. For Swiss residents the situation is more ambiguous. In Geneva, on the one hand, the internet voting rate appears to stabilize at around 15 per cent after the initial decrease, probably due to the novelty effect. On the other hand, after the initial setback Zurich shows a clear upward trend, at least before the e-voting program was discontinued in 2011.

[13] Remember that the actual number is higher because Swiss abroad voters not eligible to online voting are included in the figures for some of the cantons.

[14] The only major exception is Geneva. This is probably due to the high number of Swiss abroad registered in Geneva who live just across the border. As will be argued below, expatriates in neighbouring countries are somewhat less likely to use the electronic mode of voting.

Characteristics of the expatriate internet voter

A question that has repeatedly attracted scholarly interest is whether and how the socio-demographic profile of online voters differs from that of 'traditional' voters. To date studies of the socio-demographic profile of internet voters have largely focused on e-voting offers for residents. Alvarez *et al.* (2009), for instance, found in a recent appraisal of the Estonian internet voting experience that tech-savvy youngsters with high trust in the e-voting mechanism disproportionately make use of the online channel. More surprising may be their finding that Estonian online voters do not differ to a statistically significant extent from other voters in terms of sex, income, education, and political leaning. Given its focus on Geneva's internet voting trials (for residents), Sciarini *et al.*'s (2013) study may be more relevant to us, however. Contrary to Alvarez *et al.* (2009) they find that highly educated, politically knowledgeable, married, and male voters are more likely to vote online. Meanwhile they concur with Alvarez *et al.* (2009) in that computer skills trust in the Internet, and age are correlated with usage of the online channel. In this section we investigate whether these findings replicate for the case of the Swiss abroad.

Evidence for the profile of expatriate online voters is scarce. The only study we are aware of is Serdült (2010). Serdült focuses on the two 2009 online voting trials in Geneva where expatriates were for the first time included in the e-voting roll-out, and he compares the profile of online voters to the profile of voters using the traditional postal channel. Three main findings emerged. First, Serdült found that male Swiss abroad are more likely to vote online, similar to Sciarini et al.'s finding for Geneva residents. Second and also similar to the situation with Geneva residents, Serdült found that younger expats were generally more likely to use the online channel. Interestingly, however, it was not the youngest voters with age 18-29 who used the online channel most often, but rather the 30-39 year-old cohort. Finally, Serdült found that geography plays a role: the more distant an expatriate's country of residence the likelier she is to use the online channel. For instance, while around 60 per cent of Swiss abroad in the US voted online, only around a third of Swiss abroad living in France did so. Two mechanisms may explain this pattern. On the one hand, problems with postal delivery presumably tend to be lower the closer the country of residence is to Switzerland. On the other hand, many of Geneva's Swiss abroad live just across the border in France and commute to Geneva on a daily basis. Since they can use Swiss letter boxes for the return of the ballot (some of the border checkpoints are even equipped with drive-through letter boxes), this group of expatriates does not face problems with postal delivery at all.

A major strength of Serdült's study is that it draws on official vote registry data and thereby fully circumvents sampling issues.[15] However, this strength comes with a price: by its very nature, vote registry data covers only very basic socio-demographic statistics, such as age and sex. Thus, we complement Serdült's results with a secondary analysis based on the Swiss abroad survey we introduced above (Lutz, 2012). The primary advantage of survey data is that it allows us to go beyond the narrow socio-demographic statistics covered in vote registries. However, the price to pay is that we are no longer covering the universe, but rely on a sample. This price is particularly heavy in the present case since the survey involves severe selection bias (see footnotes 3, 4, and 5). Thus, the findings should be considered as tentative.

[15] Geneva is the only canton to maintain an official voting records database which keeps records of each citizen's electoral participation along with basic socio-demographic statistics on an anonymous basis (see Sciarini et al., 2013: 12).

The survey we are analysing focused on the 2011 federal elections, and included an item on the voting method in addition to the usual item on electoral participation. In the 2011 federal elections, expatriates in four cantons enjoyed the possibility to vote online (Argovia, Basel-City, Grisons, and St. Gall; see Table 1). Thus, we compare the profile of expatriate online voters from these four cantons to the profile of postal voters from the same four cantons.[16] In total, our sample includes 130 expatriate voters, of which 101 voted online. We report averages by the voting channel and assess the statistical significance of differences with Chi-Square-Tests.

Table 2: Comparing expatriate online voters with expatriate postal voters

	n	*Online*	*Postal*	*Diff.*
Age	130	48.62	49.28	-.65
Female sex	130	.26	.41	-.16
Education	120	6.02	6.04	-.02
Married	130	.59	.45	.15
Political interest	130	2.5	2.38	.12
Left-right	117	4.63	4.92	-.28
Political knowledge	130	2.1	1.55	.55*
IT skills	122	.24	.08	.16*
Neighbour country	130	.3	.52	-.22**

*Note: statistical significance of differences was evaluated with Chi-Square-Tests; * p < .1, ** p < .05, *** p < .01.*

Table 2 gives the results. In a first step, we focus on the three variables also covered in Serdült (2010). The survey-based estimates largely confirm the patterns found by Serdült. In particular, in line with Serdült we find that expatriates living in a country that borders Switzerland are statistically significantly less likely to use the online channel, and therefore more likely to vote by mail. Moreover, and also in line with Serdült, we find that men are more likely to use the electronic channel. The gender gap is substantial but (barely) misses conventional levels of statistical significance. This could be due to the combination of our relatively small *n* with the small number of postal voters (29), which diminishes statistical power to detect statistically significant differences. The only substantial deviation from Serdült (2010) is that age appears unrelated to the usage of the online channel. It is possible that in the case of expatriates, the relatively large convenience associated with online voting is able to offset age effects, but this result may also be owed to the survey's lack of representativity.

However, the real strength of survey data is that it allows us a closer look at a few additional variables. Four interesting results emerge. First, we find that online voters are statistically significantly more tech-savvy.[17] Second, online voters are more politically knowledgeable to a statistically significant degree.[18] Third, married and politically interested respondents have a higher rate of using the online channel. These differences are not statistically significant, but come

[16] Since these could not vote online, we exclude Swiss abroad from countries that do not allow the exchange of encrypted data. A small number of respondents (12) indicate to have voted online even though objectively this was not possible.

[17] The survey does not include a direct measure of IT skills. We proxied for technical knowledge with an item asking respondents about the use of an Internet-based voting advice application called *smartvote* (see Germann et al. 2014).

[18] Political knowledge was measured by a composite index of four political knowledge items and political interest on a self-reported 4-point scale.

relatively close to the 10 per cent level. Finally, there are clearly no significant differences with regards to political ideology and education.[19]

To conclude, we find that the socio-demographic correlates of online voting are generally replicated for the case of the Swiss abroad, in particular if compared to Sciarini *et al.*'s (2013) encompassing study of Geneva's e-voting offer for residents. Our results suggest that Swiss abroad online voters tend to be disproportionately male, technically skilled, married, and possibly of young age. We do not find any differences in terms of education, but expat online voters appear to have disproportionately high political knowledge. Also expatriate online voters do not differ significantly from other voters in terms of political leaning or interest. Finally, an interesting pattern that by its nature can only concern the expat context is that geography matters in that expatriates from more distant countries are more likely to turn out via the Internet. However, it has to be stressed that Serdült's study of the first two Geneva experiments is naturally limited in terms of temporal and spatial scope as well as in terms of the variables it can analyse, while the survey-based results are suggestive at best due to selection bias (and also limited in space and time). Moreover, all findings we have reported rely on bivariate correlations. Thus more research is needed to unravel the socio-demographic determinants of the expat online voter.

Conclusion

By generalising internet voting to all Swiss abroad irrespective of their country of residence in 2014 and by offering it in all or at least most cantons by the 2015 federal elections the electronic voting channel will continue to establish itself (Federal Chancellery, 2013). Provided that implementation for the Swiss abroad goes well and without further interruptions, internet voting is on the way of becoming the preferred voting channel for this segment of voters. With on average more than every second Swiss expatriate voter casting her or his vote electronically, online voting proves to be very popular among expatriates, especially if compared to Swiss residents who tend to have an acceptance rate of a bit less than 20% on average. The exception in this regard is Neuchâtel where the pre-registration requirement for online voting is responsible for the relatively low usage rate of about 8%. However, one should note that even though this figure for Neuchâtel seems to be fairly low it still clearly outnumbers that for voting in person at the polling station. As to the socio-demographic profile of the expat online voters, we can say that they tend to be disproportionately male, technically skilled, married, and possibly of young age. Specific to the case of expatriates is that Swiss abroad living in more distant countries are more likely to cast their vote electronically.

Inevitably this review remains limited in several regards. First and foremost, the short time frame internet voting has been available to expats naturally restricts the inferences we can draw. Also, existing expat surveys are marred by selection bias and/or focus exclusively on online voters. Finally, important questions have not been addressed in this review. In particular, there are good theoretical reasons to expect online voting offers for Swiss abroad will increase turnout rates, akin to the effect on Swiss resident turnout of about 4% due to the gradual introduction of postal voting (Lüchinger *et al.*, 2007). The Swiss abroad survey we have discussed provides some initial supporting evidence for the increasing turnout hypothesis, given that respondents in cantons with an e-voting offer are significantly more likely to have participated in the 2011 election (Lutz, 2012: 36). However, more systematic evidence is needed to substantiate a potential turnout effect.

[19] Political ideology was measured via self-placement on an 11-point left-right scale and education on an 8-point scale.

Another, related question not addressed in this survey is that of a possible digital divide, or in other words the question whether the introduction of electronic voting will lead to a further overrepresentation of the resource-rich (Norris, 2001). For all these reasons, this review provides but a first account of the expat internet voting trials, and more research is needed.

Looking into the foreseeable future of Swiss internet voting trials and a potential generalisation thereof, we can detect both political and technical challenges on the horizon. Thus far, political ramifications on e-voting were mainly restricted to the cantonal level. However, recently parliamentary motions from across the political spectrum have opposed a further extension of internet voting for Swiss domestic voters or have asked to halt e-voting trials in general unless the source code of the software is made public and an upgrade to more secure and verifiable second generation systems can be achieved. An exception would only be made for the Swiss abroad. A smooth transition to more transparent and secure internet voting solutions would therefore help to accommodate some of the critical voices. Whether the so far largely positive experience with the Swiss abroad will spill over to the debate on internet voting for Swiss residents and thus work towards a further generalisation of the new voting channel is still to be seen. In many respects the year 2014 will be a crucial one.

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About the Authors

Micha Germann

Micha Germann is a PhD researcher at the Centre for Democracy Studies (ZDA) at the University of Zurich and the Centre for Comparative and International Studies at the ETH Zurich. His research interests include direct democracy, political violence, e-voting, and voting advice applications (VAAs).

Flurin Conradin

Flurin Conradin used to work as research assistant at the Centre for Democracy Studies (ZDA) at the University of Zurich. He holds a Master's Degree in Economic Theory and Econometrics from the Toulouse School of Economics.

Christoph Wellig

Chrisoph Wellig works as research assistant at the Centre for Democracy Studies (ZDA) at the University of Zurich. He is completing his Master's degree in political science at the University of Zurich.

Uwe Serdült

Uwe Serdült is vice-director of the Centre for Research on Direct Democracy (c2d) in the Centre for Democracy Studies Aarau (ZDA) at the University of Zurich. Before coming to Aarau he taught and worked as a post-doctoral researcher at the Universities of Zurich and Geneva, respectively.

Feasibility Analysis of Various Electronic Voting Systems for Complex Elections

Jurlind Budurushi, Melanie Volkamer

Hochschulstraße 10, 64289 Darmstadt Germany, name.surname@cased.de

Abstract: *Elections differ not only from country to country, but also within each country. Some elections, like the US presidential elections, have very simple voting rules and ballots. Other elections, like local elections in Germany (e.g. Hesse) have very complex voting rules and ballots. Elections with complex voting rules and ballots introduce challenges regarding the vote casting and the tallying process. While mostly, software support for the tallying is in place, the vote casting process is rather error prone, as voting rules are very complex, and voters might unintentionally spoil their vote. In this work we analyse existing electronic voting systems regarding their feasability for the local elections in Hesse, Germany. The analysis is based on technical requirements, which are derived from two constitutional legal criteria:* secret *and* public nature of elections. *We analyse seven different approaches, and EasyVote seems to be most promising and adequate with respect to these criteria.*

Keywords: *Complex elections, Electronic Voting, Feasibility, Secret Elections, Public Nature of Elections,*

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Introduction

Elections differ not only from country to country, but also within each country. Some elections, like parliamentary elections in Estonia and Germany or presidential elections in the US, have very simple voting rules and ballots. Thereby, voters can select 1 out of *n*-candidates, where *n* is a relatively small number between two and 20. Other elections, like parliamentary and European elections in Luxembourg, parliamentary elections in Belgium or some local elections in Germany (e.g. Bavaria, Bremen, Hamburg, Hesse) etc., have very complex voting rules and ballots. For instance, in the local elections in Hesse voters can perform *cumulative voting* (cast up to three votes for each candidate), *vote splitting* (cast votes for candidates of different parties), *select a party* (votes are automatically assigned to the candidates of the selected party according to the list order), and *cross out candidates* they do not like. Furthermore, voters can cast

up to 93 votes[1] depending on the size of the district; usually more than ten parties and more than 450 candidates participate, which results in huge ballots, nearly of the size A0[2].

Elections with complex voting rules and ballots introduce challenges regarding the vote casting process and the tallying process. While mostly, software support for the tallying process is in place, the vote casting process is rather error prone, as voting rules are very complex, and voters might unintentionally spoil their vote. In the local elections of 2011 in Hesse, 5.5%[3] of cast votes were invalid while in the last German federal elections in 2013 only 1.4%[4] of cast votes were invalid. Correspondingly, it is not surprising that election officials in such areas in Germany consider electronic voting as an alternative as it could provide voters with interactive feedback (e.g. how many votes are left) and support them to not unintentionally spoil their vote.

The goal of this work is to analyse existing electronic voting systems regarding their feasibility to enable polling station electronic voting in German elections with complex voting rules and ballots such as the local elections in Hesse. The analysis is based on technical requirements, which are derived from the constitutional legal criteria. The legal criteria that we focus on this work are the *secret elections* and *public nature of elections*. From a very large set of existing electronic voting systems, only seven different approaches can be considered: (1) Direct Recording Electronic (DRE) Voting Machines; (2) DRE voting machines with plaintext Voter Verifiable Paper Audit Trails (VV-PATs); (3) DRE voting machines with encrypted VV-PATs, and four different approaches of Ballot Preparation Devices (BPDs) with VV-PATs: (4) plaintext VV-PATs, e.g. *Ballot Marking Device (Board Elections City of New York)*; (5) plaintext VV-PATs including RFIDs, e.g. *Vot.ar* (Vot.ar), (6) plaintext VV-PATs including QR-Codes, e.g. *EasyVote* (Volkamer et. al, 2011), and (7) VV-PATs containing voter's selection in plaintext and encrypted, e.g. *STAR-Vote* (Bell et. al, 2013). While the second, third and fourth approach of BPDs with VV-PATs indicate positive results with respect to *secret elections* and *public nature of elections*, *EasyVote* (Volkamer et. al, 2011) seems to be most promising and adequate with respect to these criteria for elections with complex voting rules and ballots.

This work is structured as follows: Section II is dedicated to the technical requirements that are used to analyse various electronic voting systems with respect to their feasibility for elections with complex voting rules and ballots. In section III we outline electronic voting systems that are out of the scope of this work. Afterwards, in section IV, we describe and analyse different approaches of DREs. Section V describes and analyses different DREs with VV-PATs (plaintext and encrypted). In section VI we describe and analyse different Ballot Preparation Devices with VV-PATs. Section VII concludes this work by summarizing the results and outlining directions for future research.

Constraints and Technical Requirements

We identified the following constraint for electronic voting systems being adequate for local elections in Hesse:

[1] The maximum number of votes that a voter can cast equals the number of seats. This also limits the number of candidates a party can nominate for the election.
[2] According to (International Organization For Standardization, 2007).
[3] Retrieved March 05, 2014 http://www.statistik-hessen.de/K2011/EK1.htm
[4] The 1.4% represents the average of the 1.5% invalid votes in the first race and 1.3% invalid votes in the second race. Retrieved March 05, 2014 from http://www.bundeswahlleiter.de/de/bundestagswahlen/BTW_BUND_13/ergebnisse/bundesergebnisse/

- Electronic voting systems, on which voters cast their vote and/or prepare their ballot on a voting device that provides them with interactive feedback and support them to not unintentionally, spoil their vote; as user support is one of the largest motivation for introducing electronic voting for such elections.
- Electronic voting systems that do not require printing the complete original ballot (see Figure 1), as this would require very expensive printers.

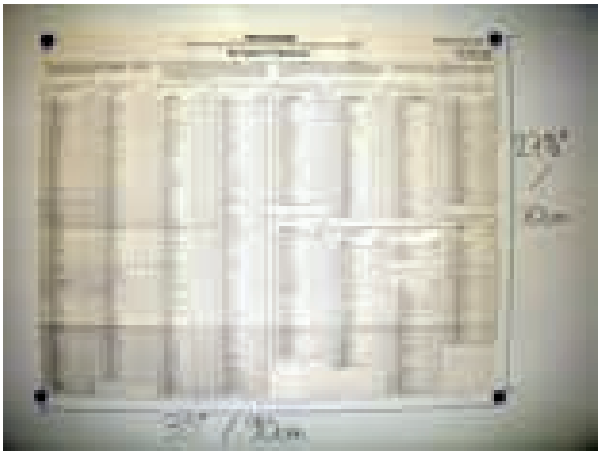

Figure 1: Ballot paper of the local elections in Hesse

Furthermore, in order to be used in the local elections in Hesse, an electronic voting system must comply with all constitutional legal criteria, which are established in Article 38.1 sentence 1 of the German constitution, namely equal, direct, free, secret, and universal elections. In addition to these criteria, another legal criterion, namely *public nature of elections,* has been introduced by the German Federal Constitutional Court in 2009 (Federal Constitutional Court of Germany, 2009). The main aspect of the *public nature of elections* requires that every voter can verify the essential steps in the election process and in the ascertainment of the results without specialist knowledge. This is of particular interest as electronic voting was in place for the local elections in Hesse until the German Federal Constitutional Court judged them in 2009 to not be constitutionally compliant because of the lack of implementing the *public nature of elections*. The focus of this work is on the legal criteria of *secret elections* and *public nature of elections*. Hence, in this section we introduce the technical requirements for both criteria.

According to Neumann et. al (Neumann et. al, 2013) the technical requirement derived from the criterion of *public nature of election* is verifiability. Verifiability consists of three sub-requirements: (1) cast-as-intended, (2) stored-as-cast, and (3) tallied-as-stored. Furthermore, to evaluate the different electronic voting systems based on these technical sub-requirements we define the following linear ordered scales:[5]

[5] The ordering of the different scales is motivated by both aspects of the public nature of elections introduced by Henning et. al (Henning et. al, 2014), namely usable and understandable verifiability.

Cast-as-intended: Similar to traditional paper-based system (0), Voter is required to manually verify the content of the ballot (-1), Voter is required to compare values[6] (-2), Voter is required to verify the content of the encrypted ballot by using an additional tool (-3), No means to verify (-4).

Stored-as-cast: Voter is provided a ballot that includes her selection encrypted and in plaintext (1)[7], Voter is provided a ballot that includes her selection in plaintext, similar to traditional paper-based elections (0), Voter is provided a ballot that includes only the encryption of her vote (-1), No means to verify (-2).

Tallied-as-stored: Semi-automatic tallying of plaintext ballots[8] (3), Fully automatic tallying of plaintext ballots combined with risk-limiting audits (2), Fully automatic tallying of plaintext ballots combined with random checks (1), Similar to traditional paper-based system (0)[9], Semi-automatic tallying of encrypted ballots (-1), Fully automatic tallying of encrypted ballots combined with risk-limiting audits (-2), Fully automatic tallying of encrypted ballots combined with random checks (-3), No means of verifying (-4).

For the criterion of *secret election*, Neumann et. al (Neumann et. al, 2013) derives the following technical requirement : *"…it should not be possible to determine a connection between the voter and her cast vote…"*. For the sake of simplicity, we refer to this definition by using the technical requirement: *vote secrecy*. In order to evaluate the different electronic voting systems based on this technical requirement we define the following linear ordered scale: Similar to traditional paper-based system (0), More than one entity need to collaborate to violate vote secrecy (-1), One entity can violate vote secrecy.

Electronic voting systems not considered

There exist a large number of electronic voting systems, which have been developed to support voters in the vote casting process and/or poll workers in the tallying process. However, the constraints defined in section II eliminate systems like Optical/Barcode Scanners, e.g. P.C.O.S. (Precinct Count Optical Scan) by Smartmatic (SMARTMATIC), Scratch & Vote (Adida et. al, 2006b), ThreeBallot (Rivest, 2006), Digital Voting Pen (Volkamer et. al, 2006), Dual Vote (MacNamara et. al, 2010), Punchscan (Fisher et. al, 2006), Scantegrity II (Chaum et. al, 2009), Prêt à Voter (Ryan et. al, 2009) because all of them rely on hand-marked ballots and thus do not support voters in the vote casting process.

Furthermore, systems like (Burton et. al, 2013), (Joaquim et. al, 2009), (Bohli et. al, 2007), (Adida et. al, 2006a), (Moran et. al, 2006), (Reynolds, 2005) and (Neff, 2004) are also not considered, as they require to print the complete ballot.

In the following sections we provide a short description of the different electronic voting systems that are potentially feasible for elections with complex voting rules and ballots, i.e. which are compliant with both defined constraints. These voting systems will be analysed regarding the level of compliance with the technical requirements defined in section II.

[6] Note that the values are different from the voter's selection. For instance, the value is the hash value of the encrypted vote.
[7] This enables voters to verify that their vote is stored-as-cast independent from time and place.
[8] In this case the election result is computed by automatically tallying each single VV-PAT. This is possible due to electronic ballot preparation in the vote casting process.
[9] This refers to entirely manual tallying ballots without using any additional tool.

Direct Recording Electronic Voting Machines

A Direct Recording Electronic (DRE) voting machine can be defined as any electronic device on which voters cast their vote electronically, and votes are stored locally in the corresponding memory component. The memory component can be internal or external, e.g. a smart card (Canard et. al, 2006) or a simple memory card (Bruck et. al, 2010), and votes can be stored in plaintext (Bruck et. al, 2010) or encrypted (Canard et. al, 2006).

The main purpose of DRE voting machines is to replace manually marked paper ballots with an interactive display of possible candidate selections. In some cases this can mean simple buttons integrated into a fixed candidate list, or a touch screen display. The tallying software can either be a part of the DRE voting machine or part of another machine. For more information refer to (Cranor, 2003). The most known DRE voting machines are developed by Avante, Diebold, ES&S and Sequoia, while for examples from the academic research refer to (Bruck et. al, 2010), (Sandler et. al, 2008), (Sandler et. al, 2007), (Canard et. al, 2006) and (Yee et. al, 2006).

The vote casting process is as follows: The voter first identifies herself to the poll workers, similar to traditional paper-based elections. Afterwards, the voter enters the voting booth and makes her selections from a provided list of candidates at the DRE itself. The voter checks that preview screen matches her voting intention. The electronic vote is not cast until the voter has confirmed that the preview screen matches her intention. At the end of the Election Day the stored electronic votes are tallied and the election results is computed, displayed and usually printed.

We analysed this category of electronic voting systems according to the technical requirements and their corresponding scales (scores), defined in section II. The corresponding score for this category are the followings:

- Cast-as-intended (-4)
- Stored-as-cast (-2)
- Tallied-as-stored (-4)
- Vote secrecy (-1)

This leads to a total *score of -11*. When using these electronic voting systems voters have no means of verifying if their vote has been cast-as-intended, recorded-as-cast and tallied-as-stored. In order to violate vote secrecy at least two entities have to collaborate, for instance one entity that manipulates the DRE such that the DRE stores the sequential order of cast votes, and a second entity (e.g. poll worker) that records the name and order of voters casting a vote.

Direct Recording Electronic Voting Machines with VV-PAT

In contrast to the Direct Recording Electronic (DRE) voting machines, these machines provide voters with an additional paper record of their cast vote. This paper record is referred as the voter verifiable paper audit trail (VV-PAT), and was introduced by Mercuri (Mercuri, 2001). VV-PATs, which can be either in plaintext or encrypted, enable to audit the electronic tally. The auditing of the electronic tally serves to detect any malicious DRE voting machine, and to ensure the correctness of the election result. For the purpose of implementing a VVPAT, the practice of using DRE voting machines with printers is starting to gain popularity. Examples of DRE voting machines used in legally binding elections include many different systems which are widely used throughout the United States of America (Verified Voting Foundation, 2003), the Smartmatic SAES

system used in Venezuela (European Union Election Observation Mission, 2006) and ProVotE in Italy (Weldemariam et. al, 2008). For systems proposed in the academic research refer to (Benaloh, 2007), (Benaloh, 2006) and (Chaum, 2004).

Note that in (Benaloh, 2007), (Benaloh, 2006) and (Chaum, 2004), voters take the encrypted VV-PATs home and can verify that their vote has been stored-as-cast and tallied-as-stored, independent from time and place. However, in order to enable auditing the electronic tally copies of the encrypted VV-PATs can be additionally collected in the polling station.

The vote casting process is as follows: The voter first identifies herself to the poll workers, similar to traditional paper-based elections. Afterwards, the voter enters the voting booth and makes her selections from a provided list of candidates at the DRE itself. The voter check that the paper ballot matches her voting intention and the ballot is either deposited automatically by the DRE into a ballot box. The electronic vote is not cast until the voter has confirmed that both paper and electronic vote match. At the end of the Election Day the stored electronic votes are tallied and the election results is computed. Furthermore, in order to ensure the correctness of the election result with a high probability, poll workers perform some random or risk-limiting audits by using the VV-PATs, refer to (Stark, 2010), (Lindeman et. al, 2012a), and (Lindeman et. al, 2012b).

We analysed this category of electronic voting systems according to the technical requirements and their corresponding scales (scores), defined in section 2. The first approach is DREs with plaintext VV-PATs, e.g. ProVotE in Italy (Weldemariam et. al, 2008). The corresponding scores are:

- Cast-as-intended (-1)
- Stored-as-cast (0)
- Tallied-as-stored (0)
- Vote secrecy (-2)

This leads to a total *score of -3*. The DREs with plaintext VV-PATs enable voters to verify if their vote has been cast-as-intended, recorded-as-cast and tallied-as-stored. However, tallied-as-stored is similar to traditional paper-based system, because the plaintext VV-PATs do not enable any automatic tallying of the election result. To violate vote secrecy only one entity is necessary, for instance a poll worker records the name and order of voters casting a vote, and later in the auditing/tallying phase accesses the plaintext VV-PATs which are collected in a sequential order.

The second approach is DREs with encrypted VV-PATs, e.g. (Benaloh, 2007). The corresponding scores are:

- Cast-as-intended (-3)
- Stored-as-cast (-1)
- Tallied-as-stored (-3)
- Vote secrecy (-1)

This leads to a total *score of -8*. The different scoring in comparison to DREs with plaintext VV-PATs, can be explained as follows: For cast-as-intended voters are confronted only with encrypted VV-PATs, i.e with cryptographic primitives and/or protocols. Furthermore regarding stored-as-cast, only encrypted VV-PATs are stored into the ballot box. However, in contrast to the DREs with plaintext VV-PATs, cast votes are tallied in a fully automatic manner. Note that poll workers can perform only random audits as current risk-limiting audits techniques are not feasible for the local elections in Hesse, due to the very large number of candidates that are nominated for the election. Finally, two entities have to collaborate to violate vote secrecy, namely one entity (e.g.

poll worker) that records the name and order of voters casting a vote, and one entity who is in possession of the secret election key (e.g. electoral officials).

Ballot Preparation Device with VV-PAT

A ballot preparation device (BPD) with VV-PAT can be defined as any electronic device on which voters make their selections (prepare their ballot) and the device prints out voters' selections, i.e. provides voter with the VV-PAT (printed ballot). The device does not store electronic votes, but rather the VV-PATs can be read/interpreted automatically.

VV-PATs either consist of one single (human-readable) part, for instance the VV-PATs of the Ballot Marking Device (Board Elections City of New York), or of two parts (Bell et. al, 2013), (Ben-Nun et. al, 2012), (Vegas, 2012), (Volkamer et. al, 2011) and (Vot.ar). The VV-PATs that consist of two parts have a human-readable, and a machine-readable part that voters are not able to interpret without an additional electronic device. The machine-readable part encodes the same information as the human-readable part either in a QR-Code (Ben-Nun et. al, 2012), (Vegas, 2012) and (Volkamer et. al, 2011) or in a RFID chip (Vot.ar). The encoded information is either in plaintext or encrypted.

The vote casting process is as follows: The voter first identifies herself to the poll workers, similar to traditional paper-based elections. Afterwards, the voter enters the voting booth and makes her selections from a provided list of candidates at the ballot preparation device. The voter checks that preview screen matches her voting intention. When the voter confirms the selected candidates, the ballot preparation device starts the printing process and deletes the selection from display and memory.[10] The printout contains a summary in human readable form as well as depending on the implementation additional not human readable information. The voter verifies that the human-readable part of the VV-PAT matches his votes. Usually, special devices are provided allowing the voter to also verify the content of the machine-readable part. The machine-readable part either contains the plaintext or the encrypted voted. In case the machine-readable part of the VV-PAT is encrypted, e.g. the Wombat system (Ben-Nun et. al, 2012), the voter must repeat the vote casting process, i.e. prepare a new ballot, in order to ensure vote secrecy.[11] Finally, the voter, either first records an electronic copy of her vote by scanning the VV-PAT and then deposits the it into the ballot box (Bell et. al, 2013), (Ben-Nun et. al, 2012), (Board Elections City of New York) and (Vegas, 2012), or directly deposits the VV-PAT into the ballot box (Volkamer et. al, 2011) and (Vot.ar).

At the end of the Election Day the election result is computed by tallying the electronic records of scanned VV-PATs. The electronic records are either available from the vote casting process, e.g. the Wombat system (Ben-Nun et. al, 2012), or by scanning all VV-PATs at once in the tallying process, or poll workers scan each single VV-PAT, and confirm that the human-readable part matches the machine-readable part in the tallying process, e.g. the Vot.ar system (Vot.ar). In case electronic records are available from the vote casting process or by scanning all VV-PATs at once in the tallying process, poll workers perform some random or risk-limiting audits by using the VV-

[10] Note that to ensure that data are irrevocably deleted also the ballot preparation device should consist only of volatile memory.

[11] In case any discrepancy is detected between the human-readable and machine-readable part in the tallying process, only the human-readable part is decisive from a legal perspective.

PATs, refer to (Stark, 2010), (Lindeman et. al, 2012a), and (Lindeman et. al, 2012b), in order to ensure the correctness of the election result with a high probability.

We analysed this category of electronic voting systems according to the technical requirements and their corresponding scales (scores), defined in section 2. The first approach – plaintext VV-PATs – is represented by the *Ballot Marking Device (Board Elections City of New York)*. The corresponding scores are:

- Cast-as-intended (-1)
- Stored-as-cast (0)
- Tallied-as-stored (1)
- Vote secrecy (-1)

This leads to a total *score of -1*. This approach enables voters to verify if their vote has been cast-as-intended, recorded-as-cast and tallied-as-stored. Furthermore, it enables a fully automatic tallying of the cast votes (plaintext VV-PATs). Note that similar to the DREs with encrypted VV-PATs, poll workers can only perform random audits. In order to violate vote secrecy at least two entities have to collaborate, for instance one entity that manipulates the BPD such that it stores the sequential order of cast votes, and a second entity (e.g. poll worker) that records the name and order of voters casting a vote.

The second approach – plaintext VV-PATs including unique RFIDs – is represented by the *Vot.ar System* (Vot.ar). The corresponding scores are:

- Cast-as-intended (-1)
- Stored-as-cast (0)
- Tallied-as-stored (3)
- Vote secrecy (-2)

This leads to a total *score of 0*. The different scoring compared to the first approach can be explained in the following way: The use of RFIDs enable a semi-automatic tallying of the cast votes (VV-PATs). However, the RFID chips make each ballot unique. Thus, a single entity (e.g. the poll workers) that records the ballot ID and the name of the voter casting a vote with that ballot can violate vote secrecy.

The third category – plaintext VV-PATs including QR-Codes – is represented by *EasyVote* (Volkamer et. al, 2011). The corresponding scores are:

- Cast-as-intended (-1)
- Stored-as-cast (0)
- Tallied-as-stored (3)
- Vote secrecy (-1)

This leads to a total *score of 1*. The QR-Codes, similar to the RFID chips, enable a semi-automatic tallying of the cast votes (VV-PATs). Furthermore, similar to the first approach at least two entities have to collaborate, in order to violate vote secrecy.

The fourth category – VV-PATs including the selections in plaintext and encrypted – is represented by the following systems, namely *STAR-Vote* (Bell et. al, 2013), *Wombat* (Ben-Nun et. al, 2012) and the *New Belgian E-voting System* (Vegas, 2012). The corresponding scores are:

- Cast-as-intended (-1)
- Stored-as-cast (1)
- Tallied-as-stored (1)

- Vote secrecy (-1)

This leads to a total *score of 0*. In contrast to all other approaches, this approach provides voters with VV-PATs that enable them to ensure stored-as-cast, on the one hand similar to traditional paper-based system, and on the other hand independent from time and place. Furthermore, tallied-as-stored and vote secrecy are similar to the first approach.

Conclusion and Future Work

The results of our analysis are summarised in Table 1. Based on these results, *EasyVote* (Volkamer et. al, 2011) has the highest score compared to all other approaches considered in this work. Thus, with respect to both legal criteria, namely *public nature of elections* and *secret elections*, EasyVote seems to be most promising and adequate for elections with complex voting rules and ballots. However, the minimal difference between the different *Ballot Preparation Electronic Voting Systems* considered in this work indicate that all systems can be adapted and/or extended with respect to elections with complex voting rules and ballots. Hence, the results of this work enable authors/developers of past and/or future *Ballot Preparation Electronic Voting Systems* to include the necessary properties for elections with complex voting rules and ballots.

For future work we plan to extend/adapt *EasyVote* by including properties, which have a better score, from other approaches discussed in this work, i.e. our goal is to maximize the total score regarding the defined scales. Furthermore, we plan to analyse *EasyVote* with respect to the remaining constitutional legal criteria, namely equal, direct, free, and universal elections.

Table 1: Analysis of various electronic voting systems regarding verifiability and vote secrecy

	Cast-as-intended	**Stored-as-cast**	**Tallied-as-stored**	**Vote secrecy**	**Total score**
DREs	-4	-2	-4	-1	**-11**
DREs with VV-PATs	-1	0	0	-2	**-3**
DREs with enc. VV-PATs	-3	-1	-3	-1	**-8**
BPD with VV-PATs	-1	0	1	-1	**-1**
BPD with VV-PATs + RFIDs	-1	0	3	-2	**0**
BPD with VV-PATs + QR-Codes	-1	0	3	-1	**1**
BPD with plaintext+encrypted VV-PATs	-1	1	1	-1	**0**

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About the Authors

Jurlind Budurushi

Jurlind Budurushi is a PhD student of the research group "SecUSo - Security, Usability and Society" in the department of computer science at the Technical University Darmstadt and research institute "CASED - Center for Advanced Security Research Darmstadt".

Melanie Volkamer

Melanie Volkamer is head of the research group "SecUSo - Security, Usability and Society" in the department of computer science at the Technical University Darmstadt and research institute "CASED - Center for Advanced Security Research Darmstadt".

Bottom-Up Movements

Political Participation Frames in a Gay Community

Jakob Svensson

Uppsala University, jakob.svensson@im.uu.se

Abstract: *This paper is based on a research project studying political discussions in the Swedish LGBT (Lesbian, Gay, Bi-, Transsexual) community Qruiser. The aim is to understand what motivated participation in Qruiser political forum threads. The research is nethnographic through online interviews, participant observations in, and content analyses of, political discussions threads during November 2012. By using framing theory as an analytical tool, the paper seeks to answer which frames attracted and mobilized participation and how this was done. The paper finds that particularly frames of the left vs the right and the xenophobic vs the political correct motivated participation together with a general game frame.*

Keywords: *Framing, Netnography, Online Community, Political Participation, Sexual Identity*

Introduction

At least 100 million participate regularly on online communities today (Kozinets 2011: 10). Homosexuals were particularly quick to embrace the Internet and its affordance of time-space compression (Gross, 2007). Queer youth, often feeling geographically and emotionally isolated, turned to the Internet as a (somewhat) safe space to explore their sexual identities among supportive and like-minded others (ibid.). From a radical democratic perspective (Mouffe, 2005) such exploration of non-normative identities can be understood as political since it challenges dominant discourses about what a respectful life entails. Within the field of political communication, arguments have also been made that it would be wrong to narrowly focus on realms of institutionalized politics to understand political participation (Carpentier 2011: 39-40; Wright, 2012). In this paper I therefore approach LGBT online communities as political and as important if aiming at understanding political participation.

It is known that participation changes when it migrates to the Internet because of the possibility of anonymity, automatic archiving and easy access to other communities (Kozinets, 2011: 100). It has been claimed that such characteristics democratize participation, making participation in the form of expression of opinions and political mobilization more accessible for a wider range of the population (see for example Shirky, 2009). Others have questioned whether the Internet affords new spaces for political participation, reinforces democratic values, empowers citizen or merely underlines existing power relations (Morozov, 2011). However, these debates have not yet been extended to include participation in online affinity communities (Wojcieszak & Mutz, 2009: 41; Wright, 2012: 6). At the same time there seems to be a general lack of engagement in new media studies with non-normative identities (Karl, 2007: 47). The argument here is that communicative exploration of sexual identity online very well may constitute the subjective requirement to participate politically, not the least since affective communication helps us to think reflexively

about our life situations and how to navigate society (McGuigan, 2005). It is thus relevant to study online affinity communities as sites of political participation.

Hence, we know that a) there is a need to study realms of non-institutional politics b) that queer communities were early to adopt and use the internet, and c) that participation changes when moving to the online realm. This directs me to the object of this paper; the Swedish LGBT community *Qruiser* which is the biggest in the Nordic region and part of the larger affinity portal *QX* (Queer Extra). Qruiser is primarily used for flirting, dating, finding friends and sexual partners. This is underlined by the name Qruiser, referring to cruising - an activity undertaken by homosexual men (mostly in the pre-digital era and before general acceptance of homosexuality in the West) strolling around in outdoor areas known among gay men as a space to find other gay men (often parks) checking each other out, looking for – as well as having – casual sex.

Qruiser does not only offer an online space for cruising. There are also possibilities for political discussions in so-called forums and clubs. This paper is based in a research project studying political discussions in a Qruiser forum during November 2012. The research is nethnographic through online interviews, participant observations in, and content analyses of, political discussions. The particular focus of this research project has been to understand what kinds of participation is taking place and what motivates people to engage in political discussion threads. In a previous paper (Svensson, 2013), I concluded that political participation on Qruiser was geared towards conflict and dissent rather than towards deliberation, opinion formation and consensus. The participation style was rude and antagonistic and Qruiser was conceived of as a place freed from political correctness, providing an outlet for political frustration. This paper intends to go further into these findings with a particular aim to understand what motivated participation in political discussions. In this paper I concentrate on the forum discussions.

Analytical Framework

It has been a common practice among scholars to distinguish between narrow/minimalist and wide/maximalist definitions of participation (Carpentier, 2011). Narrow definitions sometimes include nothing more than casting a vote every fourth year, whereas wide definitions include all kinds of opinion expressions – from blogging to civil disobedience. Verba & Nie (1972: 2) famously delineated participation as attempts to influence public decision-makers. But participation also has come to refer to activities with the purpose of influencing society at large and not only decision-makers.

I have used some of these discussions to differentiate between political participation emanating from within representative democratic institutions and practices (parliamentary participation), participation emanating from outside the Parliament but with an outspoken aim to influence public decision-makers (activist participation), and participation emanating from a more popular culture sphere, not primarily set up for political purposes (cultural participation, see Svensson, 2011). Following this differentiation, the study of Qruiser concerns cultural participation. Non-institutionalized online arenas not primarily directed towards decision-makers (such as fan communities, net communities and affinity portals) may become spaces for political participation (Hermes, 2005). And as hinted to in the introduction, if aiming at understanding political participation, it would be wrong to exclusively focus on realms of institutionalized politics (Carpentier, 2011: 39-40; Dahlgren & Alvares, 2013: 51). Similarly, Wright (2012) – building on

Oldenburg's concept of the third place – argues for a notion of "third space" as non-political online spaces where political talk emerges.

When political participation occurs on sites of popular culture, it has often been understood as communications that take a political turn without initially intended to (Wojcieszek & Mutz, 2009). Examples are Graham's (2009) study of discussions on docusoap fan-pages and Svensson's (2010) study of discussions on ice-hockey fan-pages. But cultural participation also concerns specific spaces on larger affinity portals to which politically minded and interested members are directed. Andersson (2013) studied explicitly political discussions on an online youth community primarily based on music preferences and clothing style. He found that users were exposed to very opposing political views, something that socialized them into what he discusses as politically confrontational team players (see chapter 9). Another example is Campbell's (2007) study of comments to news stories on the affinity portal Gay.com. Similar to Andersson, he found vibrant and politically charged debates from a diversity of political positions. It thus seems that confrontation to diverse political opinions is more likely on non-outspokenly political communities and affinity portals. The study of Qruiser has similarities with Campbell in that we both focus on gay sites. However, this study focuses on discussion forums in a community instead of news stories in general on the larger affinity portal. The study also has similarities with Anderson in that my object of study – a political forum on Qruiser – are explicitly political but only one tiny part of a larger affinity community not primarily geared towards politics.

Focusing on participation on a Qruiser forum, it becomes apparent that I depart from an understanding of communication as participation. We know that communication is action from the heydays of discourse and speech act theory. The *polis* – as Arendt (1998/1958: 194, 198) pointed out already in the 50s – is not the city-state in its physical location, but the activity of people acting and speaking together. In this way Arendt theorizes action and communication together – as two sides of the same coin – and relates them to the sphere of the political. That communication is participation is perhaps more true than ever in todays connected societies, permeated by online social networking in which agency is complexly interwoven with the communication platforms we utilize and the communication taking place on them (Urry, 2007: 176). Indeed, as Carpentier (2011: 67) underlines, discussions on a net community deals with opportunities for mediated participation in a (semi)public debate as well as with self-representation in one of the spaces that characterize the social.

This paper attends to processes of meaning making on an online political forum. In connected societies, digital technologies and related practices become increasingly fused with existing and new systems of meaning, contributing to the emergence of a net culture (Kozinets, 2011: 23). By assuming an anthropological approach to culture, participation and community become dialectically intertwined – also with processes of identity negotiation/maintenance and meaning making. This connects back to the general aim of this paper to understand what motivated participation in political discussion threads on Qruiser. Through different processes of identification the individual become interlinked/interlinks him/herself with the community. This leads me to the theoretical tool for analyzing this; participation frames.

Building on Goffman, frames are generally referred to when studying meaning making and how participants interpret their participation (see Carpentier, 2011: 72). Discussing frames in relation to news journalism Entman (1993: 52) argues that frames select some aspects of a perceived reality and make them more salient in a communicating text. Media is important, together with personal

experience and interaction with peers, for setting the frames of reference for readers, viewers or users – establishing a version of reality we then build our worldviews on (Scheufele, 1999: 105). Apart from news journalism, it is mostly in theories of collective action that ideas of (collective action) frames have been developed and analyzed. Frame analysis has provided a window on how collective actors construct interpretive schema that underlies mobilization and sustain action (Steinberg, 1998: 845). Frames are also situationally sensitive as they describe how communication, negotiation, and production of meaning are *framed* by a certain environment (Steinberg, 1998: 846). Benford & Snow (2000: 613) in turn underline framing as a signifying work in which participants engage actively to produce and maintain meaning. This highlights a duality in frame analysis focusing both on the environment (such as (mass) media texts) and on (mostly) individual meaning making practices. Scheufele (1999: 106) distinguishes between individual and media frames. Individual frames refer to information processing schemata and media frames to attributes to news, an organizing idea that provides meaning to an unfolding strip of events. Hence, frames do both condense the world out there (media frames) as well as signify it (individual frames) (Steinberg, 1998: 845). By criticizing individual frames, Steinberg (1998: 852) argues against Scheufele's media-individual frame dichotomy. He underlines frames as meaning making structures, as something that take place between us and that does not reside within us. Therefore we should not forget the environment, the discursive fields within which framing tales place. Largely agreeing with Steinberg, I believe frames are helpful as an analytical tool when aiming at understanding meaning making, motivation and participation. Frames help to render events and occurrences meaningful, to organize experience (and communication) and thus also to guide participation by simplifying and condensing the world in ways that mobilize, motivate and make participation meaningful (Benford & Snow, 2000: 614). In this way frames and participation are dialectically intertwined in giving meaning to events as well as to one self and to others through signifying practices of interpretation.

Keeping in mind that frames are dialogic, dynamic and unstable, in this paper I am particularly interested in how frames and participation intersect in an online political forum. Hence, I am looking for to analyze something that could be labeled as participation frames, i.e. frames that individuals use and refer to when participating in political discussion threads on Qruiser. The first question the paper then wishes to pose is which frames attracted (mobilized and maintained) participation. To discern such frames I have to look for common threads in the empirical material (see Ryan et al., 2011: 177). The second question deals with how these frames attracted participation (realizing that these two questions are hard to separate and have to be dealt with in tandem). To attend to this I will have to pay attention to the role of the online environment on Qruiser, the language and terminology used, principles, norms and values adhered to as well as what practices participants were cherishing. To conduct such analysis I have studied online postings, i.e. digitally mediated speech utterances as well as interviewed participants and observed their posting behavior and participated in it, which I will attend to next.

Method

Given the theoretical focus on participation and meaning making, condensed to the analytical tool participation frames, together with the aim to understand these – I have chosen a nethnographic method. Nethnography is a form of ethnography adapted to the characteristics of online communities (Kozinets, 2011: 9). Three main differences between ethno- and nethnography are

how a researcher 1) enter into the culture, 2) how to collect data and 3) ethical considerations a researcher has to make. The first difference is straightforward; you enter into the culture online, through the Internet and the communication platform(s) the community use. The second difference - to collect data - is possible through a combination of a wide array of methods (Kozinets, 2011: 65). In this research project I have collected material through online interviews, participant observations in, and content analyses of, political discussions threads. I will attend to these next.

The study of political discussions on Qruiser primarily took place during November 2012. November 1st the community had 109153 active members. According to member statistics 72 percent of these defined themselves as male and 72 percent defined themselves as gay, lesbian or bisexual. The majority of the members are between 20 and 40 years old with an average age of 33. 72 percent of the members are based in Sweden and only 17 percent defined themselves as in a relationship, underlining Qruiser's main function – for gays to find a date.

For this paper I have focused on political discussion threads in the sub-forum Politics, Society & the World (my translation: Politik, Samhälle & Världen). Discussion forums are particularly suitable for nethnographic research according to Kozinets (2011: 120-121). I conducted participant observations in all discussion threads started from November 1st to 20th. I continued downloading postings in these threads downloaded until November 25th. This gave me a corpus of 76 different threads, started by 31 different nicknames, containing in total 2853 postings. Kozinets (2011: 139) argues that about 1000 pages double spaced with postings is a suitable amount of data from discussion forums. From the 76 discussion threads on Qruiser November 2012 I have about 1700 pages of postings, all of which have been analyzed for this paper. After having published a conference paper on this material (see Svensson, 2013), I linked to this paper in a discussion thread (June 2013) in order to share my results with the community and participants. This discussion thread sparked a mild debate that has also been included in this study.

To this material, all thread starters and recurrent posters from November 2012 were invited to participate in online interviews. Not everyone agreed to participate. To date, I have conducted interviews on the platform with 36 different nicknames. The interviews have been different in length (and some are still continuing). In total I have around 250 pages of interview material. This material includes interviews from a pre-study April 2012

I have also conducted reflective field diary from November 1st – documenting observations, feelings, subtexts, and experiences as I participated in discussions as well as during the analysis phase. Such reflective field notations help decipher rationales and meanings behind cultural acts, and hence they have been beneficial for my analysis (Kozinets, 2011: 15). According to Kozinets (2011: 138-139), there are thus three types of data to be collected in nethnographic research, all of which have been collected in this study; 1) archive data (easily selected through copy and paste on these forums) 2) elicited data (gathered in interaction with participants through online interviews) and 3) field notations (noted in the reflexive diary).

The third difference from offline ethnography concerned ethical issues. Qruiser is neither a public nor a private forum. You need to become a member to access the site, a process that only takes two minutes. Hence, it is easier to access Qruiser than to subscribe to a newspaper. Member profile pictures are also displayed for all visitors to the login page (see https://www.qruiser.com), even to those not yet having signed up or become members. Despite this easy access and display of members profile pictures publicly; it is doubtful that participants expect that their participation

will appear in a research project (Kozinets, 2011: 193). I have therefore been fully open with my presence and my research aims on Qruiser, not the least on my profile page (as advised by Kozinets, 2011: 201). November 4th I also changed my nickname to *forskaren* (the researcher) and as stated earlier I have also published research results on the forum. In March I contacted the administrators who gave me permission to conduct the research. I have also attempted to get permission from the publisher but without any success (despite several attempts). However, I have checked the terms of use and the different policies on Qruiser and made sure that I have not violated any one of these conducting the research. I have also tried to interview all thread starters of the threads included in the study. Even if not all of them wanted participate in interviews, all of the ones that answered to my request gave me permission to study the threads they started (as advised by Kozinets, 2011: 203). Furthermore, in this paper I will not use any personal information about any participant (such as nickname or age). No postings will be cited; only interview excerpts from participants having given me their permission to do so will be displayed here. This does not entail complete anonymity, but something scholars have labeled "middle masking" (Kozinets, 2011: 211). Participants have been given a high amount of confidentiality and data have been stored in way that only I can access. Furthermore, since this is data collected in forums in which some participants link to their own blogs - with their given name and all kinds of personal information fully accessible – and since these are forums in which people confront each other for the opinions they express, I argue that the participants themselves did not act as if the communication was private (for a discussion on this see Andersson, 2013: 162-164). In conclusion then, the risk of damage to the participants is minimal, the participants autonomy and integrity is secured, I am using a relevant method for data gathering and the contribution of this research is substantial (I believe). Following Elgesem (2002) this means that this study is justified from an ethical standpoint.

Results

The forum attracted a lot of heated discussions between clear-cut and confident opponents with strong pre-established convictions. A previous study concluded that participation on this Qruiser forum was geared towards conflict and dissent between antagonists actively seeking to misinterpret each other's postings in order to attack and use unflattering labels on each other (Svensson, 2013). The question thus arises, what frames motivated participation in such heated and antagonistic discussion threads? Here I could clearly outline two participation frames, the left vs. the right and the xenophobes vs. the cultural relativists.

Studying the postings in the 76 threads collected in the forum, the division between the left and the right stands out. In the discussions threads, right-wing posters talked about "the left riffraff's confused world views" or how "the socialist Sweden has decide it is ugly to work, to earn your own living" (all quotes translated from Swedish by author). The left-wing posters showed similar (lack of) eloquence talking about the "bourgeois pack" and for example female ministers as "bourgeois bitches" and market liberals as "authoritarian bullies". That this frame triggered participation was also evident in the interview material. When asked why participating in the forum discussions a majority of the interviewees at least once in the interview made use of this frame to explain, and thus provide their participation with meaning. Statements such as "the left has done so much harm", "concerning the left, they have nothing to offer" and "we have to combat the right-wing opinions on the forum" were common.

"It is almost exclusively socialists of various colors that participate in the debates here so a different perspective - a voice that believes in freedom - is needed"

Already in the previous article I observed that the positioning of the opponent was to a surprisingly large extent done using a frame of the left vs. the right (Svensson, 2013). I have come across this frame in other studies (see Svensson et al., 2014), but was surprised that this frame remains hegemonic – sorting all kinds of conflicts into this frame. It functioned as a master frame for attracting participation, understanding posting practices, yourself and others as participants in these threads. The right-left scale is thus far from obsolete in the contemporary political landscape. Nonetheless it is simplistic and its dominance does hide other ways of constructing the political.

The other main frame that triggered participation that stands out in the material is the exchange between xenophobes (or unafraid truth-tellers according to themselves) and the defenders of multiculturalism (or the politically correct mafia/ cultural relativists according to their opponents). There are numerous examples referred to in the 2853 postings collected of for example municipalities having to "shut down elderly care units" at the same time as they received refugees who "drained the welfare system without contributing to it". In the interviews this frame was prominent with statements such as "I engage in discussions that concerns Sweden, its duration as a nation and as a home for the Swedish people and Swedish culture contra multiculturalists". On the other side their opponents argued that these posters were wrong as "there is no such thing as free immigration" and that "not even refugees can assume to have a safe haven in Sweden". Some of these posters did not shy away from naming their opponents xenophobes, fascists or even on some few occasions, Nazis, as in the posting below.

"Faceless racists/Nazis are everywhere online, but on an LGBT site? It is an insult to us and to those who fought for our rights"

In the interviews opponents of multiculturalism talked about what they considered a confusion of nationalism for racism. "I stand for being a nationalist, however my opponents love to label me racist, even though these are two different things". At the same time some of these participants welcomed a forum climate "where the political correctness has decreased" and "spread of different opinions are more visible", here anti-immigration opinions. It was thus obvious that this frame motivated participation and made it meaningful for participants.

Not surprisingly, one side here considered the religion of Islam as particularly evil and attacked Muslims as unwanted and unfit for Swedish society. You could for example observe statements in the postings like this one:

"Many Muslims are so shielded from the rest of the world that they are still for the most part believe in, and live by, Muslim traditions, as they did during the time of the prophet Mohammed. Their modernization process has not even begun."

The idea of cultural relativism was an important part of this frame as arguments frequently were made that Christianity (Judaism or any other religion or culture for that matter) and Islam were measured by different yardsticks. For example, some believed that there was a general silencing of women abuse and homophobia in Islam by a politically correct elite who did not dare to criticize Islam, afraid of being labeled islamophobists. "You cannot criticize mosques for spreading hatred against Jews, Christians and homosexuals without being attacked for spreading hatred against Muslims!". There were also frequent references to what was called "Islamophobia-phobia" both in the postings and in the interviews.

"The subordination of women has worsened recently by cultural relativism and the sprawl of Islamophobia-phobia, the belief that all cultures are equally good, and that we should not criticize Islam as it would be prejudiced and racist."

Sometimes the left vs. the right and the xenophobe vs. the cultural relativist frames intersected in interesting ways. It was for example considered that xenophobes were right-wing extremists and that people on the left defended the religion of Islam – that they considered "all Muslims as an oppressed working class" as one interviewed participant phrased it. Or as in the posting below;

"I am also amazed that some LGBT people, particularly those with left-wing views, excuse Islamic homophobia, or believe it milder than other homophobia. They are cultural relativists, and therefore use a different yardstick when it comes to Islam. Repression they sharply condemn outside Islam becomes acceptable for them when it is Muslims who stands for it."

Furthermore these postings and interview excerpts also reveal how gay rights were used as an argument to justify ones position in relation to the two frames. On the left, posters accused opponents of lacking "self-respect" since they, as ascribed Sweden Democrats (Swedish xenophobic populist party on the extreme right), supported family conservative ideas. On the other side, LGTBs on the left were accused of having "insufficient self-respect" since they "defended or played down Muslim homophobia". And sometimes the supposed left-wing posters and Sweden Democrats were lumped together as in this example "the people on the left here who cringe to Muslim congregations are not one bit better than sympathizers of the Sweden Democrats". Qruiser being a LGTB community thus clearly influenced how the frames were used by the common use of gay rights in both ends of these two frames.

Now we have entered into the question of how these frames mobilized and maintained participation. Walther (1997) argues that if you expect future interaction in a net community, users will interact in a more friendly and cooperatively manner and the tone will be generally more positive than if the users think their interaction will be limited. Following Walther participants in the Qruiser forum did thus not expect future interaction. In my observations it was obvious that the participants did not read each other's postings carefully, their interchange was rude, fast, full of spelling mistakes, indicating their quick composition in the heat of the fight, not seldom using caricatures to portray the opponent in a bad light by associating opinions from the extreme versions of these positions to the opponent. If you were perceived of as belonging to the left you had to answer for North Korean politics and like-wise, if you were perceived of as right-wing you had to answer to everything from American foreign policy to decisions from the Swedish ruling conservative alliance. According to one interview, this antagonist atmosphere led to parsing and preconceived opinions, which in turn led participants to give in to the general antagonistic tone of the threads and adopt a more ferocious appearance.

This leads me what could be labeled the truth frame, which was clearly observable in the postings in the forum threads. "I participate when I find that there is too much injustice, bullying and ignorance – to correct the worldview in the forum" as one interviewee phrased it. There was a tendency among the participants to preach what they were convinced of was the truth, and if you did not get the truth, you were basically ignorant. The examples below are from three different interviews.

"The thread had about 90% inaccurate information, so I started another thread to correct these lies"

"I'm damn tired of ignorance in general. And I become even more tired as a gay man when Qruiser allows faceless trolls to spew their racism and coarse lies"

"You learn fairly quickly that there is no point participating in their (the extreme right) threads, you become blocked if you disclose anything for them objectionable, facts for example"

In the interviews participants talked about an urge to let people know the truth – to share this truth, that they had access to.

"I don't know why the Sweden Democrats trigger the leftists hateful sentiments here, especially since these are founded in ignorance. Someone has to tell the truth."

"I stand up for knowledge and justice. That is correct. But also to educate and show facts rather than rumors"

This was not about opinion formation. Participants had formed their opinions already before participating. Thus the participation was rather motivated by an urge to preach your conviction to others. Internet, through its practice of linking, seems to afford this. Using links was a way to verify standpoints and convictions (source criticism aside). By justifying a post with a link in a sense seemed to confirm the standpoint expressed, a kind if verification that indeed the claim in the post was true, and hence that the poster had access to the truth (see also Carpentier, 2014).

While the participants believed to have privileged access to truth, they were also mostly aware of that they could not convince their opponents. In the interview except below I asked one participant about his debate with an opponent, if he believed he could get him to change his mind:

"You don't win over XX in this way, it is about to get more people to discover the major shortcomings in his arguments"

This non belief in the ability to change the opponents mind, is further elaborated in the interview below

"I will never get the opponent to change his opinion, and that's not the purpose either. The debate is to influence those who are uncertain and that just follow the debate."

This excerpt hints to one motivation to participate in these forum threads. Participants did not expect to convince or to reason with their opponents, but by engaging in debate with them they were actually addressing someone else, an imagined audience, an audience believed much easier to convince than debate opponents.

"To answer your question for who I want to discover the shortcomings of XXs argumentation, those who still can be influenced. They are not any specific persons. But I want to show alternatives for those undecided"

A conception of an imagined audience as consisting of individuals who will be convinced by their arguments further underlines the participation in the forum threads as a form fantasy (see Carpentier, 2014). "The ones who read without commenting I believe are the ones who try to form an opinion, I respect these people" as one interviewee phrased it. Therefore some participants told me they referred opponents – sending them personal messages – to the (semi)publicly forum for (semi)public debate. My conclusion is that the participants wanted the debate to be visible for this imagined audience. Here I could observe a rule/principle having formed on the forum; you do not participate if you do not have a solid opinion already formed, then you are expected to lurk. This further underlines the importance of the imagined audience for these participants.

This leads me to what I found to be a key rationale, motivation for the participation on the forum, a game/play rationale. In almost all interviews this was referred to in one way or another, that "to discuss is a way to compete, a hobby" or that "anything that amuses me is a good thing". The most common way interviewees explained their participation in the forum threads was to refer it as a pastime. And here it seems that participants preferred passing time fighting between clear cut opponents than to reason with undecided, that this was more fun/ liberating, not the least because of its lack of political correctness as highlighted in the excepts below:

"There is no-one that censors you here, there is no wait before your post gets published, you also generally get an immediate response, which is usually pretty fun"

"On this type of site, people unleash in a completely different way with there thoughts and opinions, it's liberating"

"I participate mainly when I am bored, etc., a pastime, but also because it's fun to tease all the "left" people here on (when you're bored)."

To win was secondary, or not even thought about. It was more about keeping the game ongoing. This suggests that the metaphor of play, instead of game, to better illustrate the participation in the forum threads. It therefore seemed that participants even rejoiced in attacking each other and being attacked in turn. Participants had their favorite opponents and could express joy when they entered into the thread as in this posting: "XX has awaken from his coma :) bring on the leftist propaganda". In the interviews, participants talked about how they appreciated also negative reactions, that negative reactions was a sign that they had been successful in their provocations:

"I see strong negative reactions as a sign that the one who has expressed such reactions has been emotionally affected (upset) over what I have written. And as an ideological opponent (or something like that), I wish him all evil, and thus become satisfied thinking of their political agitation."

From a play perspective rudeness/provocation is part of the rules, to make it interesting and keep the playing ongoing. In this sense to be attacked at least was to be acknowledged, as a player, a much better fate than being ignored.

"I often say that if I have not provoked anyone I have not affected anything. If you don't get any comments it seemed nobody bothered"

"I will probably not write more in debate forums here. It's not worth the time I spend, to talk if nobody listens"

This was about skillfully using the participation frames, caricaturing your opponents in light of these frames in order to trigger the play and make the pastime, here debate, ongoing. Participants in the forum did not expect to cooperate, rather to entertain themselves. It seemed that the medium afforded this because of its directness, being fast, anonymous as well as the platform, being conceived of as liberated from politically correctness. This is participation as play and this explains the tendency to attack each other rather than to reason.

Conclusion

I set out to study political participation on Qruiser in order to broadening the understanding of political participation in contemporary western, liberal and connected societies. The particular aim was to understand what motivated participation on Qruiser political forums through the analytical tool of participation frames. Attending to political discussion threads in the Forum: *Politics Society*

and the World I could discern three different frames, the left vs. right, the xenophobes vs politically correct and a general game frame. This study show how these frames were dialectically intertwined in the political participation in the forum, giving meaning to discussion, one self and others through signifying practices of interpretation.

Practices of identity negotiation and maintenance were conducted within these participation frames and thus they provided the participants a subjective anchoring point for their participation as well as a temperature at the society in which they lived (here Sweden). While being an outlet for passions and "refreshingly freed from politically correctness", these frames were also highly limiting as they carried with them ideological dimensions and preconceived ways of constructing the political. It is thus clear that using these frames was homogenizing, reducing complexities and nuances (see also Carpentier, 2014).

So what does the political participation on Qruiser say about our society and our co-existence in it? It hints at participation as confrontation rather than opinion formation and the play as an increasing important form for conceiving of democracy. If you are deliberative democrat this might be more worrying than if adhering radical democracy. However, these participants were generally politically interested individuals whose overall participation ranged from letting off steam in Qruiser forums threads to more deliberative style participation in other settings. Hence, we cannot judge the sophistication of their overall participatory practices by only attending to their participation on Qruiser.

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About the Author

Jakob Svensson

Dr. Jakob Svensson is associate professor in Media and Commcunciation Studies at Uppsala University, Sweden where he directs the Master Program in Digital Media and Society. His two main research deals with a) political participation in the digital age, and b) mobile communication for social change.

Social and Mobile Media for Public Administration

Improving Responsiveness of Public Services in Housing by Monitoring Social Media Impact

Bojan Cestnik*, Alenka Kern**

*Temida d.o.o. and Jozef Stefan Institute, Dunajska cesta 51, 1000 Ljubljana, bojan.cestnik@temida.si
**The Housing Fund of The Republic of Slovenia, Poljanska cesta 31, 1000 Ljubljana, alenka.kern@ssrs.si

Abstract: *Improving responsiveness of public administration and their services has been recognized by several researchers and analysts as one of the government's high priority tasks. In this paper we present an approach to monitoring social media impact that increases organization's awareness about their reputation and sentiment in the social media. The proposed approach is based on semi-automatic sentiment and reputation analysis of the statements retrieved from the social media repositories. The proposed approach has been used to analyse a forum created and maintained by engaged citizens about the situation of a newly constructed blocks of flats financed by the public Fund in the urban area. The citizens contributing to the forum share their mutual interest in buying a flat in the constructed blocks of flats. Their primary concern is to obtain and monitor information about the quality of the construction work and materials used. We argue that the adoption of the proposed approach improves responsiveness of public services in housing. Moreover, by monitoring the posts in the forum the Fund actually crowd-sourced the controlling functions by partially delegating the responsibility for quality control to the concerned citizens.*

Keywords: *Social media, Public services, Responsiveness, Housing*

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Introduction

Besides keeping track of their incoming and outgoing business documents, a common practice in both private and public organizations is to follow and respond to relevant articles from the press in order to maintain their reputation. Typically, this is a job of public relations (PR) department and can truly mean the difference between life and death for an organization, or the difference between profitability and failure (Shannon et al., 2012).

Since the appearance of social media on the internet (which include web applications like email, instant messaging, forums, blogs, social network services, several kinds of wikis and other), organizations strive to incorporate them as a set of new communication practices to interact with various stakeholders (Panagiotopoulos et al., 2013). The field of social computing gained considerable momentum in the past years (Chai et al., 2010). Social network services like Facebook

and Twitter embrace more and more users from various groups. For example, Facebook has more than 1.19 billion active users from all over the world; an average user has 130 friends (Facebook statistics, 2013). Their statistics also show that about 700 million users log on to Facebook at any given day. More than 350 million active users currently access Facebook through their mobile devices. Approximately 80% of our daily active users are outside the U.S. and Canada. Average user is connected to 80 community pages, groups and events (Facebook statistics, 2013). Also, Twitter has grown to more than 600 million members (Twitter statistics, 2013). According to these numbers the spread of social networks seems practically unstoppable; moreover, it is theoretically possible that everyone has a direct communication channel with the entire globe.

The rapid growth of virtual communities formed by people with shared interests – regardless of their geographical, religious or family background, goes hand in hand with the decline of traditional institutions like church and family (Achermann, 2012). Although it might seem that the social networks are mostly used to fulfil the basic need for gossip and structuring private contacts, this trend is boosted by individual's desire to have better connections and thus rapidly rise in social status, and by business in the hope of gaining potential profits through the commercial use of virtual profiles.

The vast amount of textual data that pours from social media spawned the need to effectively use techniques to elicit sentiment prevalence from chunks of text. Even though rational arguments constitute foundations of science, economics and law, emotions put flavour to our everyday lives in politics and business. Explanatory models based on reason alone often fail to account for the complexity of reality. An attempt to combine rational models and emotional explanatory approach resulted in a new method called sentiment analysis (Liu, 2010).

Striving for clarity in communicating decisions and actions is a common sense predisposition that is often taken for granted. However, the complexity of decisions imposed by the modern era may have negative influence on the clarity and comprehension of the decision documents. The results of diminished clarity are usually unpredictable and typically cause considerable damage and disruptions to at least one of the included party. On the other hand, documents which are clear to understand may lead to a better and less stressful way of communicating with broader public. As a result, the costs of the whole process can be significantly lowered and the process made more effective.

In spite of the popularity of the social computing field organizations are more or less left on their own when adopting the strategy to cope with it. There are approaches offered by commercial companies (e.g. Seiple, 2013) as well as several published studies (e.g. Panagiotopoulos et al., 2013) that differ in the level of maturity and can serve as a solid starting point. However, there is typically a gap between what the solutions available on the market offer and what a particular organization wants. So, in this paper we describe a concrete approach that is adopted by and regularly used in a public housing organization to monitor and analyse social media events. The concrete goal was to propose and conduct a process supported by computerised tools that help public officers detect sentiment and proactively respond to citizens' suggestions, initiatives or appeals. The assumption is that by actively monitoring social media impact, public organisations could improve the responsiveness of the services offered to general public.

The paper is structured as follows. In the next section we present a typical concrete process workflow that includes semi-automatic sentiment and reputation analysis of the statements retrieved from the social media repositories. The approach is evaluated on a forum created and

maintained by engaged citizens about the situation of a newly constructed blocks of flats financed by the public Fund in the urban area. In the next section we present the results of analysis and demonstrate how the adoption of the proposed approach improves responsiveness of public services in housing. The paper is concluded by summarizing the most important findings.

Materials and Methods

During the ordinary conduct of work a typical public institution dedicates substantial amount of resources to maintaining public relations ((Shannon et al., 2012). Organizations under severe media attention typically outsource their PR function to increase effectiveness and reduce the cost (Lietz, 2007). Still, a lot of work related to specific knowledge and contents has to be carried out by the internal employees; they are held accountable and maintain responsibility for the accomplished work.

Figure 1 gives a schematic illustration of a typical approach to monitor and analyse social media events. The approach can be regularly used to help public officers detect sentiment and proactively respond to citizens' suggestions, initiatives or appeals. We assume that by actively monitoring social media impact, public organisations could improve the responsiveness of the services offered to general public. The approach consists of three sub-processes: (1) Monitor news from press and broadcasting media, (2) Monitor social media posts, and (3) Analyse media and prepare responses.

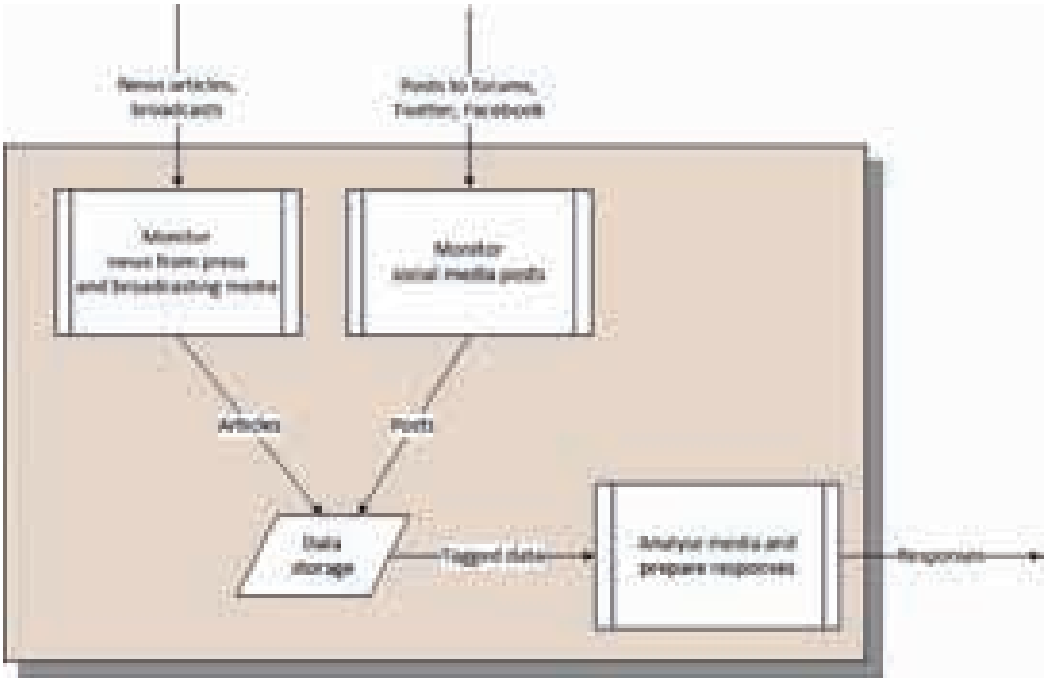

Figure 1: The process of gathering and analysing articles from press and posts from social media

The first sub-process takes as input relevant news articles from newspapers and magazines, as well as broadcasts transcriptions and stores them in the data storage. The word "relevant" is crucial here. Each organization has to provide a concrete list of keywords that are used to determine whether a particular article is important or not. The task is similar to information retrieval queries in search engines. The point here is to assure that only the sufficiently relevant articles are selected and stored in the data storage.

The second sub-process deal with monitoring social media posts. Here, the inclusion of various data sources depends on the organization's needs and requirements. For example, Facebook posts to or by a particular profile can be included. Similarly, tweets from Twitter that contain a specified #hashtag and/or keyword can also be included. In several cases it is beneficial to include posts to specific relevant user forums, since they might all be used in further analysis. The decision which sources to include or exclude is solely in the hands of the target organization; their policy that defines such decisions should be carefully and strictly documented.

The third sub-process includes the analysis of gathered media documents. It is the key step an organization has to perform in order to prepare responses addressed to the public and social media. This step includes a method for agile sentiment analysis that is performed on the documents (Cestnik et al., 2013). The task starts by standard text mining data pre-processing including removing stop words and lemmatization (Feldman et al., 2006). Next, for each text tagged document probabilities of each of the three sentiments (negative, neutral, positive) were computed using Naïve Bayes Classifier for text classification (Liu, 2010).

Sentiment analysis is well established technology applied to solving several real-world problems (Liu, 2010). The technology was, for example, extensively used in EU project FIRST (Smailović et al., 2011) for detecting sentiment changes in articles describing financial texts. They showed that the technology can be reliably used on large sets of financial texts, even though it might exhibit a problematic behaviour on evaluating individual posts. The intricacies arise mostly due to the inability to automatically discern irony and sarcasm in the text. That is the main reason that we introduced another level of sentiment estimation that involves experts from the field. The experts are shown texts and their automatic sentiment evaluations. They are presented by only 20% of text that have been evaluated as extremely positive or negative; after that they are offered a possibility to override the automatic sentiment estimation. All their decisions are stored in the data storage.

Responsiveness of Public Services

As already stated, the approach described in this paper is regularly used in a public housing organization to monitor and analyse social media events. Again, the assumption was that by actively monitoring social media impact, public organisations could improve the responsiveness of the services offered to general public.

In this section we demonstrate the proposed approach on data about communication between the media and a public organization that operates in the housing area and is responsible for financially supporting the national housing programme. The Housing Fund was founded in 1991 as one of the necessities of the Housing Law. In the last two decades the Fund's resources were primarily allocated for loans with financially pleasing terms to citizens and non-profit housing organizations. In addition, the Fund's financial incentive was used to increase the supply of newly constructed flats to the housing real estate market, as well as to encourage housing savings and

granting subventions to young families for their first attempt to consolidate their housing status. Due to the delicate nature of the housing and financial business the Fund's activities received considerable media attention and were often criticized and disputed.

To empirically examine how monitoring social media impact can improve organization's responsiveness, we selected a public forum created and maintained by engaged citizens about the situation of a newly constructed blocks of flats financed by the public Fund in the urban area. Note that the approach presented in the previous section is well suited for another text sources like Twitter and Facebook; however, in this paper we present the results of selecting and comparing forum posts and printed media news.

The citizens contributing to the forum shared their mutual interest in buying a flat in the constructed blocks of flats. Their primary concern was to obtain and monitor information about the quality of the construction work and materials used. There are 296 posts to the forum from March 2010 till October 2013, constitution of textual and graphical materials. Textual information from each post was automatically analysed for its sentiment following the approach described in the previous section. For the sake of this analysis we disregarded the sentiment of posted graphical material (pictures).

The Fund uses its web site as one of the communication channels to the general public. On many occasions such a strategy turned out to be very beneficial, since one piece of information could be actively accessed by majority of the concerned public. In course of action, such a piece of information, originating from the Fund's web site, can be traced also through various popular forums and social networks, where it gets augmented by subjective views of the concerned citizens. One of the positive side-effects of such process resulted also in the diminished pressure for obtaining information directly from the Fund.

Results of our analysis also show that a typical citizen spends much more time on social networks than on dedicated e-government sites. Social networks are designed for fun and most of their users visit them several times a day just to check for new events and messages. On the other hand, browsing e-government sites usually follows the need to solve some kind of a problem, which (hopefully) does not occur very often. So, in identifying "best practices" in our business processes we identified frequent follow-up chains of events when a user first receives a hint about a particular Fund's activity on social networks and forums and then visits the Fund's web page to check for additional information. In such way the Fund's web site can reach much broader circle of concerned citizens.

Citizens that like to be better informed about the Fund's activities post their observations to the distinguished internet forum. For example, the picture in Figure 2 was taken by a forum user on December 2013 and posted to document the status of the construction site. In this forum they follow the progress of the Fund's activities concerning the building of the largest residential complex in the centre of the capital city, where the demand for reasonable-priced affordable housing apartments for far outreaches the supply. The form includes text messages and descriptions as well as graphic material like pictures. The forum contains valuable temporal information, too, since all the posts are dated and can serve to inspect all the phases of building construction from time perspective. Note that the consequences of such now media are beneficial for both citizens and investors, since the latter can that obtain many useful responses, opinions and suggestions for improvements.

When analysing web forum user data we surprisingly discovered that their age structure is not biased towards young populations, as it was often the case in the similar past analyses, but resembles high similarity to the age pyramid obtained from state statistical sources. As a consequence we can assume that there is a tendency that the Internet is about to reach broader more balanced population than in the previous years; this assumption is supported also by the findings about the decreasing number of individuals that have never used the internet by age group reported in the Digital Agenda Scoreboard by the European Commission (2013). We estimate that by posting relevant data on the web we were able to avoid substantial amount of complaints and spare a lot of unnecessary effort. We believe that by introducing such important pieces of information, which are not required but are extremely handy for the customers, the overall usability of web communication channel increases substantially.

Figure 2: Example of a picture taken by a concerned citizen at the construction site and posted to the forum for other users to see the progress.

To navigate through a typical e-government application a user has to be skilled in certain tasks. For example, one of the most intricate tasks related to internet usage is digital signing. If simplified, it loses its designated function. Although the technology behind digital signature is

known for quite a while, its adoption still poses several intricacies for ordinary users. One might argue that utility programs like web browsers simplify its usage to a great extent. This is perfectly true; however, overly friendly use of the browsers might impose additional threats. The lack of understanding of the underlying process and technical details can cause a user to get a false feeling of trust, unaware of the possible misconducts and consequences. Although the technical side of the process is well known and documented, there seems to be a great deal of intricacies involved in using such technology. That is probably the main reason for the decision of several banks to use time token technology instead of digital certificates to ensure more suitable identity management.

In the analysis we took Figure 3 shows average sentiment values for the *forum posts* with respect to time. The average sentiment value of a question is 0.10. Negative sentiment gaps are clearly visible. In a few concrete cases we were able to map some external and internal events that resulted in such negative sentiment oscillations. For example, in period from October 2010 until April 2011 the Fund was under severe bombardment with questions about political orientation of its management, actual business policy orientation and capital expenditure issues. At the same time, the principal construction company went bankrupt and was replaced by another company.

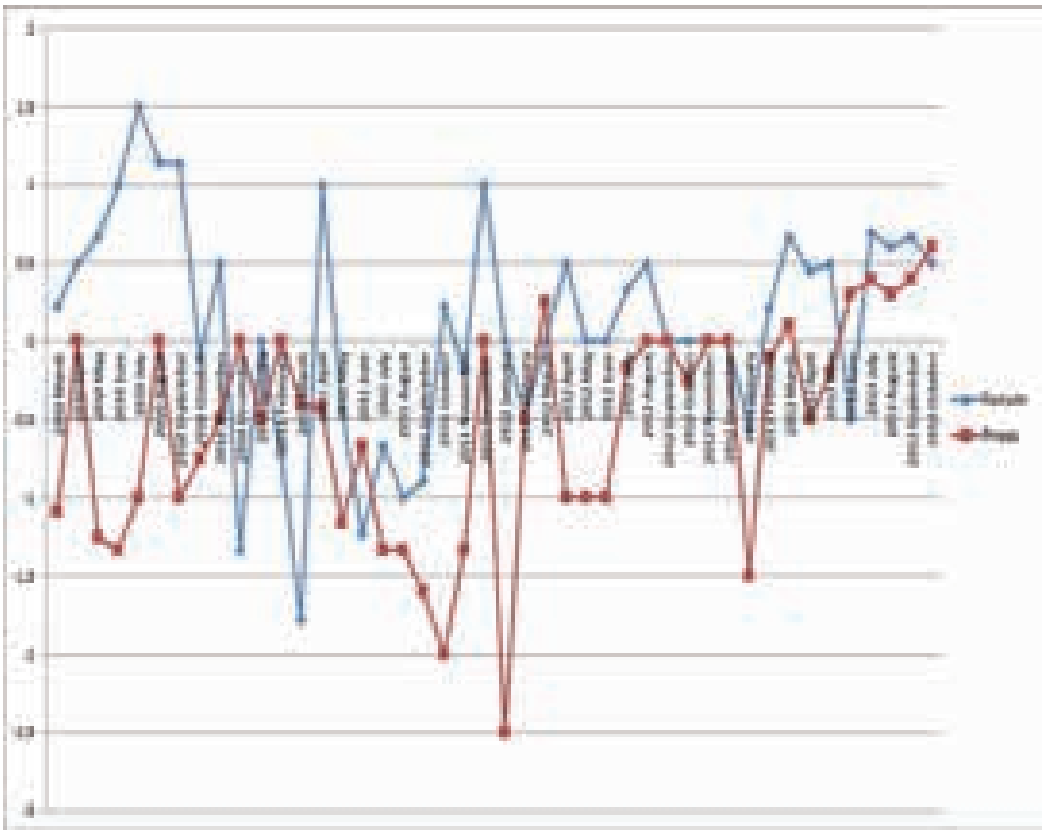

Figure 3: Average sentiment of the Forum posts and news articles about the Housing Fund from March 2010 till October 2013

Another negative peak in August 2011 can be attributed to the hesitant behaviour of the responsible ministry to assign budget resources for housing subventions for the given year. The Fund was responsible for carrying out the corresponding float for housing subventions and received, probably unjustly, many critical negative sentiment statements. The quest continued in during the first months of 2012 with questions mostly related to the stall of the project for building new housing dwelling in the capital city, where many citizens were interested to rent or buy a flat.

For practical demonstration of the approach we collected also 298 *media articles* in the same period between March 2010 and October 2013. The average sentiment of media articles is much lower: -0.55. Figure 3 shows also the comparison between the average sentiment obtained from the media articles and forum posts. The important lesson is that the estimated forum and media sentiments are not in sync. The careful analysis reveals that the forum posts more rapidly react to changes, while the media posts typically reveal a certain delay (distance) depending on different editorial policies of the media. Note that there are also several time periods (e.g. May till July 2010, September till November 2011, January 2012, April till June 2012) when negative press sentiment is surprisingly accompanied with relatively positive forum posts. The reason for such behaviour was partially due to different topics covered by the press and forum at that time; however, in case of comparable topics the effect was mostly due to the active indirect engagement of the Fund's officers in the forum debates, instructing responsible construction company to explain causes and thus cautiously steering potentially negative sentiments towards more positive ones.

The Fund's officers that are responsible for supervising the construction site were actively involved in testing the approach presented in Figure 1. Based in the diagram shown in Figure 3 they were stimulated to respond whenever they detect a decrease in sentiment of the forum's posts. Note that – building on the past experiences – the Fund's management is planning to prepare instructive guidelines stating how to handle negative and positive sentiments in press and forums. At the time being the decision is made on the regular weekly management meetings and executed by the Fund's officers in the following days. However, they rarely directly respond to the forum; they use other means to act. They typically contact the responsible construction company and clarify the raised issue. So, this finding supports our initial assumption that by actively monitoring social media impact, public organisations could improve the responsiveness of the services offered to general public.

Conclusion

In the paper we presented the approach to monitoring social media impact by using agile sentiment analysis. The approach is in regular use at the Housing Fund. Sentiment analysis helps officers react to questions more swiftly and in a coordinated fashion. The analysis also helps prioritizing the PR work. Note that the analysis revealed also rather surprising correlation between the question's sentiment and the number of days needed for the answer shown in Figure 5. One of the consequences of this analysis was rather obvious decision of the fund's management to take more active role in public relations by introducing more frequent and regular press conferences.

The perception of a sentiment of a particular media question is highly subjective. Sometimes a perfectly neutral question that touches a sensitive area can be perceived as rude or offensive. The system for agile sentiment analysis tries to avoid such subjective judgments by incorporating objective statistical properties in the estimation process. We argue that the adoption of the

proposed approach improves responsiveness of public services in housing. Moreover, by monitoring the posts in the forum the Fund actually crowd-sourced the controlling functions by partially delegating the responsibility for quality control to the concerned citizens.

However, left to itself, the system has a few potential deficiencies. It fails to detect irony and sarcasm. Observed on a single sentence, the agile sentiment analysis might fail considerably. But so can sometimes a careless human mistakenly take sarcasm for kindness. However, as it was shown on numerous occasions, the system is statistically effective on larger datasets. Its main advantage is to automatize the process that would normally take a considerable amount of time and produce highly subjective results at the end. For example, many authors successfully implemented agile sentiment analysis on Twitter (Batra et al., 2010). To accommodate for even smaller sets of sentences we extended our approach with a semi-automatic step that involves domain experts. The experts are presented by only 20% of text and their automatic sentiment evaluations that have been evaluated as extremely positive or negative; after that they are offered a possibility to override the automatic sentiment estimation. All their decisions are stored in the data storage and kept for future use.

For future work we plan to include more social network sources in our analysis. In addition to analysing sentiments from texts we would like to include also data in different formats, like for example pictures and multimedia. And last but not least, we would like to empirically support the impression that the active presence in social networks might not only improve citizens' literacy and skills, but also encourage them to participate more actively in e-Government applications and services.

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About the Authors

Bojan Cestnik

Bojan Cestnik is the managing director of Temida d.o.o., a researcher at the Department of Knowledge Technologies at the Jožef Stefan Institute in Ljubljana, and associate professor of computer science at the University of Nova Gorica. His professional and research interest include knowledge based information systems and machine learning. He has been involved in several large-scale software development and maintenance projects.

Alenka Kern

Alenka Kern is the Head of the Sales and Marketing Department at the Housing Fund of the Republic of Slovenia, public fund. She is responsible for several large projects that are carried out by the Fund. Her professional interests include human resource management and business continuity planning. She is the author of several papers presented at both national and international conferences.

How Do Universities Use Social Media? An Empirical Survey of Italian Academic Institutions

Fiorenza Oppici*, Simone Basso**, Juan Carlos De Martin***

*Nexa Center for Internet & Society, Politecnico di Torino (DAUIN), Italy. email:fiorenza.oppici@yahoo.it
**Nexa Center for Internet & Society, Politecnico di Torino (DAUIN), Italy. email: simone.basso@polito.it
***Nexa Center for Internet & Society, Politecnico di Torino (DAUIN), Italy. email: demartin@polito.it

Abstract: *This work describes how Italian universities use social media, with a focus on Facebook and Twitter. Empirical data about the online features and behaviour of the social media accounts of Italian universities was gathered using several qualitative and quantitative data collection techniques, including automatic data collection, ad-hoc Application Programming Interface (API) queries and information obtained from the university personnel managing the accounts. The results of the 'SocialUniversity' project show that most Italian universities have active social network accounts; that Facebook is the platform of choice to answer the students' questions, while Twitter serves mostly as an online news channel; that Italian universities on average use social media platforms generally better than the Italian public administration; that in the specific subset of technical universities, a few Italian institutions have an online footprint comparable to some of the top European technical universities (e.g., the Swiss Federal Institute of Technology in Zurich).*

Keywords: *Social Media Usage, Italian Universities, Facebook, Twitter, Public Sector*

Acknowledgement: *We would like to thank Net7 that supported our survey by allowing us to use free of charge their online-social-networks data collection platform, Social Proxy.*
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Introduction and Motivation

Public agencies consider Facebook, Twitter, and other social media platforms (SMPs a cost-effective method to reach large audiences (Bertot et al., 2010, Ab Hamid et al., 2007). Universities do not represent an exception: their communication strategies, in fact, increasingly rely on SMPs to complement the traditional communication channels.

Assessments of the use of SMPs by universities are starting to appear (Aquilani and Lovari 2009, Aquilani and Lovari 2010, Giglietto and Lovari 2012, Jeopen 2012), but the topic is still largely underexplored. In this work we present the results of SocialUniversity, an empirical analysis of

how Italian universities use SMPs, with a specific focus on Facebook and Twitter. The latter are respectively the first and third most popular SMP in Italy, both among the entire population with internet access (41.3% are on Facebook, 5.4% are on Twitter) and the young (69.6% of people with internet access in the age bracket 14-29 have a Facebook account and 7.5% have a Twitter one)[1]. SocialUniversity'scope is bound to the inspection of marketing, press and administration-to-student communications in the witten form, thus it doesn't focus on the second most popular SMP in Italy, YouTube[2], as it's a video sharing platform. YouTube is widely used by universities for posting promotional and informative footage, but usually this latter is shared via Facebook and Twitter too.The case of the Italian universities is particularly amenable to empirical research for two reasons. In the first place, because the number of Italian universities is relatively small[3]. Secondly, because Italian universities are fairly homogeneous, i.e., there is no formal distinction between research and teaching universities, facilitating comparisons.

To better understand the dimension of the Italian universities presence on the SMPs, we benchmark the Italian universities SMP presence with the SMP presence of the Italian public administration; also we benchmark the Politecnico di Torino with the SMP presence of five top European and Italian universities. To perform the comparison with the Italian public administration, we use the data collected by Giovanni Arata's #socialPA study (Arata 2012, 2013), with which we share elements of the methodology as well as some data collection techniques[4]. To perform the comparison with a few European universities, we use the data specifically collected for this study. The rest of this paper is organized as follows. In Section 2 we describe the related works. In Section 3 we describe the data collection methodology that we adopted. In Section 4 we present the data that we collected, including the comparison with the Italian public administration and with a few top-level European universities. In Section 5 we draw the conclusions.

Related Works

Regarding the academic use of social media, Aquilani and Lovari investigated the opportunity and necessity for Italian universities to be active on SMPs. They inspected grassroots communities at "La Sapienza" university in Rome to assess whether students were interested in talking about campus life on Facebook, and to assess which topics they discussed (Aquilani and Lovari, 2010). In a follow-up work, they also surveyed students on their willingness to interact with their university (Aquilani and Lovari, 2012). A related study focus on the definition of performance indexes to measure the Italian universities' overall social media presence (Lovari and Giglietto, 2011), following the methodology introduced by Jeopen, who measured the social media visibility of several UK universities (Jeopen, 2012).

The #socialPA study by Giovanni Arata (Arata, 2012, 2013) was the primary blueprint for this work. The #socialPA analysis encompassed all levels of Italian public administrations, from municipalities to regions, and includes data on social accounts management, level of openness of

[1] Censis/UCSI

[2] 38% of Italians with internet access have an account on Youtube, (Censis/UCSI)

3 According to the Italian Ministry of Education, University, and Research (MIUR), in fact, in 2012 there were 96 universities that served over a million and a half students (MIUR, 2012).

4 In particular, we use an enhanced version of the tools that Giovanni Arata used in the last version of the #socialPA report to perform custom queries using the Facebook API.

Facebook accounts, recognizability (i.e., the correct usage of the profile information), existing policies, posting frequency and awareness of social-networking-sites inherent features, e.g., hashtags and mentions.

Unlike the other parts of the Italian public administration, which are highly-diversified, Italian universities represent a fairly homogeneous set, at least as far as institutional purposes are concerned. Moreover, the number of Italian public administrations (about 8,000 according to the Italian National Institute of Statistics (ISTAT, 2013) is significantly larger than the number of Italian universities, i.e., 96 according to the Ministry of Education, University and Research[5]. However, the #socialPA data collection and analysis methodology (which is detailed in the next Section) remains valid also in the university context and therefore was adopted for this work. The computer[6] code developed by one of the authors of this paper to query the Facebook APIs for the last #socialPA report was enhanced and employed to collect data about universities.

Methodology

To collect information on the Twitter and the Facebook accounts of Italian universities we used the following workflow, which is based on the #socialPA workflow:

1. we manually searched for the universities accounts on the universities' websites, as well as on Facebook and Twitter; also, in some cases, we also manually inspected the Facebook pages, to extract information that it was not possible (or practical) to retrieve by using the Facebook APIs;
2. also, we added the Twitter and Facebook accounts that we found to the Social Proxy[7] data-collection platform, developed by Net7[8], that we used to automatically follow the online behavior of such accounts;
3. moreover, we used a Java program, which is a significantly-enhanced fork of the code used for the last #socialPA report, to perform more specific Facebook-and-Twitter API queries that were not possible with Social Proxy;
4. finally, we contacted the people in charge of managing the social media accounts of each university, to ask questions on their management strategies.

Of course, because of the social nature of the survey, and because we used many input sources, the process that we describe above was far from being linear. We had, in fact, to adjust our databases and the process itself, because, e.g., we discovered new accounts, or we noticed that an account was not the official account of a university (even if the name of the account seemed to imply such status).

As anticipated in Section 1, we also compared the SMP presence of our institution (the Politecnico di Torino) to the SMP of five selected European universities. We selected four technical universities — the Swiss Federal Institute of Technology in Lausanne, the Swiss Federal Institute in Zurich, the Technical University of Munich, the Politecnico di Milano (Polytechnic University of Milan) — and the other university in Turin, the Università di Torino (University of Turin). Of course, we are well aware that the five selected universities are not an exhaustive sample of the

[5] http://cercauniversita.cineca.it/ seen on December 5, 2013
[6] https://github.com/fiorenzaoppici/socialuniversity .
[7] http://www.netseven.it/portfolio/social-coop/ seen on December 4, 2013
[8] http://www.netseven.it/seen on December 4, 2013

European universities; yet, they help us to build an initial, limited characterization of the online presence of our institution.

In the following Sections, we describe more thoroughly the steps 1-4 above.

Manual Search and Manual Inspection Of Pages

Because the research handles a small set (< 100) of universities, and because Twitter doesn't support exact-match search for users, it was both feasible and necessary to manually search the Italian universities social networks handles both on the universities websites and on Twitter, Facebook, and other SMPs (e.g., YouTube, Google+, LinkedIn).

We also manually browsed the universities pages to gather the information that was not available (or hard to get) via the Facebook APIs, e.g., the response rates, the date in which the Facebook profile was opened, the openness of channels to other users.

Social Proxy: Automatic Online-Activity-Data Collection

Social Proxy is an online platform for social media monitoring — developed by Net7, a company based in Pisa, Italy — that automatically collects and provides a wide range of marketing-oriented data analytics. However, for this survey, we mainly used Social Proxy to follow the online activities (i.e., Facebook posts and tweets) of the universities accounts. Once we added the accounts handles to the online Social Proxy interface, in fact, we could follow the daily activity of the universities on Facebook and Twitter.

For most universities, we started the Social-Proxy data collection process on June 20, 2013 and we stopped the data collection process on September 30, 2013, the day in which we downloaded the whole body of tweets and posts from Social Proxy.

Regarding posts or tweets created before June 20, 2013, because Social Proxy is (of course) bound to the Facebook and Twitter APIs limits, for each account we could collect the latest 200 tweets or posts only. Yet, for the many accounts that post two-three times a week, we were still able to gather a significant portions of their history (for some accounts, in fact, we were able to go back as early as 2012). For the few accounts that post once per day (or more), instead, the first piece of collected data depends on the mean posting frequency and also depends on the day in which we added such account to Social Proxy (we added most accounts on June 20, 2013, but some accounts were discovered and added at a later time). We tried to minimize the impact of such an incremental approach by ensuring that every account had a sufficient timespan for post collection, and by weighing the absolute amount of posts from every account by the number of days in such timespan.

For each post or tweet, SocialProxy saves the following pieces of information: the author's username; the date and time; the post-or-tweet content. Of course, as regards Twitter, Social Proxy attributes a retweet to the retweeter, rather than to the author of the original tweet.

After we downloaded the data from Social Proxy, we used Excel to perform some basic data analysis tasks. For more complex tasks, we wrote a Java program[9] that allows us to remove the duplicate posts; to compute the average posting frequency and the standard deviation; to extract hashtags, mentions, and URIs; to compute statistics, e.g., the 20 most used hashtags.

[9]https://github.com/fiorenzaoppici/socialuniversity

API Queries

Social Proxy was a valuable tool to automatically follow the online activity of the universities accounts, however, it did not collect lower-level information that is useful to characterize the universities activity, e.g., the amount of likes and followers, the date in which an account was created, the total number of tweets, the location, the self description.

Therefore we wrote some Java code to gather these pieces of information directly from the Facebook and the Twitter APIs. Such codes — that is based on the Twitter4J[10] and BatchFB[11] libraries — receives a list of Facebook and Twitter accounts, and generates, for each account, an .odf file that contains the low-level information that we mentioned above.

As part of our future work, we plan to enhance our Java code to collect data like, e.g., the number of likes to a post and the thread of comments related to a post. Also, as regards Twitter, we aim to study the followers of academic accounts (including in this category not only the accounts of universities, but also the accounts of professors and researchers).

Surveys

The first survey was carried in mid-July via e-mail among the group of five selected foreign and Italian universities that were included in the comparison to our institution, the Politecnico di Torino (Polytechnic University of Turin).

We contacted people in charge of managing the social accounts (if this information was available on the university's website) or people in the press office (as a fallback), and we asked them (1) the links to their social media channels and (2) whether they had social-media statistics that they could share with us.

Everyone responded to the inquiry; the responders eagerly provided us their social-media handles, and few of them (e.g., Politecnico di Milano and the ETH) even proposed us a follow-up phone-or-skype interview, in which they provided us much more details. As regards the second question, all the responders told us that they do not keep any kind of social-media statistics.

The second survey was carried out in the last days of August 2013 among all Italian universities found on Facebook, using the Facebook private messaging feature. Universities were not queried via Twitter due to the limited size of the tweet messages, deemed unpractical for an effective communication. Survey participants were kindly asked to describe their social-media-management strategies. On 74 Facebook channels accepting private messages, 49 of them (the 66%), from 46 universities answered, and showed great interest for our work.

However, because the second survey did not reached the Facebook channels for which private messages were not enabled (as well as universities with just a Twitter account, and universities that didn't show on Facebook), in early October we carried out a third survey, in which we wrote to the press offices of the unreached universities and asked them to provide brief information on their social-media-management strategies. The response rate was slightly inferior (52%), and in particular, universities who did not enable private messages on Facebook were less responsive (40% responded) than universities not showing on Facebook (71%).

[10] http://twitter4j.org/en/index.html
[11] https://code.google.com/p/batchfb/wiki/UserGuide

Data Analysis

The methodology described above allowed us to collect a series of interesting measures about the Italian universities presence on Facebook and Twitter. For example, the creation of new academic Facebook accounts had a peak in 2011, with 30 new accounts; and, more than 20 institutions joined Twitter each year in the 2010-2012 period (Figure 2). Note that these data are based exclusively upon the foundation date of Facebook and Twitter accounts existing in the research's timeframe; no piece of information on the deletion of accounts through the past years is thus available. The average frequency of posting is 1.8 daily messages on Twitter and 1.4 on Facebook, but most universities (67% on Facebook and 61% on Twitter) update their channels less than daily.

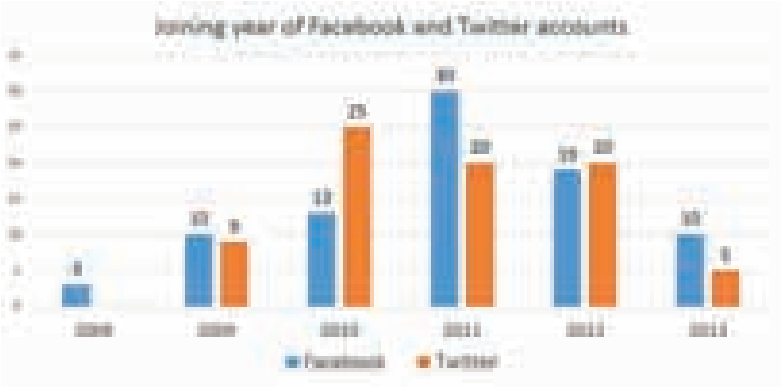

Figure 1: The number of institutions that joined Facebook and Twitter per year

Also, an estimate of the audience[12] of every channel was computed. Rather than examining the audience in absolute terms, the number of Likes/friends on Facebook and the number of followers on Twitter was weighed considering the expected social media population of each university. The expected population was computed as follows:

$$Pop = (s * Us) + (p * Up)$$

Where s and p are, respectively, the number of students and professors, and Us and Up are a rough estimate of the percentages of Facebook (or, alternatively, Twitter) adoption in the two groups according on Censis' 2012 survey on social media penetration in Italy13. 11% of students and 3.7% of professors are expected to have a Twitter account and 79% of students and 47% of professors are expected to be on Facebook. Those are just some proxy measurements; in fact, they take into account only the age factor and leave out other important factors of Facebook and Twitter users (such as income); yet, they allow to draw the following interesting observations: only large (> 10.000 students) public universities figure in the first ten positions in

[12] We define the audience as the number of accounts that can potentially read a messages posted by the account of a university. That is, on Twitter the audience is the number of followers of the university account, while on Facebook the audience is the number of likes of the university page.

[13] The number of students and professors in every institution was drawn from the Italian Ministry of University, Education and Research (MIUR) data for 2012, the last official version when SocialUniversity was carried out. Stats on the penetration of social networking platforms for different ages groups were drawn from the 10th Censis/Ucsi report on social media in Italy (Censis 2012).

the ranking for absolute audience on both Facebook and Twitter (for obvious reasons), but small to medium-sized private universities and Superior Graduate Schools14 are preponderant in the weighted ranking. This confirms the general lack of visibility of larger universities exposed by Jeopen (2012), and by Lovaro & Giglietti (2011)4.1 Presence on Facebook, Twitter and other social networks.

We found 85 Facebook accounts that we mapped to 80 Italian universities (i.e., 84% of the Italian universities are on Facebook). A few universities have more than one account: typically, they have the main account and a secondary account that provides counseling services to students. Also, five of the 85 accounts are not pages, rather they are personal profiles. Of these five personal profiles, three are secondary accounts that provide counseling services to students: OrientaNet UniPd[15] for the University of Padua, Orientamento UniFe[16] for the University of Ferrara, and the account of counseling for disabled students Sod Orientale[17] at the Università Orientale in Naples.

On Twitter, we found 79 profiles for 73 different universities (i.e., 76% of the Italian universities are on Twitter). In addition to the 73 institutional profiles, there are six secondary profiles dedicated to diverse activities, e.g., employment counseling ("La Sapienza" - @JobSoul18), student counseling (LUISS "Guido Carli"- @GianoLUISS19), communication of new publications available in the open-access institutional repository (Politecnico di Torino's Open Access System - @OAPoliTorino20), foreign-language news for foreign students communities (Politecnico di Milano - @polimi_zh21 for chinese students).

We also found that YouTube is the third most used SMP after Facebook and Twitter (61% of the Italian universities have an account), and, according to the results of our manual inspection, is used for posting extracts from conferences, campus life events, advertising campaigns, and video lectures. In this vein, nearly a fifth (19%) of the Italian universities is listed on iTunes U[22], the iTunes section for video lectures.

Other SMPs that Italian universities use are: LinkedIn (13%), Google+ (11%) and Flickr (10%).

Who is in Charge Of Managing Social Media Accounts?

Table 1: Which office is in charge of managing the SMP account(s)? (%)

Office in charge	**Facebook**	**Twitter**
Communication	50%	56%
Student Counseling	11%	5%

[14] Superior graduate schools are institutes who offer primarily third-level higher education (i.e., doctoral studies courses).
[15] https://www.facebook.com/orientanet.unipd
[16] https://www.facebook.com/orienta.unife
[17] https://www.facebook.com/sod.orientale
[18] https://twitter.com/jobsoul
[19] https://twitter.com/GianoLUISS
[20] https://twitter.com/OAPoliTorino
[21] https://twitter.com/polimi_zh
[22] http://www.apple.com/apps/itunes-u/

Online communication	10%	10%
Social Networking communication	7%	9%
Public Relations	7%	3%
Other	15%	20%

This data was collected by means of direct surveys as described in section 3.2. The managers of 60 Twitter accounts (out of 79) answered to our questions, while 59 managers of Facebook accounts replied (out of 85).

General communications' offices manage the majority of accounts both on Facebook and Twitter, while the Students' counseling offices are less represented on Twitter (11% vs. 5%). Because 7% of Facebook and 9% of Twitter accounts are managed by specially-created social media offices, we can argue that universities are increasingly recognizing social media as a peculiar area in communication.

Other management strategies (aggregated by the "other" definition of Table 1) include: account management in cooperation between the IT systems and public relations office; the Dean's secretary office; volunteer students. Interestingly, there was also one case (the University of Palermo) in which the social media accounts were managed by an external communications firm that won a procurement for performing that task.

How the Social Media Accounts Interact With Other Users (Mainly Students)

We measured the number of answering tweets in the accounts timeline with an ad-hoc API query launched on October 27, 2013: we fetched the last 200 tweets by each account, and we counted the number of tweets that were in response to tweets by other accounts. We found that, on the average only 2% of the tweets are responses. The account with the highest rate of responses was the Politecnico di Milano's main account (@polimi), in which 22% of the tweets were responses. Such higher rate could represent a higher engagement from both parts: users interact more with the institution and the university is context-aware as it uses the Twitter "Answer" tool. As regards Facebook, because it was complex to gather the rate of answers using the API, and because manually recording responses was unfeasible for all the accounts, we selected the five accounts which had in their timeline more questions posed by other accounts. On this small sample, we collected the last 10 university-related questions and answers (if any) posted up to October 25, 2013. Interestingly, the Politecnico di Torino (that was the third account with more questions posed by other accounts) never publicly responded; however, an employee of the Politecnico later confirmed via email that they, in fact, responded via private messages in that time span. As for the other universities' accounts, the response rates are very good (all the institutions answer to more than 80% of questions posed); also, (as Figure 2 shows) on the average the institutions respond within one work day This small sample is already characterized by very high participation rates (i.e the ratio of posts from other users on the total number of posts), but interestingly enough, accounts in the sample are fairly below the average in terms of audience; their average likes/expected_population value is 0.5 while for the whole sample of the Facebook account of Italian universities it is 1.7. As SocialProxy (the tool used for data harvesting) can keep just first-

level comments, it's impossible to fully determine the engagement level, since users usually answer back in comment threads.

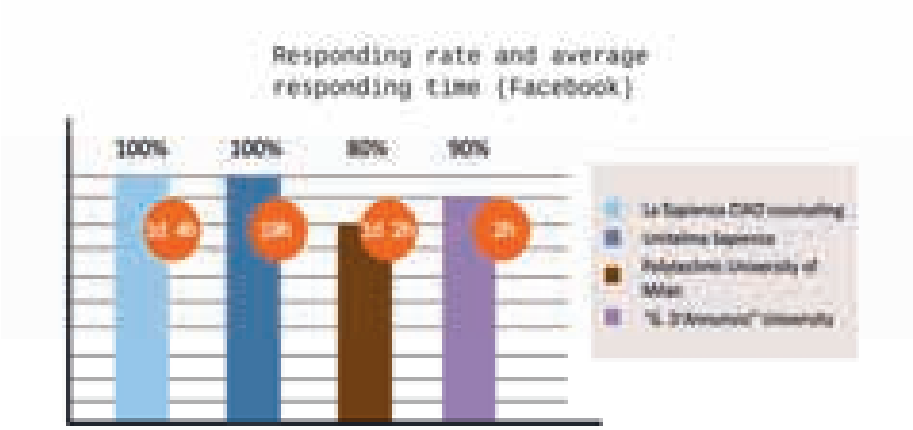

Figure 2: Responding rates and average responding time of the Facebook profiles that received more questions from other Facebook users on their timelines

In the case of Facebook, more than half (56%) of the accounts have their walls open to others' posts. But the openness of the wall is not the only index for openness; in fact, admins can configure many diverse levels of openness, i.e., they can selectively enable the following features: Private messages; Users' reviews; Comments to posts.

The vast majority of the Facebook accounts had a medium-high level of openness: only 7% had just one of the openness features enabled (i.e., one of: private messages, users' reviews, comments to posts, and the wall open to others' comments); 12% of them had two features enabled; 46% had three features enabled; and 35% enabled all the four features.

A Comparison with Selected Foreign Universities

In order to broaden the research's scope the Politecnico di Torino (PoliTO) was compared to other similar institutions: the Swiss Federal Institute of Technology in Lausanne (EPFL), the Swiss Federal Institute of Technology in Zurich (ETHZ), the Technical University in Munich (TUM), the Politecnico di Milano (PoliMi), and the other university in Turin, i.e., Università di Torino (UniTO).

As for the weighted audience, also doctoral students were computed in the expected population, while the rates of Twitter and Facebook adoption have been obtained from the PEW Internet Project's survey (Smith and Brenner, 2013). The main account of the EPFL is the leading for the weighted audience on both Facebook and Twitter (respectively with values of 2.3 and 1.8). The average posting frequency is 0.7 daily posts on Facebook and 1.3 daily posts on Twitter; in spite of this last data, 70% of the Twitter accounts of international universities post, on the average, less than one message per day. Responding rates were retrieved for all universities with the same methodology discussed in section 4.2; the Twitter accounts with the highest rate of responding tweets are: the main account for the Politecnico di Milano (@polimi) (22%), the EPFL's English channel (@EPFL_en) (14%), and the main account of the Politecnico di Torino (@poliTOnews)

(13%). On Facebook, a direct inspection (as in the 3.1 section) of the 30 last university-related questions from October 27, 2013 found that the Università di Torino and the Politecnico di Milano were the institutions with the highest responses rate, respectively, 93% and 83%.

The more relevant difference among social media accounts that we noticed is the different rates of internationalization, especially on Twitter. Swiss universities show an higher rate of international students; in fact, both the ETH and the EPFL have an English-tweeting account in addition to their main account (which, respectively, is in German and in French). Interestingly, the two English channels of the ETH and the EPFL are less followed than the main accounts: @EPFL_en has just 0.1 followers / expected_population while @EPFL has 1.9 followers / expected_population; @ETH_en has 1.0 followers / expected_population, while @ETH has 1.4 followers / expected_population.

Table 2: The different rate of internationalization of Twitter accounts

	Foreign students (%)	**Twitter accounts:**	**Tweeting in:**
EPFL	40%	3	French, English
ETHZ	29%	3	German, English
TUM	18%	1	German
PoliTo	15%	2	Italian, English
Polimi	9%	2	Italian, Chinese, English
UniTO	6%	1	Italian

Conclusions and Outlook

In this paper we describe the methodology and the results of the SocialUniversity survey that describes how Italian universities use the social media platforms (SMPs) channels (mainly, Facebook and Twitter). In particular, we describe how we collected qualitative and quantitative information on the behaviour of Italian universities on SMP channels, and we describe the main insights that we extracted from the collected data.

To start the data collection process, we listed the Twitter and Facebook accounts of most Italian universities. Then we used the Social Proxy SMP data collection platform, developed by Net7, as well as ad-hoc API queries, to monitor the online activity of the universities' Facebook and Twitter accounts. In parallel, we contacted the people in charge of managing such accounts, to gather qualitative data. Finally, in some cases, we manually inspected the accounts to collect data that we could not collect automatically.

The data shows that on average Italian universities are well aware of the potential of SMPs; in fact, some universities even have people whose only job is to manage the university's online accounts. The data shows that, while Facebook is used for counseling and answering to student's questions, Twitter is used primarily as the official, online news channel. Also, even though few Facebook accounts post - on the average - multiple times per day, the vast majority of them

updates their timelines less than once per day. Another insight is that private universities (typically small, selective and well-funded) and Superior Graduate Schools are relatively more popular than large public universities (which in recent years have been affected by steep cuts in both funding and staff).

To better understand the extent to which Italian universities use well the SMP channels, we compared their online behavior to the previously studied behavior of the Italian public administration; also, we compared the online behavior of a few, selected Italian universities to the behavior of few, selected European universities. For the former comparison, we used the latest #socialPA report data (Arata, 2013) as a benchmark, while for the latter comparison we used data specifically collected for this case study. Compared to the public administration, the universities seems to be more aware of the SMP channels best practices and features (e.g., 44% of the universities already use hashtags on Facebook, despite their recent introduction). Compared to the European universities selected for this study, Italian universities are on average less popular (in terms of the audience weighted for the number of students). However, there are Italian universities that, like the European ones, have multilingual accounts.

Regarding future developments, we plan to perform a detailed analysis of the target audience of the Twitter accounts of scholars, e.g., by harvesting the biographies. We also plan to enhance our data collection tools on Facebook, to follow the comment threads and to gather the related number of shares and likes. In turn, we expect this enhancement to allow us to better measure the response rate and the popularity of an account.

Finally, this case study only focused on the universities own accounts, but universities are complex organizations, whose online footprint goes well beyond their institutional SMPs accounts; therefore, we look forward to also following and analyzing the online activities of research centers, departments, professors, and students-associations accounts.

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About the Authors

Fiorenza Oppici

Fiorenza Oppici holds both a bachelor and master degree in Cinema and Communication Engineering at the Politecnico di Torino. The present paper is a synthesis of her Master Project, "How do italian universities use social media". She plans to pursue the research project discussed in the present paper.

Simone Basso

Simone Basso is a research fellow of the Nexa Center for Internet & Society at the Politecnico di Torino (DAUIN), Italy, since 2010, where he leads the research and development of the Neubot software project on network neutrality. His main research interests are network performance, network neutrality, TCP, Internet traffic management, peer to peer networks, and streaming. He is currently a PhD student at the Department of Control and Computer Engineering of Politecnico di Torino, where he received the Bachelor's (in 2006) and the MoS degrees (in 2009).

Juan Carlos De Martin

Juan Carlos De Martin is faculty co-director of the Nexa Center for Internet & Society at the Politecnico of Torino (DAUIN), Italy, where he teaches computer engineering and digital culture. He is also faculty fellow at the Berkman Center of Harvard University and senior visiting researcher at the Internet and Society Laboratory of Keio University. Juan Carlos De Martin is a member of the Institute of Electrical and Electronic Engineers (IEEE) and he serves as member of the Scientific Board of the Institute of the Italian Encyclopedia Treccani.

Associating E-Government and E-Participation Indexes With Governmental Twitter Accounts Performance, In EU Countries

Konstantinos Antoniadis*, Vasiliki Vrana**, Kostas Zafiropoulos***

*PhD student, Department of International and European Studies, University of Macedonia, Egnatia 156, 54006, Thessaloniki, Greece,kon.h.anton@gmail.com
** Assistant Professor, Department of Business Administration, Technological Education Institute of Central Makedonia, Terma Magnesias, 62124, Serres, Greece, vrana@teiser.gr
***Associate Professor, Department of International and European Studies, University of Macedonia, Egnatia 156, 54006, Thessaloniki, Greece, kz@uom.gr

Abstract: *The paper records government and ministries Twitter accounts for 24 EU countries. It records four indexes of Twitter performance: number of followers and following, number of tweets and number of tweets per day, and two indexes describing potential reach to citizens regarding the information tweeted by the accounts, to describe the specific accounts' performance and influence. Two summary indexes are constructed using PCA: network characteristics and activity characteristics of the accounts. Correlations are calculated for all performance indexes with e-Government and e-Participation indexes of the 24 countries. Tweeting frequency and retweeting/mentioning represent the accounts' activity and the community activity, respectively. Only activity indexes are strongly correlated with e-Government and e-Participation, while number of followers and following seems not to be associated with them. Performance of the Twitter accounts is not only a matter of Twitter appearance and networking of the accounts; it is mainly a matter of citizens' active participation.*

Keywords: *e-Government, e-Participation, Twitter, performance, indexes*

Introduction

Twitter, the microblogging service that allows users to share information via short messages with a maximum of 140 characters in length and to answer the question: "What's happening" (Chu *et al*., 2010; Naveed et al., 2011), has now 554,750,000 active registered users (Mason, 2013). It is the fastest growing social network by active users. The 55-64 year age bracket is the fastest growing demographic with 79% growth rate since 2012 (Vincezini, 2013). Twitter is increasingly being adopted by news organizations, corporations, government departments, Members of Parliament and non-governmental organizations as an innovative form of interaction with their stakeholders (Heymans, 2010; Mergel, 2012a). Nowadays, governments

have to exploit all possible delivery channels in an attempt to reach out as many citizens as possible no matter how isolated, poor or illiterate they are (UN, 2012).

Twitter updates are seen as public conversations. Twitter can be used by government agencies for news feed, as a parallel publishing stream, an adittional channel to distribute press releases and other formal announcements, to distribute mission-relevant information, engage large number of citizens, create conversations, record public opinion for policy formulation, accelerate emergency responses and activate public diplomacy (Mergel, 2012a). Use of twitter and other social media may increase transparency, integration, communication, collaboration and accountability and revitalize dialogue between goverments and citizens (Chadwick, 2009; Drogkaris et al., 2010; Mergel, 2012a; Mergel et al., 2009). Government agencies find Twitter as "an effective, efficient, timely and valuable tool to get the word out" claimed Wigand (2010, p. 66), and have started embodying it in their e-government strategies in order to maximize web 2.0 offered benefits and to keep upwith current trends (Sivarajah & Irani, 2012). For the moment little research effort has been devoted at investigating government use of Twitter (Alam & Lucas, 2011). In this vein the paper aims at investigating central government and ministries accounts of the EU countries, to record Twitter characteristics of the accounts and provide a ranking of them, in relation to their performance regarding e-government and e-participation maturity.

Twitter as a Social Media Tool

Microblogging is a form of blogging that allows people to write brief text updates and to keep in touch with friends through the internet, mobile devices, instant messaging or third-party applications (Edman, 2007; Mergel, 2012a; Miller, 2008). Nowadays, Twitter is the most popular microblogging service. Twitter claims its simplicity stating:

"People are eager to connect with other people and Twitter makes that simple" (Twitter 2009).

Users after joining Twitter and creating their profiles, can post 'tweets', mini-posts of 140 characters in lenght that can point to other rich media content. Users may also provide links to outside content by including URLs in their tweets. As URLs are typically long, "URL shorteners" are usually used in order to generate unique, abbreviated URLs for redirection (boyd et al., 2010). Users may also combine Twitter updates with other social media accounts. In this way they may automatically post updates to their news feed from Flickr, YouTube, Facebook, blogs, or any other content-sharing site (Mergel, 2012a). Twitter accounts are by default public, which means it can be viewed by anyone and followed by any Twitter users can subscribe to and view the tweets. Thus, the vast majority of Twitter accounts are public (Marwick & boyd, 2010). Social connections in Twitter are created through the act of 'following'. The reverse chronological stream of tweets from accounts that a user is following is his/hers primary view (Meeder et al., 2011). A user can follow any other user, and the user being followed need not follow back (Kwak et al., 2010). In this vein 'following' is not mutual (Hargittai & Litt, 2012) and the social network structure being created is 'asymmetric' (Grant et al., 2010) unlike 'traditional' social networks (Poblete et al., 2011). Previous studies have recorded the highly skewed distribution of followers and the low rate of reciprocal ties (Bakshy et al., 2011; Huberman et al., 2009; Kwak et al., 2010). The majority of Twitter users have only a few followers but some accounts exist that attract enormous number of followers. Twitter promotes following others by presenting a list of recommended users (Meeder et al., 2011). Skewness recorded in followers happens also at following. Some users follow

thousands, while others follow a few. Some follow celebrities and anyone that they find interesting and some follow only users that they know personally (Boyd et al., 2010). Twitter has also itsown vocabulary: write a tweet addressing a specific user which is called a mention, @reply is a tweet directed at a certain user, RT stands for retweet. Retweets allow users to rebroadcast content created by other users; thus visibility of content raises (boyd et al., 2010), '#' followed by a word represents a hashtag. Hashtags group tweets by topic by allowing users to annotate tweets with metadata (Conover et al., 2011).

Use of Twitter in the E-Government Context

Social media have changed the way citizens get informed about government activities, global and national events and what is happening in their communities (Kavanaugh et al., 2012). As the world becomes more socially connected through social media, governments all-over the world are trying to respond to the challenging opportunities offered by them, share information to a wider public in a more open manner (McNutt, 2012) seek public views and feedback, monitor satisfaction with the services (UN, 2012) and provide value-added services to their citizens (Osimo, 2008). Moreover social media have the ability to help organizations, like government agencies to connect better with their stakeholders through engagement and interactivity (Li & Bernoff, 2008; Solis & Breakenridge, 2009; Waters & Williams, 2011). As social media enable two-way communication in real time, government agencies can quickly engage citizens as co-producers of services, not just passive recipients (UN, 2012). Previous research has shown that organizations primary use social media for information sharing and rarely use them to create dialogue (Seltzer & Mitrook, 2007; Bortree & Seltzer, 2009; Waters & Williams, 2011). However, in order to effectively use social media in e-government strategies a shift in thinking, culture and leadership is required (McNutt, 2012).

Albrecht et al. (2008, p.4) defined e-participation as "the participation of individuals and legal entities in political and administrative decision-making processes by means of information and communication technology (ICT)". E-participation involves from simple information provision to mediation and from consultation and campaigning to voting (Tambouris, 2007). Four transformative properties of social media represent the benefits government agencies can gain from their use. Social media shorten or even eradicates distance between government and individuals (Cardenas, 2013). By establishing social media presence on a variety of platforms may broaden the reach of agencies message (Mergel, 2012c). Moreover, social media due to the message instant chacarter may maximize speed and can be used to share timely information. Finally, as social media websites are free to individual users and organizations, there is a perception that they are cheaper to use of other traditional media (Newman, 2009). However, the adoption of social media by government agencies could face a series of barriers and limitations. Barriers may relate to strategic formulation issues like cultural readiness and lack of strategy, others to government issues like administrative requirements, concerns for accessibility to the disabled and finally non-government site usage like privacy standards and advertising (Picazo-Vela et al., 2011). At the global level, many government agencies maintain Twitter accounts. In 2012, 78 out of the 193 United Nations Member States, nearly 40% provide a statement "follow us on Facebook or Twitter" in government portals (UN, 2012). According to Mergel (2012a) government agencies exist that manage multiple Twitter accounts based on their diverse audiences and their operational needs. For the moment research on government use of twitter is limited (Alam & Lucas, 2011) and

focus on content analysis. Golbeck et al. (2010) investigated the type of content members of the United States Congress, were posting. In their research they analyzed the content of over 6,000 posts. Members of Congress use Twitter in order to promote themselves and do not to provide insights into the legislative process, government news, or to improve transparency. However, according to the findings Twitter facilitated direct communication between Congress and citizens. Hemphill et al. (2013) using data from 380 members of Congress' Twitter activity during the winter of 2012, found that Twitter is mainly used to advertise political positions and to provide information but rarely to request political action from constituents or to recognize the good work of others. Differences in communication frequency exist between, Senators and Representatives, Republicans and Democrats and also men and women. Mergel (2012b) examined how members of the U.S. Congress use Twitter. Analyzing tweets in combination with qualitative interviews with congressional offices shows that members of the congress are mainly using Twitter to complement their existing push communication style and distribute content. The potential for interactive conversation is not used by them.

Heverin & Zach (2010) and Crump (2011) investigated the use of Twitter by police in U.S cities and UK respectively. Heverin & Zach (2010) found that police departments primarily use Twitter to disseminate crime and incident related information. City police departments also use Twitter to share information about their departments, events, traffic, safety awareness, and crime prevention and to a lesser extent to converse directly with the public and news media. While Crump (2011) investigated the structure of networks formed and the content of the messages. Research and conclusions show that the constraints of police culture have meant that Twitter has been used cautiously and as reinforcement for existing means of communication. Alam & Lucas (2011), Waters & Williams (2011), Small (2012) and Cho & Park (2012) examined the use of Twitter by government agencies in different countries. Alam & Lucas (2011) investigated the use of Twitter by the Australian government. Their findings showed that Australian government agencies are primarily using Twitter to disseminate information, especially links to news articles and reports on their activities. Waters & Williams (2011) examined how 60 government agencies at state and federal levels in U.S.A are using Twitter to communicate with their audiences. Findings indicate that government agencies primarily relied on one-way communication that sought to inform and educate rather than two-way symmetrical conversations. Canadian Government's Use of Twitter was explored by Small (2012). Despite the fact that Twitter is a well-established part of Canadians' e-government strategy, service delivery characterizes government tweets. Cho & Park (2012) analyzed Twitter activity of the Ministry for Food, Agriculture, Forestry and Fisheries (MFAFF) in Korea. The results indicated some limitations of the MFAFF's activity on Twitter as a mutual communication channel. However, Twitter can function as an effective information delivery channel for government agencies. As the study concerns only a government organization generalization of findings is limited. Panagiotopoulos & Sams (2012) studied Twitter accounts maintained by UK local government authorities. They collected over 296,000 tweets from 187 officially listed local government accounts and examined networks developed by the accounts followed by a structural analysis of the tweets. The findings indicate high level of maturity of Twitter in the UK local government. The accounts are building an extensive Twitter network that gives them access to a diverse group of stakeholders beyond networked citizens at the local level. Regarding content it is localized and temporal. However, Twitter is not used in isolation as a medium, but likely as part of a more organized social media strategy.

This reseacrh aims to find associations among EU countries governmental Twitter accounts and the general e-Government and e-Participation indexes of the countries. The idea is to explore whether Twitter performance, with regards to networking and activity characteristics, is in accordance with the general rankings of the countries concearning e-Government and e-Participation. If this happens, the minimal conclusion that can be drawn is that Twitter does not fail to assist in promoting e-Government and e-Participation services.

Methodology

During 19-28 February 2013, for each EU country, we searched the government central website along with the ministries websites, to find out if they provide links to Twitter accounts. These accounts were then recorded for every European Union country. This search resulted to recording 19 countries, which have central government Twitter accounts, 8 countries which have accounts for the ministry of development, 8 for the ministry of health, 9 for the ministry of economy, 9 for the ministry of education, 9 for the ministry of environment and 17 for the minnistry of foreign affairs. In total, accounts for 24 countries were recorded.

During the same period and for the abovementioned accounts, some metrics and performance indexes were recorded, as well. Those indexes include Twitter performance indicators proposed in the literature, such as the number of followers of an account, number of other accounts an account follows (following), number of tweets, and tweets per day (Anger & Kittl, 2011; Bakshy et al., 2011; Bayram & Arici, 2013; Crump, 2011; Rosi & Magnani, 2012; Sevin, 2012). We also recorded two performance indexes, which describe community of followers involvment in reading tweets from the accounts and spreading the information originally provided by these accounts, by retweeting or mentioning. These indicators are Topsy score, and Total Effective Reach. Topsy score refers to retweets and mentions than matter for a particular Twitter account as a measure of user's community involvement for this account. It is a complex index provided by Topsy.com social search and analytics site. Topsy score is considered to be better that other Twitter metrics (Klout, Kred or PROskore), since it uses a ranking based on several measures on how and by whom the content of an account is shared. According to this ranking we can decide who is an infuential user (Popescu, 2012). Total Effective Reach measures the total amount of people who are exposed to a tweet or its retweets. It multiplies users and each of the retweeting followers counts by their calculated influence (the likelihood that the user will be retweeted or mentioned) to determine a likely and realistic representation of any user's reach in Twitter at any given time. The last index is provided by http://twtrland.com. We summed up total effective reach for the 14 most popular tweets of each account. Topsy score and Total Effective Reach are chosen among other indexes of the same type because they add to the construction of an index and they are more easily comprehended. Since each country provides and uses a different number of e-Government Twitter accounts, we calculated the average values of the Twitter performance indexes (followers, following, tweets, tweets per day, Topsy score, Total effective reach) of the Twitter accounts for each country, in order to have one value for each country. On the other hand, since number of followers, following and Total effective reach depend on each country's population, we adjusted the three indexes by dividing them by the population of each country. Next, a Principal Components Analysis (PCA) was used to construct overall indexes of Twitter performance.

At the last step, three general e-Government and e-Participation official indexes were recorded in order to be associated with the Twitter performance indexes. The time frames for gathering the indicators from Twitter and e-Government indexes are not identical; however the e-Government and e-Participation indexes are the latest available indexes. By calculating the correlation coefficients among the above indexes, we aimed to answer the papers central question, which is whether Twitter performance is in accordance with the general e-Government and e-Participation indexes of the EU countries. The three indexes are: e-Government development index, e-Participation index and the Online service index (UN, 2012): "The United Nations e-Government development index (EGDI) is a composite indicator measuring the willingness and capacity of national administrations to use information and communication technology to deliver public services. It is based on a comprehensive survey of the online presence of all 193 Member States, which assesses the technical features of national websites as well as e-Government policies and strategies applied in general and by specific sectors for delivery of essential services, EGDI = (1/3 * online service index) +(1/3 * telecommunication index) +(1/3 * human capital index)", (UN 2012, pp 119-120). "The e-Participation questions which refer to e-Participation index, as part of the e-Government questionnaire, extend the dimension of the Survey by emphasizing quality in the connected presence stage of e-Government. […]. The purpose of this measure is […] to offer insight into how different countries are using online tools to promote interaction between citizen and government, as well as among citizens, for the benefit of all. The e-Participation index is normalized by taking their total score values for a given country subtracting the lowest total score for any country in the Survey and dividing by the range of total score values for all countries….", (UN 2012, p 125). As for the Online service index, "to arrive at a set of online service index values, the researchers assessed each country's national website, including the national central portal, e-services portal and e-Participation portal, as well as the websites of the related ministries of education, labour, social services, health, finance, and environment as applicable. In addition to being assessed for content and features, the national sites were tested for a minimal level of web content accessibility as described in the Web Content Accessibility Guidelines of the World Wide Web Consortium. […]. The online index value for a given country is equal to the actual score value divided by the range of total score values for all countries.", (UN 2012, pp 120-121).

Findings

Our survey resulted in recording 24 countries which provide central government and/or ministries' Twitter accounts. Table 1 presents all the recorded indexes for the 24 countries sorted by the e-Government development index 2012. The second column of Table 1 presents the number of recorded Twitter accounts. It is obvious that most surveyed countries have 1 to 4 Twitter accounts , while six countries (UK, Netherlands, Spain, Greece, Latvia and Poland) have more than four accounts. For UK we recorded eight accounts. Number of followers, following and total effective reach are subject to the population of each country, while number of tweets is associated with the age of an account, in the sense that older accounts have more tweets. E-Government development indexes for Luxemburg (0.80), Austria (0.78), Croatia (0.73), Slovakia (0.63), range from very high to medium, to low. So a few countries of a wide range of E-participation development index are not recorded in our study. It remains to be explored what their Twitter performance will be and if it will be in accordance to e-Government and e-Participation indexes.

Table 1: E-Government Twitter account characteristics and indexes for the 24 EU countries.

Country	Number of Twitter accounts surveyed	Followers (av.)	Following (av.)	Tweets (av.)	Tweets per day (av.)	Total effective reach (av.)	Topsy score (av.)	E-Gov Develop ment index	E-Part index	Online service index
Netherlands	5	12,291	374	2,901	1.92	29,552	496	0.91	1	0.96
UK	8	64,763	6,933	4,268	3.06	816,763	4035	0.9	0.92	0.97
Denmark	1	5,240	40	3,333	2	15,080	305	0.89	0.55	0.86
France	4	34,361	222	1,348	1.95	28,560	701	0.86	0.58	0.88
Sweden	2	1,511	934	410	0.45	20,060	118	0.86	0.68	0.84
Finland	4	2,770	89	1,054	1.5	11,770	102	0.85	0.74	0.88
Germany	4	25,488	81	1,531	2.35	133,783	382	0.81	0.76	0.75
Estonia	2	1,408	128	423	0.3	1474	24	0.8	0.76	0.82
Spain	7	47,853	604	2,487	2.89	149,311	1017	0.78	0.5	0.76
Belgium	3	2,686	138	439	0.47	17,754	59	0.77	0.13	0.65
Slovenia	3	3,407	1,673	1,039	1.2	6,399	170	0.75	0.21	0.67
Lithuania	1	1,360	1	737	0.5	1,209	10	0.73	0.53	0.70
Portugal	1	18,259	120	1,967	1.4	16,166	2	0.72	0.37	0.65
Hungary	1	479	0	994	1.3	478	41	0.72	0.45	0.69
Italy	2	21,185	70	1,341	3.25	84,666	2380	0.72	0.26	0.58
Malta	1	106	79	1,769	3	174	12	0.71	0.26	0.61
Ireland	4	1,703	263	708	1.53	19,892	243	0.71	0.13	0.54
Greece	7	6,196	372	1,800	2.15	29,049	58	0.69	0.34	0.58
Latvia	7	1,958	309	2,022	2.19	9,682	201	0.66	0.21	0.59
Cyprus	1	113	11	68	0.6	185	26	0.65	0.08	0.56
Czech Republic	1	6,406	262	696	0.7	4,786	35	0.65	0.26	0.54
Poland	6	1,961	214	1,158	1.42	32,395	118	0.64	0.18	0.54
Romania	2	786	312	1,292	1.7	2,159	12	0.61	0.08	0.52
Bulgaria	1	1,838	71	702	0.7	2,243	84	0.61	0.03	0.49

Principal Components Analysis (PCA) with Varimax rotation was used for the indexes: followers, following, tweets, and tweets per day, Topsy score and Total effective reach. Two PC were extracted emplaning 49% and 27% of the total variance respectively (total 76%). Table 2 presents the factor loadings for the two PC. The first PC is associated with the account activity as recorded by total number of tweets and tweets per day, and the citizens' community activity as it is recorded by indexes of retweeting and spreading the information. The second PC is correlated with numbers of following and followers.

Further, Table 3 presents correlation coefficients between performance indexes and e-Government and e-Participation indexes. Only PC1, and most of the indexes that it summarizes, are correlated with e-Government and e-Participation indexes. It is the citizens and the account's

activity which are correlated with e-Government and e-Participation indexes. Some correlation coefficients of the original indexes are very close to be statistically significant (p=0.05), while correlations of PC1 with e-Government and e-Participation indexes are indeed statistically significant. The correlations reveal that Twitter activity indexes are in line with general e-Government and e-Participation indexes.

Table 2: Correlations and Factor loadings resulted from PCA of the six Twitter performance indexes.

	Tweets	**Topsy score**	**Tweets per day**	**Total Effective Reach**	**Following**	**Followers**	**PC 1**	**PC 2**
Tweets	1						.881	.150
Topsy score	.610**	1					.874	.008
Tweets per day	.721**	.609**	1				.822	-.080
Total Effective Reach	.662**	.759**	.431*	1			.794	.332
Following	-.023	-.021	-.022	.200	1		-.094	.876
Followers	.436*	.174	.128	.398	.499*	1	.266	.833

(*:p<0.05, **:p<0.01)

Table 3: Pearson correlation coefficients (significance level in brackets) among Twitter performance indexes and e-Government and e-Participation indexes.

	E-Government development index	**E-Participation index**	**Online service index**
Followers	.284 (.178)	.250 (.239)	.316 (.133)
Following	.015 (.946)	-.125 (.562)	-.010 (.962)
Tweets	**.477 (.018)**	**.480 (.018)**	**.505 (.012)**
Tweets per day	.198 (.353)	.193 (.367)	.163 (.447)
Total Effective Reach	**.396 (.055)**	**.355 (.089)**	**.403 (.051)**
Topsy score	**.371 (.074)**	**.360 (.084)**	**.377 (.070)**
PC 1	**.419 (.042)**	**.421 (.040)**	**.423 (.040)**
PC 2	.150 (.484)	.047 (.827)	.157 (.463)

Conclusion

The analysis provides evidence that Twitter usage comply with the general countries e-Government and e-participation indexes. This provides indications that social media usage assists in providing information and promoting e-Government and e-Participation services. They eventually serve as another channel of informing and providing e-Government services. It is interesting that while official e-Government and e-Participation indexes are constructed only by considering information regarding government services and not by taking into account the citizens' involvement and in any case not considering Twitter, in our case it is this account's and citizens' involvement and activity, which are significantly correlated with e-Government and e-Participation. Performance of the Twitter accounts is not only a matter of Twitter accounts (the medium) appearance; it is mainly a matter of citizens' active participation. It seems that there is a bidirectional connection between e-Govermnmet and e-Participation level of each country and the Twitter performance or citizens' involvment in Twitter. Activity and performance on Twitter is in a one-one relation with the general e-Government and e-Participation development. This might sound an obvious conclusion, however these relationships as simple or obvious they may seem,

they remain to be recoded and documented, especially when e-Government and e-Participation indexes are measured using different data from those of the Twitter performance indexes.

Certainly our study refers to an aggregate level of data analysis. We study overall indexes for each country and we do not work with individual level data. Comparing and correlating aggregate indexes refers to the ecological analysis, which may sometimes suffer from ecological fallacy. We can not prove that the performance of Twitter or other media, used by governments, is a result (or a cause) of the general e-Government and e-Partcipation level of a country. However, the paper provides evidence that this might not be excluded from any conclusions drawn. What is sure is that Twitter, as a medium of e-Government services provision, does not fail to provide information and to promote e-Government services and it does not only retain a role of must-have technological improvement, regardless of its actual usefulness. Concluding, we might suggest that e-Government and e-Participation indexes could be expanded or augmented to include such measures and metrics of citizens' involvement and activity, regarding Twitter, and possibly other social media, usage in e-Government services provision.

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About the Authors

Konstantinos Antoniadis

Konstantinos Antoniadis is a PhD candidate at the Department of International and European Studies, University of Macedonia, Egnatia 156, 54006, Thessaloniki, Greece. His research is on the use of Twitter in promoting eGovernment services. Author's contact: kon.h.anton@gmail.com

Vasiliki Vrana

Vasiliki Vrana is an Assistant Professor, Department of Business Administration, Technological Education Institute of Central Macedonia, Terma Magnesias 62124, Serres, Greece. She holds a PhD in Computer Science. She teaches Information Systems and research methods. Her research interests include the study of Web2.0 in Politics and Tourism. Author's contact: vrana@teiser.gr

Kostas Zafiropoulos

Kostas Zafiropoulos is an Associate Professor at the Department of International and European Studies, University of Macedonia, Egnatia 156, 54006, Thessaloniki, Greece. He holds a PhD in Quantitative Methods and he teaches statistics and research methods. His research interests include the study of Web2.0 in Politics and Tourism. Author's contact: kz@uom.gr

Open Collaborative Government

Through Liquid Democracy to Sustainable Non-Bureaucratic Government

Alois Paulin

Vienna University of Technology, Faculty of Informatics, Favoritenstr. 9-11 / 183-2, 1040 Vienna, Austria; University of Maribor, Institute of Informatics, Smetanova ul. 17, 2000 Maribor, Slovenia; alois@apaulin.com

Abstract: *We explore how the principles of liquid democracy could be applied in Self-Service Government (ss-Gov) for collaborative decision making as an alternative to modern parliaments. We summarize the principles of Sustainable Non-Bureaucratic Government (SNBG) and explore how liquid democracy could be utilized to enable democratic end-to-end self-management of jural relations.*

Keywords: *Liquid Democracy, Sustainable Non-Bureaucratic Government, Self-Service Government, e-Government, e-Democracy*

Introduction

A recent study by Paulin (2013) explored the computability of jural eligibilities by means of modern ICTs as a method for enabling what is named there *Self-Service Government* (ss-Gov). SS-Gov is a model for governing a society in which a dedicated public administration system (a *bureaucracy*) is not required for asserting a subject's (e.g. citizen's) jural eligibilities in a particular context, but rather the eligibilities can be *calculated* by means of relational algebra based on raw data about the subject's jural facts.

This raw data, which serves as a basis of a subject's jural eligibilities, is read and written by active and passive jural subjects, who again do have the *calculated* eligibility to consume, respectively provide, this data. Thus, in theory, a closed circuit is established in which subjects of various jural statuses interact with a relational system of jural data, which through self-service manipulation of the raw data stored within enables transformation of jural eligibilities of subjects in juropolitical societies. Paulin (2013) names this approach to the technical determination / calculation of jural eligibilities in a juropolitical society *Constellation-Based Reasoning* (CBR), whereby he compares this methodology to "*a key opening a pin-tumbler lock, where the key due to its specific shape moves the pins into the right constellation, which allows the lock to be opened*" (ibid., p.1775). The *lock*, then, defines the constellation and definition of the required data (defined as a relational set), which must be satisfied by the *key*, i.e. the data of a stakeholder and/or context in a situation, to *unlock* a particular eligibility in a given context. Thus, ss-Gov enables a new model of government in which eligibilities (e.g. rights) are not *obtained* in form of credentials from state authorities through administrative proceedings, but are rather *determined* by means of CBR. The mathematical basis for the determination of eligibilities enables homogeneous, standardizable

technical storage, rule-based generation and –access to the raw jural data, and hence its sustainable storage as structured data in digital systems. This approach makes the existence of an administrative middle-layer (the bureaucracy) hypothetically obsolete, without however systemically rejecting or disabling such system.

In this paper we explore if CBR can be utilized to enable non-bureaucratic collaborative decision-making through *liquid democracy*, such as it might be used in republican juropolitical systems for empowering political leaders and -representatives, or for creating common policies and jural regulations. In chapter 2 we shall first elaborate the theoretical framework by describing the concepts of *Sustainable Non-Bureaucratic Government* (SNBG) as a vision encompassing non-bureaucratic collaborative decision making, and describe the principles and history of *Liquid Democracy* (LD); in chapter 3 we shall explore how modern parliamentary decision-making could be handled either through the principles of SNBG without changing the existing structure, as well as how the same would be transposed to the realm of LD.

Theory Frame – Concepts for Self-Management

The modern system of public administration and its dependent stakeholders relies on an ever-increasing influx of capital (through e.g. taxes or public resources) to sustain itself, which it does by constantly increasing its legitimacy that bases on an increasing self-imposed handling of new regulations, responsibilities, and taxes (cf. Shleifer and Vishny 1993, 616). Within such bureaucratic ecosystem, informal networks take control, which Banfield (1975) terms machines. These machines are communities, which exist based on a system of exchanges of favours (such as jobs, opportunities to make money by legal or other means, perks, etc.) amongst officials and external interest groups. Such hierarchies, which "*arise from extra-legal, if not illegal, arrangements, are ad hoc, and must be continually renewed by 'deals' in order to prevent them from collapsing*" (ibid.).

Increasingly demanding state machines are an everlasting issue in any civilization – limits of bearable growth of government requirements (manifested through taxation) however are easily reached and, as Adams (2001) argues, have caused the dusk of many once strong civilizations, including Ancient Egypt, Greece, Rome, the Aztec Empire, and the European Empires.

A promising attempt to curb the impact and burden of state machines on the society was the introduction of office automation technologies and bespoke ICT systems introduced in the last couple of decades to automate routine tasks of government agencies and to provide self-service access to government information and services. Computerization of the public sector has in large parts of everyday bureaucratic chores shifted bureaucratic discretionary power from a predominantly street-level bureaucracy with *"large numbers of faceless officials whose freies Ermessen (discretionary power) could cause an open society to be smothered in the bud"* (Bovens and Zouridis 2002, 174) to a system-level bureaucracy in which information is automatically collected from various sources and applications from citizens can be instantly handled – e.g. approved, rejected, or set aside for manual inspection.

The digital era without a doubt has influenced the public sector. The available technology makes it possible for bureaucratic networks to easier manage their duties, and to better supervise their subjects and its own kin. The digital era however seems to be merely another noteworthy change in environment which the bureaucracy aims to survive – the modern bureaucratic culture, which began in the mid-17th century (Walter 2011, chap. 2), after all, is *too big to fail*, or is it?

The *continuity* of the bureaucracy, "*which survived the changes from monarchy to republic, from republic to dictatorship, from dictatorship to democracy*" (König in: Walter 2011, 27, own translation), has in the recent past been challenged by two novel concepts – *new public management* (Osborne and Gaebler 1992) as an organizational, and e-government as a technological challenger. Latter, driven by powerful myths (Bekkers and Homburg 2007), has constructed a hype portraying technology as the enabler to new and better government featuring transparency, rich participation, and self-service one-stop-shops. Alas, a deep change in structure, away from the well-established bureaucratic approach, has not been part of its vision.

The e-government approach, however, has many flaws: As Bekkers & Homburg (ibid.) emphasize, e-government artefacts frequently require the coordination of a multitude of heterogeneous back-offices within the public administration. Aiming for progress in this regard often results in what they call *battle of the back-offices*, which prevents the development of a sustainable, goal-oriented e-government system-of-systems.

Aside from this, Paulin (2013) elaborates three *hazards* of e-government, which make this approach unsustainable: *hazard I (expiry date)* targets the dependency of monolithic e-government artefacts on law – such artefacts are developed according to law which is valid at design-time, but which will inevitably change sooner or later, requiring either a costly reengineering of the artefact, or making free changes to law unlikely due to systems that are simply too big to be changed; *hazard II (monopolization, corruption and exclusion)* targets the gap between the legislator defining the functional characteristics of e-government artefacts and their possible many heterogeneous, non-interoperable, technical instantiations – Paulin (ibid.) gives examples of the European e-ID and the Slovenian system for electronic registered mail delivery, which both led to nationally favoured technical instances, which discriminated other providers; the 3rd hazard *(legal certainty)* finally targets the challenge how to provide e-government artefacts whose internal processes and interfaces would follow the core jural principle of legal certainty, whereby it is emphasized that users of such systems should be able to rely on jurally clearly defined and stable interfaces and system behaviour.

At the end of the day, e-government remains a bureaucracy-driven approach that supports the continuation and influence of the latter in the digital era. In the search for a sustainable *self-management* of juropolitical societies, we shall further below explore concepts for self-managing jural relations, as well as self-managed collaborative decision making.

Sustainable Non-Bureaucratic Government (SNBG)

Self-Service Government (Paulin 2013) through its *Constellation-Based Reasoning* (CBR) concept represents a scaffolding for creating, storing, retrieving and changing jural facts based on which eligibilities of jural subjects can be determined.

However, while this model provides a feasible approach towards a sustainable base infrastructure for storing and communicating jural data, it represents only a part of the complexity required to bring the vision towards a form of government that does not require a bureaucratic machine for administering jural relations in a juropolitical society, into reality. Thus, if constellations of jural data enable eligibilities, then naturally one must ask how to recognize such constellation – thus, domain-specific semantics, data structures, etc., must be defined, which make it possible to recognize for example a specific constellation of data representing a university

degree, a driving permission, a land parcel, or a political representative's mandate. All these however must remain independent from the infrastructure responsible for *creating, reading, updating and deleting* (CRUD) the jural facts, in order to ensure sustainability of the infrastructure.

Let us therefore continue thinking how self-managed, *sustainable non-bureaucratic government* (SNBG) could be established by means of ICTs. Expressed through a technology stack, we may see SNBG as an architecture comprising five layers:

The first, bottom-most layer is a technical communication network, such as e.g. (but not mandatory!) the modern Internet. This layer is about exchanging arbitrary messages required for telecommunication.

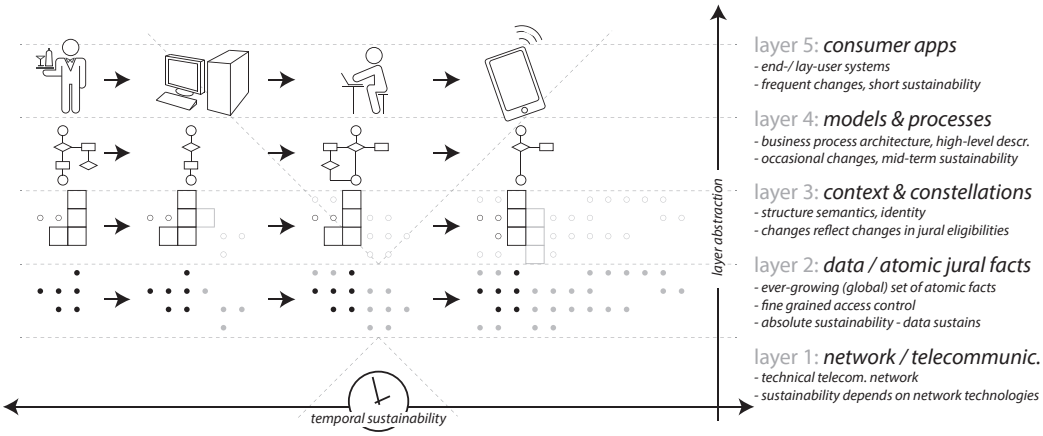

Figure 1: Five layers of SNBG: Layer #2, where the jural data is stored, is by definition sustainable. The individual eligibilities are determined by means of layer #3 semantics, whose range shifts through time. Layers #4 and #5 are unsustainable and adopt to current fashion, without influencing the concepts from layers #2 and #3. The left-facing arrows illustrate the evolution of the respective artifacts through time.

The second layer is about a content-agnostic technical infrastructure that enables arbitrary communication and manipulation of jural facts. An instantiation of the ss-Gov model would be a suiting approach to deliver infrastructure for this layer.

On the third level, a *contextualization-layer* would provide artefacts that would define domain-specific data structures, semantic conventions, *identity*, etc. This layer would enable interoperability between nodes that would constitute the network defined on the 2nd level, and provide the corresponding semantics. This layer then would answer questions such as the one posed above, defining for example the structure and semantics of a constellation that would denote a land parcel, a university degree, a diplomat's jural status, etc.

A clear separation of this layer from layer#2 is crucial, as the semantics and structures of layer #3 will change through time – for *having* a university degree for example, the requirements of tomorrow might be slightly different compared to the requirements of today or yesterday; nonetheless, the *complex concept* of a university degree, which entitles individuals to certain eligibilities (e.g. only individuals with a university degree are permitted to compete for civil service jobs) may survive many changes in its intrinsic composition, until perhaps in some point in the future this concept might lose its original value. (An example of such *complex concept* which through time became obsolete; are for example the aristocratic titles of the Austro-Hungarian

monarchy – once they *enabled* the access to government jobs, but became after the break-up of the monarchy suddenly of no value.) These *complex concepts* of the *contextualization layer* act as *locks* in CBR reasoning, which are unlocked through the fulfillment of the required data constellations.

The contextualization layer might be established and governed by professional guilds, who would find proper definitions and micro-architectures for complex jural concepts. Thus for example, a guild- or de-facto-standard could emerge, which would define on a European, or global level, how a bachelor degree is to be represented by layer#2 jural facts. This would enable a subject, which graduated from a British university to enjoy eligibilities associated with having tertiary education in Slovenia without the need for additional homologation – the British university in this case would be the technical host of the layer#2 jural facts, which could be referred to in order to utilize them as a *key* (or part of it) to *unlock* eligibilities in other countries.

On the 4th layer, a unified approach to *describing* processes needs to be found, which would engage the contextualized constellations from layer#3 into business processes (level#5), that would constitute the business logic of complex information systems, which could be used by lay (i.e. not adequately literate in terms of data-level command of ICTs) subjects to interact with the network of jural relations stored on layer#2. A process here is to be understood as a system consisting of multiple stages of hierarchically interdependent CBR *locks*, where unlocked earlier locks present part of the key for later ones. (E.g.: to be selected for a civil service job, one must have first applied for such job, whereby in order to apply for such job, one must have prior fulfilled all requirements for *having* an appropriate university degree.) A modeling technique that might be feasible for describing layer#4 processes is the diagraming tool as proposed by Paulin (2013, 1780).

Layer five, finally, is about technical artefacts (such as information systems, in whichever form) that would provide means for lay interaction with the network of jural relations from layer#2. Graphical user interfaces, m2m APIs, technologies for planning, visualizing, analyzing, etc. of layer#2 data would enable a rich environment for subjects/citizens to interact with the state and service-providers, whereby latter might be either subsidized by the state or a local community, or be purely commercial providers of solutions for accessing layer#2 data.

The mistake of modern e-government was that it immediately went to providing monolithic layer#5 artefacts, which turned out to have at least issues with sustainability and interoperability, if the complex jural implications of system-level bureaucracy are left aside. Also approaching the design and development by e.g. starting at layer#4, as e.g. by developing a methodology for describing business processes on a high level and automatically translating them into the business logic of e-government artefacts, would, without considering layers#2-3 inevitably result in an unsustainable approach that might well satisfy acute needs (such as e-government does), but would not be prepared for future.

Liquid Democratic Collaborative Decision Making

LD is a weighted way of making collaborative decisions, which does not depend on elected representatives, but rather on the transient delegation of votes. We can describe this processes mathematically as follows (cf. Jabbusch 2011, 35–7): each member A of a society can delegate its power to another member B (and withdraw it again at any time), whereat A – assuming each member's power is v and the sum of all v is V, has thus $(v_A\text{-}v_A)/V = 0$ influence on voting on a

decision, while member *B* thus has $(v_A+v_B)/V$ influence on a decision made by all who are eligible to influence the given decision.

It is not clear who came up with liquid democracy first, and it appears that this idea arose from many minds independently. In terms of functioning information systems, to the best of our knowledge, three instantiations are known: in 2010, Paulin (2010) applied liquid democracy for executive empowerment to a student union, which was established mid-April 2010; a few weeks later, in Mai 2010, the German Pirate Party approved *Liquid-Feedback*, a system based on liquid-democracy that served as a backbone for their inter-party decision making process; in Russia, Leonid Volkov & Fyodor Krasheninnikov launched in 2011 the portal *http://democratia2.ru*, which instantiates their specific vision on liquid democracy - *cloud democracy* (cf. Velikanov 2013).

The roots of the concept as such have been researched by Jabbusch (2011, 30–33), who aims to summarize the history of various concepts associated with liquid democracy based on an article by James Green-Armytage (2010). We shall partly repeat Jabbusch' summary for sake of completeness – translated to English – here:

In 1912 the New York Times reports of William S. O'Ren, who demands for *interactive representation* whereby each elected politician's – the so-called proxy's, influence would be weighted with regard to the amount of votes received. His idea was picked-up more than half a century later in 1967 by the mathematician Gordon Tullock, who in passing suggests that voters could "by wire" chose their representative or vote themselves (in the parliament) while the debate would be broadcast by TV. In 1969 James C. Miller argued that everybody should have the possibility to vote on any question themselves, or appoint a representative. This idea was welcomed by Martin Shubik in 1970, who calls it an "instant referendum", but is concerned that the speed of decision-making might influence the time available for a public debate.

Further roots of the LD-concept, Jabbusch argues, are to be found in the ideas developed by "sayke", an anonymous user of the web, according to whom *"liquid democracy can be thought of as a function that takes a question as an argument, and returns a list of answers sorted by group preference [… or] as a voting system that migrates along the line between direct and representative democracy."* ("sayke" in : ibid., p.31)

Sayke's idea was developed further through a wiki until 2003, resulting in the concept that a decentralized information system (software) should enable citizens to participate in political decision-making, thus making parliaments obsolete. Each citizen shall have one vote, whereby the system would provide the citizen with all proposals on the question at stake. If the citizen would not want to do his own research on the particular question, he could subscribe to the opinions of friends instead. The system would further provide that decisions could be made automatically by the system (based on the friend's suggestions?). The idea was further developed by the anonymous user "Kragg", who dropped the subscription to friends' decisions and instead proposed that voters could be delegated transitively, which is vital for LD.

Liquid democracy is thus a method of collaborative decision making that allows equal members of a community to either express their decisions on a matter directly, or empower a proxy to act on their behalf, whereby thus given power is transient. Thus, if Ann represents Bob and Carl, and Carl represents Dave and Eve, then Ann holds the power to act on behalf of all, including Dave and Eve, whose power transitively shifts from Carl to Ann. If this community would further consist of Franck and Gaby, thus in total seven people, then Ann's decision would represent 5/7 = 71.4% of the community's will, provided that nobody in Ann's network votes for herself. Would

however Carl decide to vote on an issue himself, then Ann would suddenly be representing only (53=2)/7 = 28.6% of the community.

Liquid Democracy in the German Pirate Party: a Path Down the Rabbit Hole

Jabbusch, himself a former high-ranking party member of the German Pirates, sees the Internet as an opportunity to get rid of *"inefficient and costly organizations like parties and parliaments"* and sees liquid democracy as an enabler to *"exchange or completely remove representative democracy"* (Jabbusch 2011, 8–9). Through liquid democracy, he argues, *"the people would assume all legislative roles of parliament – committee debates, amendments, formation of opinions and resolutions regarding even complex wordings of laws"* whereby *"citizens would have the right to propose new laws at any time"* (ibid., p.35). Jabbusch further envisions that individuals could delegate their voting power *"temporarily to organizations (such as political parties, NGOs, associations, etc.) or to individuals (politicians, experts, friends)"*, or, optionally, the citizen's vote could be delegated only for particular topics (idib., p.35).

As Jabbusch notes (ibid., p.41-2), liquid democracy was a priority of the German pirates ever since their formation and rose to a wide-debated issue in the years 2007-2009. In 2009, when the pirates experienced nation-wide publicity and a strong rise in membership, several working groups were founded to investigate how to introduce advanced collaborative decision-making approaches for inter-party decision-making processes.

One such group founded the association *Liquid Democracy e.V.*, which developed the software *Adhocracy*, which was later used by the German parliament (Bundestag) – albeit with no transitive delegation, for an e-participation pilot (Bundestag 2013). Adhocracy however, the Pirates found, did not suit their requirements, whereupon within two weeks the system *LiquidFeedback (LQFB)* was developed (Jabbusch 2011, 42), which continued playing a vital role in the party's policy-making processes.

LQFB has been designed as a virtual place for forming opinions by the party base, which are to serve the party organs as recommendations and feedback (ibid., p.53). Opinion forming in LQFB takes place through *initiatives*, which can be proposed by any registered member, however, no discussions like they take place on other web forums are permitted in order to prevent *trolling* – i.e. counterproductive contributions. Once an initiative has been proposed, it must first receive support of at least 10% of the registered users within a certain time span; if it succeeds in doing so, time for discussion and eventual modifications of the initiative is allocated, whereby modifications are allowed only up to a certain time span before the end of the discussion period. After this, members can vote on the final proposal. The interesting point here is that discussion is deliberately excluded from the system and thus has to take place in wikis, other forums, or in real-world discussions (ibid., p.58-60).

The *Meinungsbilder* ("opinion-pictures/frames"), which are formed by the party base through LQFB however are not binding for the party leadership. Jabbusch (ibid., p.75ff) demonstrates how a Meinungsbild is formed on the example of *universal basic income (UBI)*, a political idea arguing that the state should give every citizen a living-costs covering income unconditionally. A Meinungsbild-forming is initiated by a proposer posting an initiative. Each initiative can receive counter-initiatives, which are then competing within the Meinungsbild for dominance. It may happen that many initiatives within a Meinungsbild are accepted, which results in a fuzzy representation of the party base's opinion. In addition, it is not impossible to initiate many similar Meinungsbild-forming processes, which further diversifies the results. At the time of Jabbusch's

report, seven UBI-related Meinungsbilder were formed (not including the failed initiatives); as of summer 2013, another more than ten Meinungsbilder on this very topic existed.

Despite the fact that is up to the party leadership on how to consider the opinions and petitions from the base during their mandate, the Meinungsbilder are further processed in party meetings and committees and are eventually included in official policy documents. In the case of the UBI, Jabbusch reports, the leadership accepted a petition for supporting a demonstration, which the party did by publishing an appeal for support on YouTube.

This kind of collaborative opinion-gathering as exercised by the Pirates however cannot be regarded as more than an admittedly elaborate form of deliberation. The non-binding nature of the Meinungsbilder does not prevent the party leadership from acting against the will of the party basis, as indeed has happened in 2013 (Herwatz 2013). However, even if the party leadership would be de-jure bound to the collaboratively expressed will, the Pirates might run danger to drawn in a torrent of different interpretations, contradictions, and juridical tricks that would allow the leadership to have its way in the end anyhow.

The approach chosen by the German Pirates does present a significantly novelty in the intra-party policy creating process, which could be eventually applied at a national level for a more democratic way of making political decisions. This way of collaborative opinion-gathering however does in no way affect the continuity of the bureaucracy but rather strengthens its legitimacy by making it appear more accountable and more participative.

Liquid Democratic Decision-Making in SNBG

Modern parliamentary systems institutionalize collaborative decision-making and regulate it through strict procedures conducted by elected representatives of the political community. National assemblies, legislative councils, Russian *Dumas*, Muslim *Majlis'*, or Western *Parliaments*, etc., are then but different names for the same concept of elected (or hereditary, or appointed) representatives deciding on rules, investments, and other matters from the public domain (of the *republic* so to speak).

The process of making a decision by any such legislative assembly can be broadly divided into four distinct phases:

- first, the proposal is elaborated and presented to the assembly,
- next, the proposal is deliberated (often involving many instances),
- then the assembly votes on the last version of the proposal, and
- lastly, the proposal (if elected) is enacted and steps into action.

In Slovenia for example, the *Constitution* of the Republic defines a bicameral legislative system with a *state assembly* (Državni zbor, hereinafter: parliament) as the legislative body and a *state council* (Državni svet) as a second chamber with a right to request a second round of deliberation on an already accepted proposal from the former (§91). The parliament consists of a fixed number of 90 members (§80), who decide in most cases with majority of the present assembly, whereby more than half of all members must be present for a decision to be valid (§86). A bill can be proposed either by the government, any member of the parliament, or by at least five thousand voters (§88). The process of deliberating and deciding on a proposal is defined as a multi-phase

procedure regulated by the *Rules of Procedure of the State Assembly* (poslovnik Državnega zbora) of the parliament (§89, §94).

The *Rules of Procedure of the State Assembly* define how the legislative procedure is conducted, as well as the structure of the proposal. Latter must be sent to the president of the parliament (§114) and must contain (§115) an explanation of the causes of the proposed statute, its aims and goals, an estimate of the financial implications for the state budget if the proposal was to be enacted, a review of similar regulations in other legal systems and the conformance of the proposal with European Union law, and a discussion of other consequences the enacted law would imply. The president of the parliament initiates the legislative procedure by immediately distributing the received proposal amongst the members of the parliament.

At least ten members of the parliament can request within 15 days a deliberation on the reasons for the proposal (§122), as a result of which the proposal can be rejected preliminarily if the parliament finds that the proposal is not fit for further consideration. If the proposal is to be considered further, it is delegated to a taskforce, where it undergoes deliberation and where it can be brought through amendments into a further stage of ripeness, before the task force presents the thus updated proposal to the parliament. The parliament then deliberates a second time on the updated proposal, where further changes can be made. After that, a third round of deliberation takes place after which the voting on the final version of the proposed statute is done.

Could this procedure be translated into the domain of SNBG? We shall think how a multiphase legislative procedure could be handled by SNBG in two distinct ways – first, how it would be translated to remain virtually the same, and later, how it would be conducted by means of liquid democracy.

If we were to keep the same bodies, their characteristics and powers, then we had four distinct jural subjects that would contribute to the enacted statute – the proposer, the state assembly (parliament), the president of the former, and the assistive taskforce.

In such scenario, the proposer would generate a proposal by writing it into the respective ss-Gov registry. The eligibility to write proposals into that registry would be given based on the qualification of the proposing subject – either the subject would be a member of the parliament, a representative of the government, or it would be a proposal signed by at least 5.000 subjects whose membership in the voting registry would be valid. Once registered in the respective ss-Gov registry, the proposal would be available to the members of parliament (MPs) for deliberation. Within 15 days, 10 members of parliament might flag the proposal as blocked, whereupon the majority of the MPs together would either unblock or reject it by declaring their vote.

The proposal would then remain in a status where the parliament could not decide on it, until the responsive taskforce would flag it (or an updated version of it) as ripe. The taskforce would be set-up and empowered by the president of the parliament, and based on the membership in this taskforces the majority of its members would be able to set the flag.

Once flagged by the taskforce, the president of the parliament would flag the ripe proposal so to denote that it passed the second deliberation (the first deliberation happened if the 10 MPs flagged it at the beginning). Provided this flag being set, the president would have to once further flag it in order to denote that it passed the third deliberation, making it ripe for voting. After that, the majority of the MPs would be able to flag the statute as either enacted or rejected.

Through the flow of changes in the status of the proposal, the proposal (as updated by the taskforce) would be finally enacted. However, unlike in the present-day procedure, the role of the

subjects taking part in this flow, would be focused on setting flags – i.e. changing information that describes the readiness of the proposal. The transactions thus change form *push* to *pull*, i.e. the subjects do not *push* documents to each other, but rather *pull* the status of the proposal and change it once the status permits it. This implies the need for periodic *pull-requests* into the corresponding registries which would enable the subjects to be notified on changes, such as e.g. the appearance of a new proposal, the changes in its status, and so on.

Also the final enactment of the proposal would be a pull-action, which then could be done by a subject in whose interest it is to enact the accepted statute – this for example could be any MP, or the proposer itself. The enactment of a statute today is limited to its publication in the official journal or similar media; in SNBG however an enactment of a new regulation would imply the immediate change of law. Aside from this, complex constraints such as for example a certain required minimum time between the approval of a proposal and its enactment might be possible as well.

How then would the MPs deliberate on the proposal in SNBG? As SNBG does not deal with deliberation, but merely with the government of eligibilities, it does not impose any constraints on how human beings exchange their opinions. Thus, if so desired, the *Parliament / Duma / Majlis* may remain as a place or institution where members and the public present their opinions in formal or informal ways, behind the lectern or in the lobbies, according to strict rules or traditional customs, in any way, so to speak, that pleases the expectations of the society. The same liberty applies to other aspects of the procedure which leads to the enactment or rejection of a proposal, such as the flow of information about a new proposal, its status, change, etc. It is reasonable to assume that humans remain to interact with each other in an SNBG-enabled system and thus information is conveyed with at least the same efficiency between subjects, which then may act upon the received news.

How about secret voting? Also here, SNBG does not set any constraints – thus, although CBR would require the identity of the voter to verify that the subject is a member of the eligible body, the identity does not need to be stored with the vote preference. This would be analogous to checking the identity of a voter entering the polling place.

How about then liquid democracy? – So far we described the translation of a classical legislative process into its SNBG-enabled clone. This way we argue that SNBG is capable to support the existing context without much ado. Next, we might think how to further evolve collaborative decision-making into the novel domain of liquid democracy (LD).

The basic principle of LD is that subjects delegate their eligibilities to vote in collaborative decision making to other subjects, but may temporarily repossess them to express their own decision in specific cases. The individual subject's power in contributing to the collaborative decision is thus a frequently changing variable rather than a foreseeable and fixed constant.

LD is by no means restricted to a certain predefined community of eligible members – thus, in the here discussed case of parliamentary decision-making, three scenarios might be feasible:

- One would be that only the (here: elected) members of the parliament take part in LD-decision making, whereby after they are elected they can delegate their voting power to their colleagues (e.g. to the presidents of their fractions), which might result in a significantly reduced amount of powerful MPs, who would transparently represent the power structures within the parliament. Such approach might make more sense in larger

parliaments (such as e.g. the European Parliament), where the sheer amount of members make decision-making less clear.

- Another option would be to treat the entire community of voters in the nation as members of the LD system, which might make political parties obsolete, as the delegated eligibilities would shape into a network with a couple of very powerful nodes to which large numbers of individual subjects would link transitively.
- The third option would be to take a hybrid approach where voters might have an opt-out option from the LD system by voting for MPs. Latter then would in total represent the community of voters who cast their vote in the elections, either in equal shares (i.e. each MP would have one vote in 90), or relatively in accordance with the amount of votes received. The voters that would remain in the LD modus might still be able to delegate their votes to MPs, or contribute their own decisions.

In either case, the multi-phase mode could be maintained, or at will transformed into a full LD-style decision making single-phase activity. While in the former every changed state in the process of making a decision would be collaboratively decided through the logic of LD, in latter a proposal would be accepted as soon as the required majority through LD would be found. In order to prevent hasty decisions, constraints regarding the time required for forming a decision might be set on an elevated legislative level (e.g. on the constitutional level) – a statute thus could be passed for example after at least one hour once the consensus of *all* members of the voting body is reached, or after at least one week once a two-third majority is given.

For storing the LD-relations between subjects, a dedicated ss-Gov registry would be required, in which each subject would be able to address the attribute denoting to whom the voting power was delegated (if at all). The proposal being voted on might then contain a snapshot of the network of relations at the time of its enactment / rejection for sake of accountability / documentation. The snapshot of the decision on a particular proposal would remain dynamic and modify-able until it would be frozen at the point where a decision is made. Thus, each subject would be able to either actively change its preference at any time until the final decision, or remain passive and such support another member or do not participate in the decision-making at all.

As this scenario shows, SNBG is compatible with both conventional and progressive collaborative decision-making techniques, which implies a fluent transition from one mode to another being feasible.

Conclusion

We summarized Self-Service Government (ss-Gov), a model for determining jural eligibilities based on jural facts stored in digital form in a dedicated ICT network. We described our vision of *Sustainable Non-Bureaucratic Government* (SNBG) which we structured into a five-level technology stack featuring ss-Gov as an essential basis, though not a complete enabler of SNBG. Further, we described the principles and beginnings of *Liquid Democracy* (LD) and presented an overview of the liquid-democratic approach taken by the German Pirate Party for intra-party agenda setting, which we criticized as unfeasible to generate systemic change towards self-managed government.

In chapter 3 we applied the principles of SNBG to the existing parliamentary decision-making procedure in Slovenia and examined how latter would perform under the joint principles of SNBG and LD. We found that the *key/lock* approach (i.e. *Constellation-Based Reasoning* – CBR) of ss-Gov

can be feasibly applied to the existing parliamentary procedure, and further that an introduction of LD as an approach to increase inclusion and accuracy in shaping / determining the *common will* in democratic systems is conceptually doable by means of CBR.

We conclude that a combination of SNBG and LD would yield a powerful approach that would enable the emergence of truly self-managed juropolitical societies, where law, as well as the empowerment of active subjectivity in public functions would become a matter of collaborative decisions made based on ultra-democratic principles.

The here presented work however is purely theoretical. Further research is required, which would evaluate the principles of CBR and/or LD to detailed real-world scenarios, as well as such research, which would contribute to the searching-for, the development and improvement of particular technologies in the SNBG technology stack.

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About the Author

Alois Paulin

The author is PhD student at the University of Maribor and affiliate of the Technical University of Vienna. His research focuses on finding and developing sustainable conceptual technical foundations towards forms of self-management of juropolitical communities, which would yield in a technical infrastructure for self-managed governance of eligibilites in juropolitial systems.

Harnessing the Potential of IT-enabled Collaboration - A Classification for Open Government Collaboration

Jörn von Lucke*, Katharina Große**

*Zeppelin University, Am Seemooser Horn 20, D-88045 Friedrichshafen, Germany joern.vonlucke@zu.de,
**Zeppelin University, Am Seemooser Horn 20, D-88045 Friedrichshafen, Germany katharina.grosse@zu.de

Abstract: *What has been learnt in collaborative software development is also true for Open Governmant Collaboration (OGC): There is a need for a classification of the different types of collaboration. It is needed in order to design platforms that meet the needs of the respective tasks. The paper introduces such a classification based on the input for collaboration: data, information, knowledge, capital, and goods. It finds eight types of OGC, which pose different requirements on their IT infrastructure. This does not only help to design appropriate platforms, but also encourages decision-makers to clearly define their goals. As a consequence, problems such as unclear expectations or inappropriate tools can be overcome.*

Keywords: *Collaboration, Open Government, IT infrastructure, Classification, Knowledge*

Introduction

In our previous work, we have described that most of the discussions about opening government focus on initial stages of the policy cycle, namely the agenda setting and decision preparation. This participation offers great advantages for governments and it is well-discussed among scientists and practitioners. We argued however, that government processes offer even more possibility for citizen involvement. Great potential can be found in opening up not only the decision preparation, but also the actual implementation of policy, its monitoring and evaluation. We called this Open Government Collaboration (OGC) and illustrated its use in various fields of application (von Lucke & Große, forthcoming). We also accentuated that collaboration does not only encompass the co-operation of government and citizens, but also in between government agencies and with stakeholders from other organisations. Linders (2012) provides a useful overview of collaborative connections between citizens and/or government agencies. He does however not refer to resulting platform requirements.

Developments in Information and Communication Technologies (ICTs) are the key factor that enhanced the possibilities of collaboration. ICTs make it possible to collaborate independently of time and location and also to collaborate with a large, undefined mass, namely "the crowd". This offers an enormous increase in problem-solving and innovation capabilities. As ICTs are the core enabler of this new "Open Government Collaboration", they are also the key factor for success of failure. That means that the appropriate use of technology is essential in order to fully harness the

potential of OGC. Observing a related case, namely collaborative software development, one can see that here the need for a classification of collaborative tools and environments is clearly recognised. As Soriano, Fernández and Jiménez (2010) have pointed out, it is unlikely to find one single environment that will meet "*every possible collaborative need*" (p. 1407). It is thus important to be able to make an informed decision on which one has the best fit to the task at hand. The same holds true for OGC. Which environment, which tools are appropriate for which task or problem? Due to OGC being a new concept, there is, until now, no classification that can help answering these questions. This paper introduces a first suggestion.

There are various approaches to creating classifications. Bafoutsou and Mentzas (2002) present an overview over different attempts that use characteristics such as the mode of interaction, the type of task to be accomplished or the time and space relations.

If we want to create platforms to profit from the potential of Open Government Collaboration, we need a similar approach. We need to identify the requirements that are posed on an environment by the different collaborative activities. Only if we are aware of the respective requirements, we can design appropriate support systems.

This is why this paper will start the discussion about a classification for Open Government Collaboration. It will identify different types of OGC based on their input and subsequently the provided output. Thereby the functionality that is needed to achieve the desired results can be identified. It is important to note that we focus on the main functionalities that the OGC enabling platforms need to provide, in order to create a general overview and common ground for debate.

We build upon proposed classification from the "ladder of knowledge" presented by North (2011). The ladder has proven a helpful tool in knowledge management, discussion tools and processes for businesses in the information society. It appropriately captures varying levels of input complexity and allows the user to design organisational processes appropriately – whether they are about information sharing, knowledge management or creating a learning organisation. Therefore it seems to be a perfect starting-point for a classification of very similar tasks for government.

For every step of the ladder, we describe the input and the different types of collaboration that come into play at this level. We then illustrate the benefits that result from it and finally deduce the respective the requirements. In order to do so, we profit from our previous work, in which we described the many applications of OGC (von Lucke & Große, forthcoming). The discussion is summarised in an overall table in the final section.

Data

Firstly, there is collaboration that is built around the joint collection of data. The definition of "data" and its boundary towards "information" are not always unequivocal. This becomes apparent when reading the European Commission's take on Open Data, for example: "*The Commission's work in the area of open data is focussing on generating value through re-use of a specific type of data – public sector information, sometimes also referred to as government data.*"[1] On the European

[1] http://ec.europa.eu/digital-agenda/en/open-data-0.

EPSI platform, the terms are used synonymously as well: "*Public Sector Information (PSI) or Open Government Data is the single largest source of information in Europe.*"[2]

Nonetheless, in this paper, we differentiate between data and information according to North (2011). Following his classification, data are symbols, e.g. letters or numbers that are ordered according to syntax. They provide the basis for information, but they are not interpreted yet. Information is data put into context, i.e. interpreted in texts, visualisations videos or audio recordings.

Data Collection

Looking at the output of data-based collaboration, we can identify two different categories. The first category is data collection. The main focus here lies on providing a platform to gather different datasets and make them accessible. Examples are open government data portals like the EU Open Data Portal[3], the US[4] or the German[5] version. The other main type of data is spatial data.[6] With the INSPIRE Directive, the EU has committed itself to creating a comprehensive portal and infrastructure for spatial data.[7]

The EU expects the potential in additional economic growth that could result from Open Data to be up to 40 billion Euros annually in 2015 (Kroes, 2011) and 206 billion Euros annually in 2020 (WISE, 2014).

The necessary portals primarily require a universally accessible interface for the upload of metadata information or even datasets and their provision. Additionally, a good search function, entailing of course a good description of the sets, is essential. A common infrastructure of metadata, like INSPIRE, is crucial.

Instead of the simple transfer upload and download of metadata or datasets, open data portals might also aim at integrating the different datasets into a comprehensive database out of which individual datasets can be created.

Data Transformation

We call the second type of data-based collaboration "transformation". In this case data from different sources is combined and turned into information. This can happen through visualisation in graphs or maps.[8] Some open data portals have integrated visualisation dashboards.[9] Other

[2] http://www.epsiplatform.eu/content/about-us.
[3] http://open-data.europa.eu.
[4] http://www.data.gov.
[5] https://www.govdata.de.
[6] Naturally, there are also portals for the provision of scientific data. As mostly however, the provision of datasets is an addition to the provision of scientific papers, we will discuss open access in the information section.
[7] http://inspire-geoportal.ec.europa.eu.
[8] It is important to note at this point that open data enables individuals to take the data and interpret or visualise it. The difference lies in the fact that these individual efforts are normally not supported by the platform.
[9] See for example: http://dataportal.afdb.org/default.aspx.

examples are plain open street maps[10] or monitoring platforms. The transformation can also happen via the co-production of text, like in Wikipedia, where data is combined and interpreted in order to provide information on the respective topic.

In addition to providing a great added benefit for citizens, such a transformation can foster the transparency and accountability of governments. Of course, this is also true for and cannot be done without open data portals and their metadata catalogues. The data in its raw format however, will most likely only be regarded by a small percentage of the citizens. In contrasts, a good interpretation or visualisation will be meaningful for a much larger percentage of the population.

For this type of collaboration, additionally to the upload and provision function, the platform needs the capabilities to support the visualisation of data and the tools to co-produce text, if applicable. As information is readily prepared for the interested citizen and mostly topically focused, the search function is less central, but in most cases still important.

Information

The second input we discuss is information, i.e. interpreted data in the form of texts, audio files or videos. Examples are open access portals, where scientific papers are provided, or portals for open educational resources. Freedom of information portals, through which governments provide their reports or studies, also fall into this category.

If open access is fostered, a crowd sourced quality control becomes possible and new projects can re-use existing datasets. Open educational resources (OER) can significantly decrease the financial burden for schools and also enable education for students in areas with insufficient schooling infrastructure. Freedom of information portals can help increase the transparency and accountability of states.

The handling of these is similar to the collection of data. Input, search and provision are the central functions.

Knowledge

Knowledge is the connection of information with personal experience (North, 2011). That means if people use information to judge situations, evaluate progress, write texts or develop software, their input is knowledge.

In some cases, the distinction between a collaboration that is fuelled by information and one that needs knowledge calls for further explanation. This is the case when it comes to open approaches like the open street map[11] or the wheel map.[12] We classify the collaboration on open street maps as based on information. The collaboration on wheel map however, we describe as being based on knowledge.

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[10] As will become apparent in the subsequent paragraphs, we categorise open street maps as the gathering of information, but problem maps and crisis maps as well as the wheel map as knowledge-based collaboration. We will discuss this choice when presenting the knowledge category. The same applies to collaborative monitoring.

[11] Open Street Map: http://www.openstreetmap.org.

[12] Wheel Map: http://wheelmap.org.

This is because when it comes to street maps, there is no judgement required by the participants. They register pre-defined data. It is clearly defined what to register as a street or what to register as a building. Contrary to this, for the wheel map, there is an evaluation required by the participant: Is this building semi-accessible or not accessible by wheelchair at all? The same goes for all additional layers that are added to the underlying map. After a natural disaster, the question to judge might be: Is help needed here? What is the problem? What kind of assistance is required?

A similar distinction applies to monitoring and evaluation. While monitoring requires the participant to report information, evaluation encompasses a personal judgement on this information: Is this project a success or a failure? What does this delay mean and what consequences need to follow?

There are three types of knowledge-based collaboration. In these three, there are three different possible outputs which make for three types of collaboration namely knowledge combination, knowledge application with a joint end product, and knowledge application with a related end product.[13] The naming intentionally shows a relationship between the latter two types of collaboration. While the first one, knowledge combination, focuses on the documentation of knowledge, the latter two require the contributor to apply her or his knowledge.

Knowledge Combination

In knowledge contribution, participants collaboratively work towards creating a description of their knowledge. They combine their insights or suggestions for problem solutions to provide people that face a similar challenge with an instruction manual or recommendations on how to act. In companies, employees might describe how to follow certain processes or how to solve certain problems. The result takes the form of text documents and/or illustrations.[14] We know this type of collaboration from wikis. It also applies to the collaborative writing on policies.

The wisdom of crowds is not a new concept and its benefits are obvious (Surowiecki, 2005). This holds true especially in a time of complex challenges that even (government) experts cannot always solve. In order to include the variety of aspects that need to be considered in a problem solution or in order to create a good policy, the input of many different stakeholders is essential (Willke, 2002).

A platform that facilitates this type of collaboration needs to include a function to discuss and decide on suggestions. It also needs to enable the actual production of a text document, maybe including illustrations. A collaborative editor is necessary. If specific policy problems are to be tackled, a toolbox for the presentation and discussion of problems is needed, too.

[13] North (2011) calls the application of knowledge "know how" ("Können"), "action" ("Handeln") and "competence" ("Richtig Handeln"). The input however, which is relevant for the OGC classification in our proposal, is still knowledge, which is why we adhere to the same category.

[14] It is important to note here that of course wikis can also be used as a platform to gather information. One of the most well-known examples for this is Wikipedia, which is essentially an information base. Wikis in general however are mostly used as tools for knowledge management.

Knowledge Application with a Joint End Product

The second type of knowledge-based collaboration does not require a combination of knowledge, but an application of it. Each participant applies his knowledge and fulfils a certain task. This knowledge application can either result in what we call a joint end product or a related end product. A joint end product could be a text, map or illustration. We might see this in documents that evaluate projects, crisis maps or plagiarism controls.

This production of a joint end product is similar to the one in first type of knowledge-based collaboration, knowledge combination. The difference lies in the content of the created document or illustration. In the case of knowledge combination, the knowledge of how to do something is verbalised and stored. In the case of knowledge a task is fulfilled, like e.g. the evaluation of a situation, or the classification of a sentence as plagiarism. The task-fulfilment is then reported back and integrated in the joint end product that documents the results. If one takes the collaboration in the evaluation of a project as example, the collaboration would look like the following: Based on the results of project monitoring, people can discuss and judge the success of any given project. They would each come to a decision, and then engage in the writing of a collaborative evaluation report, which profits from their unique perspectives and experiences.

An important characteristic of this type of collaboration is that there is no organised task allocation. When creating crisis maps, participants will map the area they can access. It might be that some areas are mapped several times and the information is changed and updated while other regions are not mapped at all.

Governments do profit from this collaboration, because it offers supports in fulfilling public tasks. Without the crowd, governments might not be able to undertake these tasks or might only do so much less accurately and more slowly. This holds true especially in the case of disasters, when infrastructures are damaged and operations cannot be run regularly.

The functionalities that are needed for collaborative knowledge applications with a joint end product are the interface to upload information and visualise it (input & visualisation). It might however also be necessary to provide a collaborative editor to produce actual reports (production). Especially when information is needed to fulfil the task, the platform also needs to fulfil a provision function. This is the case i.e. for project evaluation or plagiarism controls.

Knowledge Application with a Related End Product

The third type of knowledge-based collaboration is equally based on the application of knowledge. There is however, no joint end product like a document or an illustration. Rather, many people fulfil many isolated tasks that all help together to move towards a shared goal. This collaboration is often described as crowdsourcing. Examples for a related end product are peer-2-patent initiatives, in which patent applications are pre-reviewed by the crowd. While this at first seems very similar to e.g. the plagiarism review we discussed before, there is one essential difference: the output.

In the case of plagiarism control, the entire document that is to be checked is presented to the cloud and the public sphere. Even though not everybody will evaluate every part of the document, it is worked on together and the findings are reported in one joint overview. In case of peer-2-patent on the contrary, one member of the crowd pre-screens one application, another one works on a different application. Each review results in an individual report for a distinct case. While

there is the common overall goal of reviewing patent applications and speeding up the process, there is no communal end product. This kind of knowledge application focuses on the allocation of sub-tasks to the crowd. The individual work results are not merged. Other examples are online volunteer portals or design contests. Collaborative cyber defence could also be put in this category.[15]

Open source software development does also fit in this category, even though its case could also be classified as a hybrid type. Arguably, there is a joint end product – the software. However, tasks in the development are very clearly allocated and the result is delivered to a central repository when completed. The actual assembling is not a collaborative effort. This is the reason why we classify open source as a type II collaborative knowledge application. For type I, the collaborative assembling of the joint end product is essential.

The benefits of collaboration with a related end product are similar to those discussed for the previous type. The required functionality however, is slightly different. The most important function that a platform needs to provide in this case is of organisational nature. Participants have to be matched to their tasks. In some cases they might need to upload information in order to report the task fulfilment and its result (input). In some cases, it might be necessary to present the project or task and provide information to the participants, too.

A platform to enable this kind of collaboration thus needs an additional set of functions, like e.g. a collaborative editor.

Capital

A slightly different type of collaboration is often summarised under the heading of crowdfunding. Its input is money, its output is funding for projects or start-ups.

While collaboration in the provision of needed monetary resources is not necessarily a new phenomenon, it has been significantly enhanced by the development of IT-enabled infrastructure.

There are different varieties of crowdfunding. The first one is related to the classical concept of charitable donations. Participants can give money to a project of their choice[16]. A slight alteration is the offering of project-related paraphernalia as thank you for the donation. This is mostly used for cultural projects.[17] There are also arrangements of micro loans and loans as well as classical investments where funders obtain shares in the company.

In times of budget cuts and austerity measure, crowdfunding seems to gain in importance for governments. In Germany, cities can now borrow money from their citizens on leihdeinerstadtgeld.de.[18]

Independent of the type of crowdfunding, the platform that enables the money-based collaboration has two main functionalities. Firstly, users who are in need of funding need to be able to present their idea, project or business to attract supporters. This might include the possibility to share videos, photos, in some cases status reports and similar. Secondly, there needs to be an infrastructure for transferring the money (and transferring it back in the case of loans).

[15] In 2007, Estonians started to volunteer in a cyber-defence unit (Czossek, Ottis & Talihärm, 2011).
[16] For example on http://www.betterplace.org.
[17] For example on http://www.startnext.de.
[18] Leih Deiner Stadt Geld: https://www.leihdeinerstadtgeld.de.

Goods

The final type of collaboration focuses on the sharing of goods and has newly been titled the shareconomy. People collaborate to provide one another with equipment and infrastructure. Examples are transportation (car sharing), office space (co-working) or IT infrastructure via open wireless networks or cloud computing. People do also share their living spaces via couchsurfing or airbnb. [19]

The rise of the shareconomy is commonly attributed to a cultural change that does no longer consider the ownership of goods as a pursuable goal. Sharing them is considered more desirable.

In many cases, the shareconomy takes over tasks that fall in the area of government responsibilities. Transportation is a very good example. Car sharing offers a solution to a problem that government might not be able to solve on its own – in this case via public transportation.

A platform to support the shareconomy primarily needs to fulfil an organisational function to match providers and seekers. As the sharing of resources is to a large extent based on mutual trust, a rating mechanism is also essential.

Summary and Discussion

It has become apparent that indeed, depending on the type of collaboration, the supporting platforms are required to offer very different functionalities (see Table). By looking at the different inputs (data, information, knowledge, capital, and goods) as well as the different outputs (datasets, maps, illustrations, text documents, audio files, videos, fulfilled tasks, funding, equipment, and infrastructure), we were able to identify eight types of collaboration and the resulting demands on the supporting IT infrastructure. This framework can therefore be a first step towards realising the full potential of Open Government Collaboration. Also, it encourages decision makers to define the goals of their collaborative projects, which enables them to better monitor success and continuously optimise the processes. While this classification is no solution to the common problems that occur in collaboration, such as scepticism towards partners and reluctance to co-operate or unclear hierarchies and responsibilities, it helps to minimise dissatisfaction that stems from unclear goals or tools that do not meet the requirements of the tasks.

[19] Couchsurfing: https://www.couchsurfing.org. Airbnb: https://www.airbnb.de.

Table 1: Input-Output-Classification for Open Government Collaboration

Input	Type of collaboration	Output	Examples	Major activity on online platform
Data	Collection	• Data • Existing Datasets • Assembled Datasets	• Open government data • Open spatial data	• Input • Search • Set creation • Provision
	Transformation	• Information • Maps • Illustrations • Text documents	• Open street maps • Open data visualisation • Monitoring platforms • Wikipedia	• Input • Search • Provision • Visualisation • Production
Infor-mation	Collection	• Information • Text documents • Illustrations • Audio files • Video files	• Open access portals • Open educational resources • Freedom of information portals	• Input • Search • Provision
Know-ledge	Combination	• Knowledge • Text documents • Illustrations	• Policy design • Wikis	• Presentation • Discussion • Decision • Production
	Application with a joint end product	• Joint end product: • Text documents • Maps • Illustrations	• Project evaluation • Problem reporting systems • Crisis maps • Plagiarism control	• Input • Visualisation • Provision • Production
	Application with a related end product	• Related end product: • Fulfilled task	• Peer-2-patent • Volunteer portals • Design contests • Cyber defence • Open source software	• Organisation • Input • Presentation • Provision
Capital	Crowdfunding	• Funding	• Donations • (Micro) loans • Investment	• Presentation • Transfer
Goods	Sharing	• Equipment • Infrastructure	• Transportation • Office space	• Organisation • Ration
	(Shareconomy)		• Networks • Cloud Computing	

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About the Authors

Jörn von Lucke

Prof. Dr. Jörn von Lucke is professor and chair for public sector informatics and business informatics as well as director of "The Open Government Institute" at the Zeppelin University in Friedrichshafen. He was the founding director of the Deutsche Telekom Institute for Connected Cities (TICC) and involved in the broadband project T-City Friedrichshafen. His current fields of research are E-Government, Open Government, Open Government Data, Open Budget 2.0, Open Government Collaboration, Open Societal Innovation, Web 2.0, Portals and One-Stop Government.

Katharina Große

Katharina Große works as academic assistant for the chair for public sector informatics and business informatics at "The Open Government Institute" at the Zeppelin University in Friedrichshafen. Her work focuses on the analysis of cooperation between the state and civil society in the democracy of the future. She has received a Master in Public Management & Governance from the Zeppelin University and a BBA from the International Business School in Groningen.

Open Data, Transparency and Open Innovation

Breaking Public Administrations' Data Silos: The Case of Open-DAI, and a Comparison between Open Data Platforms.

Raimondo Iemma*, Federico Morando*, Michele Osella**

*Nexa Center for Internet & Society at Politecnico di Torino, DAUIN – Corso Duca degli Abruzzi 24, 10129 Torino (Italy), raimondo.iemma@polito.it, federico.morando@polito.it
**Istituto Superiore Mario Boella – Via Pier Carlo Boggio 61, 10138 Torino (Italy), osella@ismb.it

Abstract: *An open reuse of public data and tools can turn the government into a powerful 'platform' also involving external innovators. However, the typical information system of a public agency is not open by design. Several public administrations have started adopting technical solutions to overcome this issue, typically in the form of middleware layers operating as 'buses' between data centres and the outside world. Open-DAI is an open source platform designed to expose data as services, directly pulling from legacy databases of the data holder. The platform is the result of an ongoing project funded under the EU ICT PSP call 2011. We present the rationale and features of Open-DAI, also through a comparison with three other open data platforms: the Socrata Open Data portal, CKAN, and ENGAGE.*

Keywords: *Public Sector Information, Service-Oriented Architecture, Open Data portals, Benchmarking, Exploitation.*

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Introduction

By allowing external actors to reuse government data and tools, new services can be provided to citizens and by citizens (e.g., Nam, 2012; Linders, 2012). In this way, the government can be turned into a powerful "platform" also involving innovators (e.g., O'Reilly, 2011). At the same time, by using common open repositories, public administrations can save time and money from the automatisation of internal data exchange, while increasing their degree of transparency (Stiglitz et al., 2000). Not by chance, 'open by default' is becoming one of the foundational principles of open data-related pieces of legislation, including the recently updated European Directive on Public Sector Information (PSI).

However, the typical information system of a public agency is not open by design. The general public can frequently access to services based on software applications. But raw data and/or granular data services are typically not available to the general public. Usually, a low level access

to the system is reserved to a small number of public officials. Apart from technicians, the most frequent category of users consists of external service providers, or of bulk reusers of data. In both cases, the conditions and purposes of access typically result from well formalised agreements. A huge amount of relevant public sector information is stored in proprietary formats (see, e.g., the UK Action Plan 2013 related with the G8 Open Data Charter). Data streams are usually fragmented, with information only flowing vertically, and rarely between departments (Tapscott et al., 2008). The same kind of issue applies to interaction between agencies at different administrative levels, with the additional aspect of semantic interoperability. Open data dissemination is typically not yet embedded in the ICT management strategy as a step of the data life-cycle (e.g., Fioretti, 2011).

Making public agencies' information systems open is arguably a challenge for the medium and long term (see, e.g., the UK Open Standards Principles, 2012). In the short run, it seems useful to track endeavours aimed at smoothing the process of data publication, e.g., in the form of middleware layers operating as 'buses' between data centres and the outside world. In fact, several public administrations have started adopting technical solutions in this respect. At the same time, policy contributions set requirements in terms of openness and interoperability.

In this paper we discuss the features of Open-DAI, an open-source platform designed to enable organisations to expose data as services, directly pulling from their legacy databases. Open-DAI is the result of an ongoing project funded under the EU ICT PSP call 2011, Objective 4.1: Towards a cloud of public services. Amongst the expected impacts, an increase in the efficiency of administrative services which will apply new architectural approaches to the legacy assets. As a EU-funded project over the period February 2012 - September 2014, Open-DAI is coordinated by CSI Piemonte, the ICT in-house company of Regione Piemonte, and involves public administrations from Italy, Spain, Sweden, and Turkey[1].

This paper is organised as follows. Section 2 describes the overall architecture of Open-DAI. Section 3 contains a comparative analysis with other platforms for open data exposure. In Section 4, exploitation scenarios are presented. Section 5 draws conclusions, and discusses future works.

Open-DAI

Background and Objectives

When defining the optimal technological approach for Open-DAI, the EU call (ICT PSP 2011, Objective 4.1) specifications were taken into account. Two technological paradigms were adopted at the infrastructural and the architectural levels respectively: cloud computing and service-oriented architectures (SOA). Cloud computing can ensure an elastic provision of resources, with a trade-off emerging between the efficiency savings driven by a decentralisation / rationalisations of the IT estate of an organisation, with concerns related with reliability, data protection and security. All these aspects are particularly relevant for the public sector (e.g., Armbrust et al., 2009).

SOA principles place the interoperability of software services at the core of the design of systems development and integration. Balzer (2004) lists as the most relevant guiding principles to direct development, maintenance, and usage of the SOA "[r]euse, granularity, modularity, composability,

[1] The complete list of the Open-DAI partners is available at http://www.open-dai.eu.

and componentization", together with "[c]ompliance to standards". Indeed, these are the functional equivalent for a service of the most desirable characteristics of open government data, which should not just be accessible, but also available for re- use as raw data that can be technically and legally remixed with other data and possibly semantically described, using standard vocabularies (e.g., Berners-Lee, 2006; or Heath & Bizer, 2011).

Open-DAI aims at creating a 'open data hub', allowing data exposure using standard protocols, and avoiding data duplication. Its second objective is to improve interoperability, without any modification of the legacy logical and physical infrastructure.

Rationale, Architecture, and Technological Choices

Open-DAI is a platform that directly extracts data from legacy DBs that sit behind existing public sector applications. Under the rules defined by the data holder, it generates a virtualised version of the database in the cloud, and exposes the transformed data as services (RESTful APIs), therefore providing data reusers with a 'real time' connection with the legacy data.

At the architectural level, Open-DAI encompasses two interrelated components: (i) a cloud infrastructure; (ii) a SOA-compliant middleware layer operating within each private cloud owner, i.e., a data holder (to ensure autonomy scalability related with specific needs), but encompassing common components (so that the middleware is managed by the cloud provider, i.e. the Open-DAI maintainer - without any extra burden for the public agency using it). Technological choices result from the integration of "out-of-the-box" open-source tools.

The cloud computing infrastructure is implemented through CloudStack, an open-source solution that organises virtual machines into logical groups, helps to deploy them on physical host, and provides fine-grained management features. A cloud cluster has is managed by CSI Piemonte (Italy), as coordinator of the Open-DAI project. In practice, each user of the platform receives a private allocation (domain) of the cloud, isolated at the network layer for security purposes.

The middleware layer exposes data services, allowing the creation of new services, and integrating them using a SOA-compliant approach. This middleware has two main components (as in Figure , p. 236).

Access to legacy databases is ensured by a data virtualisation layer (the open-source component JBoss TEIID), using VPN connections, also allowing data transformations. Using the D2RQ platform as semantic module, Open-DAI also enables linked data exposure, with an RDF triple store coupled with a SPARQL endpoint. Geographic data are released using GeoServer, an open-source Java J2EE application designed for that purpose.

The task of publishing of data services (as RESTful APIs) is carried out by the open-source web server Apache, with WSO2 as Enterprise Service Bus, so that the existing infrastructure (including servers, storage systems and/or relational DBs) is retained. This approach is particularly suitable for the exposure of frequently changing data. As a 'proof-of-concept' of possible data reuses enabled by Open-DAI, several pilot services were created by the project partners (see § 2.3).

A 'common components' group tools facilitates management and monitoring activities carried out by the platform user, including configuration provided through the open-source tool Puppet.

Figure 1: Schematisation of the Open-DAI architecture

Examples of Public Data Reuse: Service Pilots

Pilot services are being developed within the project, in the form of mobile or web applications. These services represent a proof-of-concept of possible data reuses enabled by the platform. Prior to the actual design of the pilot services, an assessment of the datasets made available by the public administrations involved in the project was performed. This activity included a description of the structure and fields of the datasets, as well as further scrutiny aimed at clearing Intellectual Property Rights (IPRs) and at managing the existence of personal data. Beyond existing technical and legal constraints, datasets were selected according to the expected value in their reuse, assuming for instance the possibility of geo-referencing, and the presence of real-time updates, as some of the key features in this respect. Apps are designed to provide real-time information on: air quality (Piedmont Region and Barcelona Municipality); road accidents (with the future opportunity to also gather real-time data from citizens) (Piedmont Region and Lleida Municipality); location of points of interest (Karlshamn Municipality and Ordu Municipality)[2].

Comparative Analysis

Requirements Definition

In order to compare Open-DAI with other solutions for data publication, we engaged in the selection of meaningful parameters, e.g. capturing specific features related with the functioning of a platform. We decided to derive such parameters from requirements (explicitly or implicitly) expressed in several public documents. This first set of sources encompass: legislation at European (e.g., the PSI Directive[3], the INSPIRE Directive), national (e.g, the Italian Code for the Digital

[2] At the time of completing this article (February 28th, 2014), the mentioned pilot services are described in the Open-DAI website (http://open-dai.eu/, see the section 'Pilots'), and for some of them a demo is available. The source code of the pilots is progressively stored in a GitHub repository (https://github.com/open-dai).

[3] The timing of the recent "Consultation on guidelines on recommended standard licenses, datasets and charging for the re-use of public sector information" (expired on November 22nd, 2013), did not allow us to elicit requirements from its results, not yet available at the time of completing this version of the paper, as further input.

Administration) and local (e.g, Piedmont legislation on PSI) level; strategic plans related with the implementation of the EU Digital Agenda (e.g., EU eGOV action plan, European Interoperability Framework, the "Connecting Europe Facility" proposal of regulation; the "Open Data Support" initiative by DG CONNECT); national guidelines on public sector information management (e.g, UK Open Data white paper; UK Public information management principles; UK Open Standards Principles; Guidelines on public sector information reuse by the Italian Agency for digital policies; Open Data vademecum by Formez); tender specifications for open data portals (e.g., the call for tender for the EU open data portal; the call for tender for the open data portal of the Lazio Region); studies (e.g., "Study on persistent URIs" by ISA; Garcia & Pardo, 2005, "E-government success factors: Mapping practical tools to theoretical foundations"; others cited throughout this paper).

As a result of an extraction carried out in two steps. The first one meant to elicit a long-list of preliminary requirements drawing on aforementioned sources, and the second one aimed at distilling the short-list of refined requirements adopted as criteria for benchmarking purposes. Finally 18 requirements have been obtained. Those requirements were organised in four categories, describing: (i) publication features (capturing, e.g., the process through which data are published) [A1 to A8]; (ii) data features (e.g., in terms of standards supported by the platform) [B1 to B5]; (iii) the platform architecture, or other general features [C1 to C3]; (iv) add-ons [D1 to D2]. Arguably, this categorisation is just one amongst the many possible, also considering that the impact of most of the features can be reflected in several aspects at the same time.

Benchmarking

Platforms subject to benchmarking were chosen so to ensure a reasonable coverage of the existing solutions, still preserving comparability. We then included in our benchmarking activity: a commercial, widely adopted platform (Socrata Open Data portal); a 'community-based', widely adopted platform (CKAN); two platforms deriving from the work carried out within European projects, therefore with a limited user base so far, but with considerable potential, such as ENGAGE and Open-DAI.

Socrata is a U.S. company founded in 2007, providing social data discovery services for opening government data. Its 'Open Data Portal' provides a cloud-based service for data publishing, metadata management, data catalogue federation, and exposure of data as services. Data can be published manually, or through dedicated APIs. Search APIs allow queries at the dataset level. Data reuse is also enabled through developers APIs (in a 'freemium' logic). Currently, around 50 out of 330 public data catalogues worldwide use the Socrata software (figure derived from http://www.socrata.com/customer-spotlight/). In early 2013, Socrata launched the "Community Edition" of its Open Data portal (free and open-source).

CKAN (acronym for Comprehensive Knowledge Archive Network) is an open-source data management platform maintained by the Open Knowledge Foundation. Currently, it is used by around 50 out of 330 data catalogues worldwide (figure derived from http://ckan.org/instances), including the recently issued European Open Data portal (http://open-data.europa.eu/), developed by the Belgian company Tenforce. CKAN is released under several versions, that differ from each other in terms of features and service level. While the download and usage of CKAN are free, the CKAN team offers deployment services. CKAN furthermore allows catalogue federation through its APIs.

ENGAGE is a combination of CP & CSA project funded under the European Commission FP7 Programme. Its main goal is the development and use of a data infrastructure, incorporating distributed and diverse public sector information (PSI) resources, capable of supporting scientific collaboration and research, particularly for the Social Science and Humanities (SSH) scientific communities, while also empowering the deployment of open governmental data towards citizens.

The main results of the benchmarking are reported in Table 1.

Table 1: Open data platforms benchmarking table

Requirement	Open-DAI	Socrata OD Portal	CKAN	ENGAGE
A1. Uses an automatic process to expose data stored in legacy databases.	Yes. The platform pulls data (virtually in real time) from legacy DBs, with standard connectors available (for most DBs).	Automatable, using 'Publish' APIs made available to data holders.	Automatable, using 'Publish' APIs made available to data holders.	Automatable, using 'Publish' APIs made available to data holders.
A2. Uses APIs at the data level (e.g., transformations).	Yes (e.g., CSV to JSON), and data filtering.	Yes (e.g., CSV to JSON).	Yes, with its 'Data storer' plugin.	No.
A3. Promotes the use of standard metadata.	Under development, with the aim of following the same approach as CKAN in this respect.	Yes, in the 'Community' edition, using standard vocabularies such as DCAT (W3C).	Yes , using standard vocabularies such as DCAT (W3C).	Yes, three-layer metadata architecture: discovery (e.g., Dublin Core, eGMS, CKAN), context (e.g., CERIF), detail (i.e., subject-specific or topic-specific).
A4. Enables catalogue federation (with CKAN-API as de facto standard).	Not yet, ongoing development.	It allows federation, using CKAN metadata (but not the API) as a standard.	Yes (trivially).	Yes, using CKAN-API as standard.
A5. Allows to perform a data quality check (and related data refinement).	Not directly.	Not directly, but it enables quality check, e.g. identifying data types for values.	Not as embedded functionality, basic integration with OpenRefine through an extension.	Not as embedded functionality, but ENGAGE provides a strong integration with OpenRefine). Besides, data curation by the community is encouraged.
A6. Is designed to be integrated with (or includes) a front-end / open data portal.	Yes, i.e. it is planned to integrate Open-DAI as a back-end of the Open Data portal of the Piedmont Region.	Yes, but poorly customizable. Ongoing attempts by third parties, e.g. an integration point with Drupal is being developed , still in Alpha mode.	Yes. On top of the standard front-end, there are well experimented modules for Drupal and Wordpress.	Yes. A full-fledged front-end is included.
A7. Releases APIs to reuse data.	Yes, RESTful APIs.	Yes, RESTful APIs.	Yes, with its 'Data storer' plugin.	No. RESTful APIs are implemented only at metadata level.

A.8 Enables browsing at the data level.	Yes.	Yes.	Yes, with its 'Data storer' plugin.	Yes.
B1. Designed to expose Open Data.	Yes.	Yes.	Yes.	Yes.
B2. Designed to publish dynamic data.	Yes.	Yes.	No, only static files.	Yes.
B3. Designed to expose geo-referenceable data.	Yes.	Yes.	No, but allows exposing georeferenced metadata.	Yes.
B4. Designed to expose Linked Open Data (meaning at least RDF triple store + SPARQL endpoint + other features, e.g., ontology mapping).	Yes.	No. The 'Community edition' allows data exposure as RDF, but with no triple store, nor SPARQL endpoint.	No, just linked metadata.	Yes.
B5. Presents prototypes of data reuse.	Yes, e.g., Open-DAI pilot services.	Yes.	Yes, e.g., tabular previews.	Yes, derived datasets .
C1. Released as open-source software.	Yes.	Not the standard edition (Yes, in case of the 'Community Edition').	Yes.	Not yet. However, the consortium is inclined to release the basic engine under the MIT License.
C2. Available in a cloud environment.	Yes, at all levels of abstraction.	Yes, SaaS.	No.	Yes, SaaS.
C3. Available "on premise" by the data holder (i.e., as a DB independent from the provider's API).	Yes.	No.	Yes (but has a 'hosted' option).	Yes.
D1. Allows to gather feedback on data (also in terms of 'forked' datasets).	Yes, in the case of service pilots that enable data flow in both directions.	Yes, users can manipulate files and save their edits.	Yes (through the 'datahub.io' portal).	Yes. Derived datasets are welcome and are tracked by the system.
D2. Encompasses a ticketing system.	No.	No.	No.	Yes, the issue tracking system covers bug, license issues and general questions/suggestions. Moreover, users may place a new request for data not available on the portal.

Discussion

Open-DAI can be conceived as a 'bus' that, by federating governmental data repository, breaks silos existing among governmental agencies making data available for a twofold goal: on one hand, Open-DAI becomes a propellant for a fluid flow of data (even in case of confidential data not bound to be published) among public bodies and, on the other hand, allows the exposure of Open Government Data to the outside world.

At this level of abstraction, Open-DAI holds several common points with other solutions designed with the same purpose. However, considering specific functionalities, differences may emerge as significant, and therefore worth exploring.

The process under which data are extracted from legacy DBs is arguably one of the distinctive features of Open-DAI. In fact, Socrata OD Portal, CKAN and ENGAGE enable data exposure in a 'push' mode, i.e. using "publish" APIs available to data holders, who set them according with their needs (e.g., in terms of frequency of update), while Open-DAI - as already explained - 'pulls' data from DBs of legacy applications. From the point of view of developers, the data they get using Open-DAI is a transformation of (a query on) a legacy database, while using other platforms developers get the most recent version of the published data. Depending on the optimal frequency of update of a specific dataset (from the point of view of its meaningfulness, and actual reusability), this aspect could turn out to be more or less relevant. Moreover, Open-DAI provides a broad set of services/formats, and fine-grained API management (through WSO2), which is not always the case for the platforms used for this comparison.

Currently, Open-DAI is not integrated with a 'traditional' portal, although, for instance, there are plans to expose its APIs on the Open Data portal of the Piedmont Region. Together with catalogue federation, this aspect represents one of the future developments foreseen for Open-DAI. Both CKAN and ENGAGE encompass a full-fledged front-end (a 'data hub', in the first case), while the CMS of the Socrata Open Data portal has advanced data preview features, but is perceived by its users as poorly customisable. Open-DAI is a potential substitute of 'traditional' (e.g., not exposing data as services) open data portals, but it can also be seen as a complement to these pieces of software. In fact, to serve the broader "data portal" market, Open-DAI needs a front-end: it can get it through integration with an open data portal and/or with CKAN, composing, in this way, the same kind of offering as softwares such as Socrata Open Data portal.

Although with some differences in the way they are implemented, all platforms exposing data as services feature advanced solutions in terms of data exposure, e.g. related with specific formalisms or categories of data, while CKAN usually enables these kinds of features only at the metadata level. In particular, among the considered platforms, currently only Open-DAI and ENGAGE are designed to expose (and allow standard queries on) Linked Open Data.

Exploitation Scenarios

In light of the comparative analysis above, and of the actual incentives and constraints of the partners, four exploitation scenarios were drafted for Open-DAI.

Looking at Scenario 1, the partial reuse of project outputs as components is a default and worst-case scenario. Under this scenario, when Open-DAI ends as a EU-funded project, nobody

maintains it as a unique platform and the various exploitation items become reused in other contexts. Obviously, this is a sub-optimal scenario.

Under Scenario 2, Open-DAI would be maintained as an open-source platform by one of the partners of the former consortium (most probably, the project leader). Benefits could be experienced at different levels, not only in terms of tangible legacy, but also for third parties willing to engage in further developments. Moreover, adoption costs for interested PAs would be reasonably low if compared with market offerings. In addition, the maintainer could achieve a potentially high return, especially in terms of economies of scale and scope within its organisation.

Under Scenario 3, a "data cloud" offer (essentially equivalent to the Open-DAI platform) would be promoted, as part of a major public procurement action, e.g. by a national / local public group purchasing organization (GPO) able to capture significant scale and scope economies. However, in order to become a service purchased by PAs on a regular basis, this "data cloud" should be defined and evaluated under standard terms, which is currently rather complex. Moreover, competition concerns may, although some standard remedial/mitigation actions could be foreseen (e.g., avoiding the 'winner takes it all' approach).

Scenario 4 captures a market approach, defined through a detailed business plan. Possible sources of revenue are identified as being mainly related with (i) start-up and integration of the platform, and (ii) supply of Open-DAI as a service (with reusers served in a "freemium" mode). Realistic cost and demand scenarios make Open-DAI economically sustainable even at the level of a single European country and with a single software maintainer. In any case, the incentive to offer Open-DAI to public administrations, even if barely reaching break-even, would be strong, also in relation with potential spillover effects (see, e.g., Ferro & Osella, 2013).

It emerges that scenario 2 is reasonably feasible, and, given the willingness expressed by some of the partners, it represents the most likely alternative. Scenario 3 is possibly granting a higher chance of internalising externalities deriving from a standardised adoption of Open-DAI, but weak in terms of autonomy from decisions of external stakeholders. Finally, the market exploitation by some of the partners, e.g. interested in providing services around Open-DAI, is to be considered as arguably likely.

Conclusions and Future Work

Platforms for open government data publishing share a set of common features. All of them allow their adopters to reach high-level policy objectives related with enabling data reuse by third parties, in standardised ways. Yet, differences may also be identified. These are related, on the one hand, with the type of integration (if any) with legacy systems. On the other hand, features improving data discoverability (also through multiple catalogues), and integration with data portals, are supposed to maxise the expected value for developers and other interested parties. In this respect, reaching a critical mass of public administrations adopting the platform would entail an increase the available data in volume, variety and quantity, attracting more data reusers as a consequence. Generally speaking, interaction with potential reusers could be improved in any of the examples taken into account. For instance, a properly sustainable model for a 'public data versioning' is not yet available, although several attempts have been carried out.

Finally, we submit that the benchmarking exercise drafted in this paper could be further developed, and thus become a useful reference for practitioners, policymakers and, of course,

public administrations facing a choice between open data platforms. In particular, the set of references used to elicit requirements could be broadened. Moreover, requirements could be expressed adopting a 'linked' approach in such a way to explicitly capture interrelations, providing a comprehensive (and enricheable) framework for further benchmarking.

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About the Authors

Raimondo Iemma

Raimondo Iemma holds a MSc in Industrial engineering from Politecnico di Torino. He is PhD candidate in Management, production and design at Politecnico di Torino. He performs research and policy support in the field of Open Government Data and innovation within (or fostered by) the Public Sector. He is Managing Director & Research Fellow at the Nexa Center for Internet & Society.

Federico Morando

Federico Morando is an economist, with interdisciplinary research interests at the intersection between law, economics and technology. He holds a Ph.D. in Institutions, Economics and Law from the Univ. of Turin and Ghent. He is the Director of Research and Policy of the Nexa Center for Internet & Society. From Dec. 2012, he leads the Creative Commons Italy project.

Michele Osella

Dr. Michele Osella is the Head of Business Model & Policy Innovation Unit at Istituto Superiore Mario Boella, being in charge of a multidisciplinary research team studying economic, social and policy implications of ICTs. In the academic sphere, he is Adjunct Lecturer in Innovation Management at the Polytechnic of Turin. Prominent strands of research on which he is focused are social computing, open data, smart city governance as well as Internet economics, with a keen interest for groundbreaking business models.

Conceptualizing Open Data Ecosystems: A Timeline Analysis of Open Data Development in the UK

Maximilian Heimstädt*, Fredric Saunderson**, Tom Heath***

** School of Business & Economics, Free University, Berlin, m.heimstaedt@fu-berlin.de*

*** National Library of Scotland, Edinburgh, f.saunderson@nls.uk*

**** Open Data Institute, London, tom.heath@theodi.org*

Abstract: *In this paper, we conceptualize Open Data ecosystems by analysing the major stakeholders in the UK. The conceptualization is based on a review of popular Open Data definitions and business ecosystem theories, which we applied to empirical data using a timeline analysis. Our work is informed by a combination of discourse analysis and in-depth interviews, undertaken during the summer of 2013. Drawing on the UK as a best practice example, we identify a set of structural business ecosystem properties: circular flow of resources, sustainability, demand that encourages supply, and dependence developing between suppliers, intermediaries, and users. However, significant gaps and shortcomings are found to remain. Most prominently, demand is not yet fully encouraging supply and actors have yet to experience fully mutual interdependence.*

Keywords: *Open Data Ecosystem, Open Government Data, Framework, United Kingdom*

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Introduction

An ecosystem does not develop solely through top down governance, but by fruitful interaction between cooperating and competing actors. To investigate the driving forces within a national Open Data ecosystem, we have utilised a business ecosystem framework to analyse developments within the United Kingdom between the late 1990s and mid-2013. The Open Data Barometer of October 2013 ranks the UK's Open Data initiative as world leading (Davies, 2013). The Open Data Index, aggregated by the Open Knowledge Foundation, also ranks the UK's Open Data ecosystem as the world's most developed, giving the country an overall score of 940 out of 1000 (Open Knowledge Foundation, 2013). Because the UK process operates as a distributed and intentional, rather than random, system, it can be regarded as a prime example of best practice. In this paper, we generalise the mechanics of Open Data ecosystems, in order to foster the development of ecosystems in other geographies. In the first two sections we review different Open Data definitions and highlight aspects of business ecosystem theory. In the third

section we assemble a narrative timeline of the Open Data ecosystems in the UK before creating a more general conceptualisation in the final section. Methodologically, our work is informed by a combination of discourse analysis and in-depth interviews, undertaken during the summer of 2013, and therefore capturing the current state of the art.

Standards for a Distributed Movement: Open Data Definitions

Open Data has emerged as a global and distributed movement involving various governmental and non-governmental actors. To enable productive communication within this system, there have to be technical and terminological standards. We therefore have reviewed, compared, and contextualised the existing body of Open Data definitions and principles, which have played a role in the development of the United Kingdom's Open Data ecosystem.

The Open Knowledge Foundation (OKF), launched in 2004, sought as one of its first projects to define digital openness by releasing the Open Knowledge Definition (Open Knowledge Foundation, 2005). By 2004, the idea of openness had already gained some ground in academia, sections of the media, and, notably, in the software community. The OKF developed its definition in an effort to prevent the concept from being diluted by a plurality of understandings (R. Pollock, personal communication, July 19, 2013; T. Steinberg, personal communication, July 17, 2013). In order to ease dissemination and understanding, the OKF outlined its criteria in a single phrase: "A work is open if it is accessible, reproducible and re-usable without legal, social or technological restriction" (Internet Archive, 2006). Over the years this summary has developed into its present wording, which was released as Version 1.1 in November 2009: "A piece of data or content is open if anyone is free to use, reuse, and redistribute it – subject only, at most, to the requirement to attribute and/or share-alike" (Open Knowledge Foundation, n.d.).

In September 2007, thirty Open Government advocates gathered in Sebastopol, California, to discuss how opening up government data could benefit democratic systems. The results of this meetup were eight principles [see Table 1], which define the structural properties government data must posses to be considered "open". The US non-profit organisation Sunlight Foundation sponsored the gathering and in 2010 released an updated version of the results containing two additional principles – permanence and usage cost – for Open Government Data [see Table 1].

It is important to explicitly mention at this point that Open Government Data (OGD) is not an equivalent to, but a subcategory or subset of, Open Data, which may equally originate in the commercial, academic or third sectors. As Yu and Robinson (2012) explain, the term Open Data remains neutral in regards to the content of the data sets and only describes its technical and legal shape. Kloiber (2012), however, mentions that in the majority of articles, reports and strategy papers the term is used synonymously for OGD. For the clarity and consistency on this matter we will simply use the phrase "Open Data" in this article.

Strict interpretation frameworks, such as the Open Definition and the Sunlight/Sebastopol Principles, emphasise a dichotomous classification of data: data is either open or closed. With his five star rating for Linked Open Data, Berners-Lee (2010) highlights the importance of not just legal but also technical aspects of openness, for example through the use of open standards and non-proprietary file formats for Open Data publishing. More broadly, Berners-Lee and others (Berners-Lee, 2009; Bizer et al., 2009; Heath & Bizer, 2011) promoted the concept of Linked Open Data to transform "data on the web" into "the web of data" by encouraging the linking of one's own data

with other datasets. A more recent initiative, Open Data Certificates[1], was launched in 2013 by the London-based Open Data Institute (ODI), enabling data publishers and others reliably to assess the extent to which Open Data is published according to recognised best practices. In addition to legal and technical aspects, Open Data Certificates take practical and social factors into account to provide a more holistic assessment framework. The scheme is a development of the OKF's Open Definition, the 5 star scheme, and the OPQUAST Open Data initiative checklist [see table 1] (J. Tennison, personal communication, July 11, 2013). The latter is grouped into thirteen themes (e.g. metadata, format, and license) and each principle is ranked on a scale of one to three, depending on its importance.

Table 1: Open Data Definitions and Frameworks Influencing the UK Ecosystem

#	Definition or Framework	Release Data	Summary
1	Open Definition	October 2005	Use, Reuse, and Redistribution
2	Sebastopol Principles	December 2007	8 Principles for opening up explicitly governmental data
3	Sunlight Principles	August 2010	#2 plus "Permanence" and "Marginal Usage Cost"
4	5 Star Linked Open Data	May 2010	#1, #2, and Semantic Web Technologies
5	OPQUAST Checklist	April 2011	72 Principles, 17 Themes, 3 Levels of Importance
6	Open Data White Paper	June 2012	PSI, made available as Open Data according to #1, #2, and #3
7	Open Data Certificates	June 2013	Merges #1, #4, #5 into four levels of Open Data publishing quality

So far, we have reviewed a list of definitions developed by individuals, both non-formalised and formalised civic actors. However, it is also essential to examine how the UK government itself defines Open Data (and Open Government Data). HM Government's (2012a, p. 8) *Open Data White Paper* states that Open Government Data is "Public Sector Information that has been made available to the public as Open Data". The document defines Public Sector Information (PSI) as

[1] https://certificates.theodi.org/

"data and information produced, collected or held by public authorities, as part of their public task" (HM Government, 2012b, p. 8), and sees Open Data, in general terms, as data that is accessible (ideally via the internet) at marginal cost and without discrimination, available in digital and machine-readable format, and provided free of restrictions on use or redistribution (HM Government, 2012b).

The Ecosystem Analogy

To analyse the provision and use of Open Data by a variety of actors, a suitable framework for investigation is necessary. The biological understanding of an ecosystem has proved beneficial to various paths of investigation previously (e.g. Mars, Bronstein, & Lusch, 2012) and is applied here. Hannon (1997) explored the commonalities existent between ecology and economics, noting how both disciplines are concerned with the study of dynamic systems that incorporate methods of production, exchange, capital stocks, and storage. Lewin (1999) likewise observed how biological ecosystems and economic systems are complex adaptive systems and thus follow the same deep laws.

Use of the ecosystem analogy in relation to business practices has been notably strong. By developing a survey discussion of the *industrial ecosystem*, the *economy ecosystem*, the *social ecosystem*, and other such analogous pairings, Peltoniemi and Vuori (2004, p. 13) position a *business ecosystem* as being "a dynamic structure which consists of an interconnected population of organisations".

The existing literature contextualises digital ecosystems as cyclical (Pollock, 2011), sustainable (Boley & Chang, 2007), demand-driven (Boley & Chang, 2007) environments oriented around the agents of various species who are mutually interdependent (Harrison, Pardo, & Cook, 2012) in the delivery of effective and efficient value. Just as methods of production, capital stocks, etc. are interrelated in a business ecosystem, within the concept of a digital ecosystem it is the sets of data, as well as the systems and actors supporting that data, which can be understood as analogous to a cyclical, biological environment. Ultimately, the difference between a digital ecosystem and, for example, a business ecosystem is one of content: digital information (e.g. government data) in the case of the former and entities of commerce (e.g. capital and means of production) in the case of the latter. In respect of principles, the various ecosystems are largely comparable, in that they are about understanding and appreciating interrelationships and interdependencies between agents and entities. Whatever the content, ecosystems do not operate in a closed, adiabatic, manner, but – in a systemic reading – constantly communicate with adjacent ecosystems. The Web, therefore, might be seen as a structure that holds several of these coevolving systems.

Development of the UK's Open Data environment over recent years is presented in the next section. In combination with this historical context, the final section removes the ecosystem analogy from abstraction and investigates its applicability to Open Data ecosystems, as well as what implications the theory can provide in practice.

Open Government Data in the UK: Assembling a Narrative Timeline

When considering how to structure a narrative describing the UK Open Government Data ecosystem, two approaches were apparent. First, the environment could be dissected thematically

(looking in turn at government reports, licensing frameworks, etc.). Second, the ecosystem could be analysed according to its temporal development. The latter approach provides greater insight into the gradual evolution of the ecosystem, and the historical context surrounding major milestones in its development, and is therefore adopted in this work.

Previous Open Data timelines, most notably Davies (2010), inform and influence our research. However, the work presented here adds a number of original contributions beyond the state of the art, through the use of expert interviews, the extension of the timeline up to 2013, and the focus on 2009 as a pivotal point in the evolution of the ecosystem.

Incubation Phase: UK Government Data from 1998 to 2009

A strong community of activists and civil servants in the UK has driven initiatives to unlock the potential of Public Sector Information (PSI) since the late 1990s. The UK government's Open Data ecosystem first emerged in 1998 when the Cabinet Office published its green paper "Crown Copyright in the Information Age". This paper initiated a liberalisation process crucial to the development of open PSI. As proposed in the paper, a new "Click-Use" licensing scheme was introduced in 2000 by the Office of Public Sector Information, which allowed the commercial and non-commercial use of crown copyright material under the precondition of attribution.

In November 2003 the European Union adopted the "Directive on the Reuse of Public Sector Information" with the aim of creating a common legislative framework for public bodies across Europe to release public data. In 2005 two pillars of the developing Open Data movement were firmly established with the UK's Freedom of Information Act coming into force in January and the EU directive entering into effect in November.

In addition to these governmental efforts to reimagine the use of PSI, between 2004 and 2006 civic activism also increased. In October 2005 the OKF organised a World Summit on Free Information Infrastructure, which subsequently became the annual Open Knowledge Conference (OKCon)[2], and shortly after inaugurated its Open Knowledge Definition. In March the following year the Guardian launched its "Free Our Data" campaign, lead by the journalists Michael Cross and Charles Arthur. The newspaper argued that government trading funds, like the Ordnance Survey and the Met Office, should provide citizens with easy access to their data, on the premise that taxpayers fund data collection. In March 2008 Newbery (University of Cambridge) and Pollock (OKF) published "Models of Public Sector Information via Trading Funds", which criticised the way trading funds commoditised publicly funded data – more precisely, arguing that "the problem is not the Trading Funds themselves but the government policy" (R. Pollock, personal communication, July 19, 2013). In April 2010 these diverse external pressures finally compelled Ordnance Survey to openly release important geodata (Ordnance Survey, 2010).

Simultaneous to the Guardian's campaign, the Cabinet Office began allocating resources to the emerging idea of open PSI. As a result, the civil activists Tom Steinberg and Ed Mayo, together with the Cabinet Office, published in June 2007 the "Power of Information Review", which took a "practical look at the use and development of citizen and state-generated information in the UK" (Mayo & Steinberg, 2007, p. 3). In reaction to the report and in order to further investigate application of Steinberg and Mayo's recommendations, the UK government established the Power

[2] The most recent OKCon took place in Geneva in September 2013 and attracted more than 900 participants from 55 countries.

of Information Task Force in March 2008. The Task Force was comprised of representatives from business, civil society and the government, and three months after establishment, together with the Cabinet Office, it announced the "Show Us A Better Way" competition (The National Archives, 2010). This competition made large and previously closed PSI data sets – for example, health care information from NHS Choices, the Official Notices from the London Gazette, and a list of all schools in England and Wales – available to developers. "Where Does My Money Go?", a service launched in December 2009 to visualise the government budget, and later folded in to the OKF-run OpenSpending, was one of the competition winners.

Rapid Growth Phase: Implementing UK Open Government Data since 2009

Impressive as initial efforts were, the year 2009 represents a major turning point, with significant developments in the United States as well as in the UK. With both countries launching data portals - the so-called and much cited "data.govs" - a notably strong environment of reciprocal enforcement (healthy competition) emerged as the two countries both witnessed rapid growth in the opening of PSI. As Pollock stated in our interview, 2009 saw significant shifts and "even the phrasing changed... [w]e started talking about Open Government Data" instead of reusable PSI as in the years before 2009. In January of that year, Barack Obama issued his memorandum on the Freedom of Information Act, committing his government to information openness. In the UK, when the Power of Information Task Force published its final report in February 2009, the Cabinet Office immediately began operationalisation. One of the recommendations in the report was creation of a single point of access for government data, and so beta work on the UK's Open Data portal - data.gov.uk - began in September. Notably, February's release by the OKF of the first version of its Open Database License (ODbL) laid important groundwork for the international application of Open Data, particularly in Europe[3] (J. Tennison, personal communication, July 11, 2013).

In May 2009 the US government launched its own data portal - data.gov - initially containing 47 data sets. The launch of this first fully operational national Open Data portal was a pivotal point for the global community of Open Data advocates – it represented tangible proof of high-level governmental support. Likewise, in June 2009 the British government appointed Berners-Lee and Nigel Shadbolt to advise government on how to open up government data in a similar manner. Shortly after his appointment, Berners-Lee officially launched data.gov.uk to the general public in January 2010.

Ahead of the 2010 general election, Conservative leader David Cameron released in March the "Conservative Technology Manifesto", which called for legislative change in favour of a "Right for Government Data" (Conservative Party, 2010, p. 3). Later that month, the incumbent Prime Minister Gordon Brown published Labour's "National Digital Strategy", which called for the creation of a Web Science Institute to be directed by Berners-Lee and Shadbolt. Upon winning the election, Cameron cancelled plans for a Web Science Institute in May 2010 and focused instead on the establishment of a new Transparency Board.

Further movement commenced when Prime Minister Cameron sent a letter to his Cabinet Ministers in June 2010 calling for practical implementation of the transparency agenda. Tennison,

[3] Although copyright has been widely harmonised around the world, the legal situation for databases is not as clear. Databases in the US, for example, are not necessarily protectable by law, where in the EU they are. The ODbL, combined with an appropriate content license, allows the reuse of data sets under the paradigm of Open Data.

who worked on development of the UK's legislation.gov.uk, likened this action to a policy implementation wake-up call: the letter was like "being hit by a big stick", and demonstrated Cameron's personal commitment to the agenda, as well as his ministers' initial lack of enthusiasm (J. Tennison, personal communication, July 11, 2013). In September the government took a major leap towards solidifying its Open Data ecosystem by releasing specifications for a new Open Government License (OGL) to replace the Click-Use License[4]. This change is notable as a "move from the transactional Click-Use to the non-transactional Open Government License" (Employee of The National Archives, personal communication, July 7, 2013).

The following September, the American and Brazilian governments launched the Open Government Partnership (OGP), an international initiative for promoting transparency, civil participation and digital administration. As one of the eight founding members, the UK released its first OGP National Action Plan that same month. The following April, the UK assumed the co-chairmanship of the OGP and a month later the government responded to lobbying by interested parties and announced plans for an Open Data Institute to be set up in London. As with Labour's plans for a Web Science Institute, Berners-Lee and Shadbolt were appointed as president and chairman of the ODI, which officially opened in November 2012.

In May 2012 Cabinet Minister Maude appointed Heather Savory to be the first chair of the Open Data User Group, a committee established with the aim of capturing users' perspectives on the process of Open Data policymaking. In June, the government published the foundational and highly significant "Unleashing the Potential – The Open Data White Paper", as well as individual departmental Open Data strategies and an updated version of data.gov.uk. "Open Growth", a study released by the consulting firm Deloitte in December 2012, worked to quantify the economic value of Open Data for the UK economy. The report was conducted in collaboration with the ODI and formed an integral part of the widely received "Shakespeare Review of Public Sector Information" published in May 2013. This comprehensive report was accepted by the UK government as a foundation for future policy decisions, as reflected in the "Government Response to Shakespeare Review" of June 2013.

Towards a Conceptualisation of Open Data Ecosystems

We previously outlined digital ecosystems as being (1) cyclical, (2) sustainable, (3) demand-driven environments oriented around agents that are (4) mutually interdependent in the delivery of value (Boley & Chang, 2007; Harrison, Pardo, & Cook, 2012; Pollock, 2011). In this section we check these structural properties against our empirical observations in order to develop a conceptualisation of Open Government Data ecosystems.

Biological ecosystems are (1) cyclical, meaning that carbon – their central resource – is passed along the consumption chains until it loops back to its "beginning". By definition, the central resource of Open Data ecosystems is Open Data. Any data that is opened up has the potential to be

[4] On the data.gov.uk blog, Nigel Shadbolt describes the new license: "Based on the world-leading Creative Commons family of licences, the new licence works in parallel with them and mirrors their Attribution Licence and the Open Data Commons Attribution Licence, whilst covering a broad range of information, including Crown Copyright, databases and source codes, and applying to the whole of the UK." (http://data.gov.uk/blog/new-open-government-license)

processed cyclically, in that it will feed back to the system/agent it originates from. However, empirical evidence shows that this potential varies between different data categories. In June 2010 the UK government released the heavily requested COINS database as Open Data. COINS contains extensive public spending data that has enabled institutions like the OKF and The Guardian to develop in-depth spending analyses and visualisations. These have in turn been consumed by the data suppliers and have informed, or even influenced, their later decisions. Public transport data serves as an example of lower cyclical potential. Transport applications, like *Mapumental*, will likely influence users' actions (e.g. which trains they travel on), but the service appears less likely to affect the organisations that supply the data (e.g. rail operators).

In a business ecosystem (2) sustainability is understood as the ability to survive without government intervention (c.f. Peltoniemi and Vuori, 2004). However, we think it is important to differentiate. Some interventions protect ecosystems from deteriorating through external pressures (e.g. some agricultural subsidies), while others support the creation of business ecosystems with positive societal effects and high entrance barriers. Examples of the latter include subsidies for regenerative energy or a government's embracing of Open Data. In the UK the government expects positive economic and societal impacts, ergo it intervenes to nurture the ecosystem. What differentiates these interventions is the idiosyncrasy that the government itself is the bottleneck of the ecosystem, as it is the majority data holder. It therefore has to intervene *in itself* and ensure an internal sustainable data provision. However, long-term sustainability can only be achieved when the relevant data suppliers experience a tangible benefit – a task for the UK government-funded, but independently operating, ODI, which partly functions as a startup-incubator for Open Data initiatives. Therefore, government intervention not only has to tackle the supply side, but the demand side as well (S. Coleman, personal communication, July 15, 2013; G. Starks, personal communication, July 26, 2013).

In healthy, non-monopolistic business ecosystems (3) demand regulates supply. However, Open Data ecosystems operate slightly differently. The main resource – Open Data – is often produced within natural monopolies, due to high fixed costs, low variable costs and a rather small number of potential customers for the data (think, for example, of one national statistics agency). These natural monopolies within public services likely have certain economic benefits, but they also prevent the competitive environment that is so often the cornerstone of innovation. As we have shown above, data holding bodies only publish their data sustainably if they experience demand, which in turn will result in benefits for the agency (think of a useful analysis or an app). In the UK we observed that in some data areas – such as transport, financial, and health data – an initial release triggered significant demand, noticeable through early use cases such as *Prescribing Analytics*, *Where Does My Money Go?*, and *CityMapper*. However, other key datasets, such as the Postcode Address File (PAF), which are in high public and academic demand,[5] have not been opened[6] (demand has not generated supply).

Lastly, we investigated whether agents in Open Data ecosystems are (4) mutually interdependent in their delivery of value. The minimal value chain within Open Data ecosystems consists of three elements: data suppliers, data intermediaries, and data consumers. Whilst intermediaries and consumers usually conduct a traditional exchange of goods, suppliers (embodied largely by public agencies) are required to provide Open Data to the public as part of

[5] e.g. Shadbolt (2013)

[6] c.f. Savory (2013)

their operational mandate. If, for whatever reason, a data collecting agency stops providing data, it would not experience negative effects to its core business. However, private developers, who build businesses based on that data, would be unable to continue. In this manner, Open Data ecosystems do not always show robust mutual interdependence, but rather they often demonstrate more of a one-sided dependency. This is likely to have adverse effects on the ecosystem when not regulated by the government.

Conclusion

The United Kingdom has incubated and advanced a robust and world leading Open Government Data ecosystem over the past 15 years. In that time there have been two primary trajectories: the push of activists and the initiative of government itself. With a greatly accelerated pace since 2009, the UK has seen the latter of these two seize the agenda ever more and establish meaningful Open Data policies as part of a determined agenda for growth.

This paper examined the UK's experience of establishing a functioning Open Data environment and focused its analysis on the applicable notion of an analogous ecosystem: a system which is cyclical, sustainable, and demand driven around mutually dependent actors. The work found that in many respects, the last 15 years have shaped the UK's Open Data environment into an Open Data ecosystem. There are clear signs of a cycle, of sustainability, of demand encouraging supply, and of dependence developing between suppliers, intermediaries, and users. However, it was also found that significant gaps and shortcomings remain. Most prominently, demand is not yet fully encouraging supply and actors have yet to experience entirely mutual interdependence.

Our research indicates where future Open Data research, integrated with the ecosystem perspective, may develop. The Open Data Institute, for example, is relatively new to the UK ecosystem, but in time the institution's role as a Public Open Innovation intermediary (Bakici et al., 2013) could be examined. Furthermore, greater emphasis should be placed on meet-ups and hack-days as loci of inter-stakeholder dialogue, with these occasions arguably being conceptualized as field configuring events (Lampel & Meyer, 2008).

On the basis of our findings we propose that Open Data initiatives be assessed by ecosystem criteria to generate interoperable data allowing for extensive cross-case analysis It is well established that the tenants of an ecosystem generate strong, sustainable, and meaningful survival. The UK, a leader already by many Open Data assessments, is well on its way to establishing a fully functioning ecosystem. But there is, as outlined, more to be done. It is the view here that once the four ecosystem criteria are fully and comprehensively met, the environment can be considered developed and sustainable. The UK is not yet at the end of the road, nor are other governments' Open Data endeavours. However, understanding the significance of an operational ecosystem (as outlined here) and what this entails in the Open Data context can clearly be of benefit to the initiative.

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About the Authors

Maximilian Heimstädt

Maximilian Heimstädt is a PhD student within the department for organisation theory at Free University Berlin, where he investigates the emergence and management of municipal Open Data ecosystems. He previously studied an M.Sc. in Management and Information Technology at the University of St Andrews, Scotland, and worked as a visiting researcher at the Open Data Institute in London.

Fredric Saunderson

Fredric Saunderson gained his M.A. in Digital Asset Management from King's College London in 2013. He then worked as a researcher for the Open Data Institute in London, before moving to the National Library of Scotland in January 2014. In his M.A. dissertation, Fredric examined public engagement with Open Government Data in the United Kingdom. He holds an undergraduate M.A. (Hons.) in International Relations from the University of St Andrews.

Tom Heath

Dr. Tom Heath is Head of Research at the Open Data Institute in London, UK, where he leads a diverse, multidisciplinary programme of research exploring the impact, applications and implications of Open Data. Tom has a background in commercial and academic research, and is an internationally recognised expert in the field of Linked Open Data. He holds a B.Sc. in Psychology from the University of Liverpool and a Ph.D. in Computer Science from The Open University.

The Tau of Data: A New Metric to Assess the Timeliness of Data in Catalogues

Ulrich Atz

Open Data Institute, 65 Clifton Street, EC2A 4JE, London, UK
ulrich.atz@theodi.org

Abstract: *We review existing studies that assess the timeliness of data in catalogues and propose a new metric: tau, the percentage of datasets up-to-date in a data catalogue. Obsolete data will stifle innovation, whereas spotlighting timeliness can foster efficiency and support the sustainability of the open data ecosystem, for example, by encouraging automated publication of data.We validate the tau in three case studies: the World Bank catalogue, the UK data catalogue (data.gov.uk) and the London Datastore. For the World Bank and London we find that roughly half of the datasets are up-to-date, whereas data.gov.uk performs worse. However, there are considerable caveats when it comes to missing and undocumented metadata. The tau of data is easy to implement, can be readily interpreted and be generalised with further parameters across all data catalogues.*

Keywords: *open data, timeliness, data quality, data catalogue, datastore*

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Introduction

Governments and institutions often publish open data as part of a collection. A minimum requirement for these data catalogues are discoverable and up-to-date datasets.[1] To the best of our knowledge, there is no rigorous quantitative analysis on the timeliness of data in catalogues because of the varied (and arguably messy) landscape of open data portals. We chose a case study approach and propose a new metric that may allow for comparisons in the future.

The timeliness of data matters for several reasons, for example:

[1] The interested reader can find an extensive, global list of data catalogues at http://datacatalogs.org

- Businesses and startups using open data want to trust the publisher that the data will remain available and up-to-date. Obsolete data will stifle *innovation*.
- A measure of timeliness will put the spotlight on the update cycle. Automating this process can lead to gains in *efficiency* in publishing, analysis and re-use.
- Timely data being produced more efficiently is a necessary, though perhaps not sufficient, condition for a *sustainable* open data ecosystem.

Findings

Here are some of the general findings:

1. **Missing timeliness**. More evidence points towards the hypothesis that many datasets are *not updated* with a regular schedule or at all.
2. **Poor metadata**. Ironically, the data about open data seems to be incomplete, undocumented or hard to find. On the plus side, there is enough metadata available to make this statement.
3. A **new metric tau** (τ) to assess the **timeliness** of data. The London Datastore scores "ok" with 0.52 (i.e., slightly more than half of the datasets are updated according to schedule.) For our case studies this could easily be improved by releasing *monthly* datasets on a more regular basis.

Summary of the Three Case Studies

The **World Bank** updates its data catalogues on an irregular schedule. There are 102 datasets that have revision dates and are set to be updated. Overall slightly less than half of the datasets were updated according to schedule ($\tau = 0.46$). The number of missing dates is relatively large, which is a substantial caveat.

The **UK data catalogue** has an irregular release cycle. Even worse, only around 25% (4,000) of datasets include data on update frequency. This may be one of the reason why it performs so poorly on the τ with 0.25. The UK data catalogue updated almost ¾ of its datasets in 2013.

The **London Datastore** hosts around 550 datasets. They were released with stark differences for releases in some months over the last three years. More importantly, the updates are not concentrated in recent months, which suggests a poor update cycle. The $\tau = 0.52$ is optimistic because its metadata update variable possibly includes minor updates.

On the Timeliness of Data

What is an up-to-date dataset? This is not a trivial question and is a function of the forecast update frequency. A dataset that is only released annually will probably only be updated once a year. Yet knowing the timeliness is important and Lindman, Rossi and Tuunainen (2013) write in their *Open Data Services: Research Agenda* that "from the services perspective, [...], the most critical questions revolve around achieving sufficient timeliness of the data."

Fast-paced communications streams like Twitter are an indication of the trends in data. Implicitely this may also increase the pressure to improve the timeliness of data. Tinati *et al*. (2012, 2013) and Gurin (2014) allude to the changing pace, as well as how the publication of data is improving efficiency between government departments, councils and local authorities. We are not aware of any studies that look at the relative importance of timeliness compared to, for instance, quality or relevance. Ultimately, all are part of an exemplar publication of open data.[2]

In "Annex A: Improving data on Whitehall" of the *Whitehall Monitor 2013*, Bouchal, Stephen and Bull (2013), urge publishers, among other suggestions, to "explain the update cycle" and "clearly signpost periodicity". They also argue that "the evidence suggests that there are improvements in [data quality], but there is still a long way to go."

Furthermore, a dataset should always contain current data. Some datasets such as the UK census may be released according to their pre-defined schedule, but are too far behind users' need. Here we will not discuss the questions of what is current data and focus on the timeliness of data catalogues.

Methodology

The varied landscape of open data portals prohibits a simple quantitative analysis. (Despite the limited number of data portal software such as CKAN.) Some have tried by looking at the Socrata metadata, though face numerous caveats (Levine, 2013).

We chose a case study approach by looking at three case studies: the World Bank, the UK data catalogue and the London Datastore. The three cases were selected because we have existing relationships with the publishers and they represent different regional levels (international, national and local, respectively). Maali, Cyganiak and Peristeras (2010) selected seven data catalogues in a similar fashion.

Yin (2009) argues that case selection is crucial and we were careful to choose cases that allow for analytical generalisation (as opposed to statistical generalisation from surveys).

An additional difficulty is that an uneven release cycle can stem from

- datasets that differ substantially in their update cycle; and
- "waves" of updating datasets unrelated to the availability at the source.

Without additional information we cannot distinguish between the two explanations. Even if we know how often datasets have to be updated, without a standardised metric the answer will only be suggestive. We therefore devised an unambiguous metric, the tau of data (see next section). However, "garbage in, garbage out"[3], its usefulness relies on the underlying quality of the metadata. In our case studies the amount of missing metadata poses substantial reason for concern for the reliability of individual metrics. However, this is unrelated to the construct validity which we believe to be high because of the relativly simple nature of the metric.

[2] On how to publish open data, compare further: https://certificates.theodi.org
[3] http://www.worldwidewords.org/qa/qa-gar1.htm, accessed 2013-12-09.

The Tau of Data

We propose a new metric for measuring the timeliness of data. The *tau* (τ) can be interpreted as *the percentage of datasets up-to-date in a data catalogue*. Before we move on to its definition, a concept of timeliness.

$$timeliness = \mathbf{I}\left(\frac{update\ frequency}{today - last\ substantial\ update}\right)$$

Here, *timeliness*, is simply an indicator (1 or 0) whether the dataset's last substantial update was a longer time ago than an anticipated release based on the reported update frequency. **I()** is the indicator function[4] and takes 1 if the ratio is bigger than one and 0 otherwise. For example, a dataset with an annual cycle and an update in 2013, would yield 1. A dataset with a monthly cycle and a last major update in October would result in a 0 (based on Dec 2013).

By *substantial* we mean a new release of the data. Minor updates, for example if someone discovers a typo in the title and corrects it, should not appear as an update. The τ of a data catalogue is the average across datasets (indicated by the subscript *i)*.

$$\tau = \frac{1}{N}\sum_{i=1}^{N}\mathbf{I}\left(\frac{update\ frequency_i - \lambda + \delta}{today - last\ substantial\ update_i}\right)$$

N is the number of datasets in the catalogue. We can make this more flexible by introducing two parameters in a linear form, delta (δ) and lambda (λ): the "leeway" of days we allow the data catalogue for updating. The δ is a fixed number of days applicable to all datasets, for example one day for processing. λ, on the other hand, is relative to the update frequency. For example, we may allow for a 10% increase for data cleaning, which for an annual dataset implies 1.2 months and for a monthly dataset 3 days in tolerance.[5]

A τ of 0 means the catalogue has no up-to-date datasets. A τ of 1 means all datasets are up-to-date. Datasets with missing metadata are omitted; if the percentage of missing information is substantial (indicative > 5%), the researcher has to take additional care in interpreting the results.

Table 1: Proposed benchmarks for different levels of tau

τ (tau)	timeliness of data
0.9 - 1	exemplar
0.7 - 0.9	standard
0.5 - 0.7	ok
0.25 - 0.5	poor
0 - 0.25	obsolete

By design the tau of data is limited to a binary, up-to-date or not, classification. In its extreme case this means that a data catalogue that is one day late is recorded in the same way as one that

[4] http://turing.une.edu.au/~stat354/notes/node16.html, accessed 2013-12-09.

[5] We have explored a few different values to see how much the tau changes in this instance. It mostly affects the scores for monthly publications around the magnitude of 10%.

fails to update the datasets completely. However, we deem this extreme case very unlikely and argue that benefits of simplicity outweigh a more complicated approach.

To implement the τ, you need to record two variables: the *last substantial update* and a *standardised update frequency* for all datasets (preferably in days; in our analysis we found a wide range of values used). We recommend the standard set of update frequencies defined by Dublin Core (for an overview see Kurtz, 2013).

Validating the Tau of Data in Three Case Studies[6]

The World Bank Data Catalogue

The original metadata[7] contains 162 catalogues. For the columns update frequency and last revision date information for around 15% are missing. Missing data are treated as missing at random and are removed.

Table 2: Last updates (revision dates) by year in the World Bank Catalogue

2005	2006	2007	2008	2009	2010	2011	2012	2013
6	0	0	1	6	12	18	18	75

We can see that the World Bank updated more than half of its data catalogues in 2013. The histogram in figure 1 exhibits the full distribution.

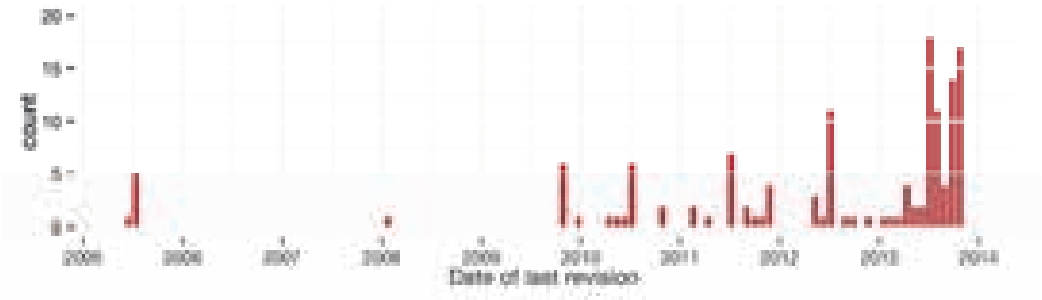

Figure 1: World Bank data catalogue last revision date. The 2005 figures are an artefact because in the original data they are dated as 1905.

It is also clear that the update cycle has clear spikes in certain months and is not uniform over the years.

What happens if we take the update frequency into account? Not all datasets have to be updated within the last year. Below we can see that some update frequencies are longer than a year or some releases are not even planned to be updated. If we disregard these particular cases, we may bias our metric.

[6] The R code and workspace for the analysis can be found on GitHub: https://github.com/theodi/R-projects/tree/master/data-portal-analysis

[7] http://datacatalog.worldbank.org, accessed 2013-10-15.

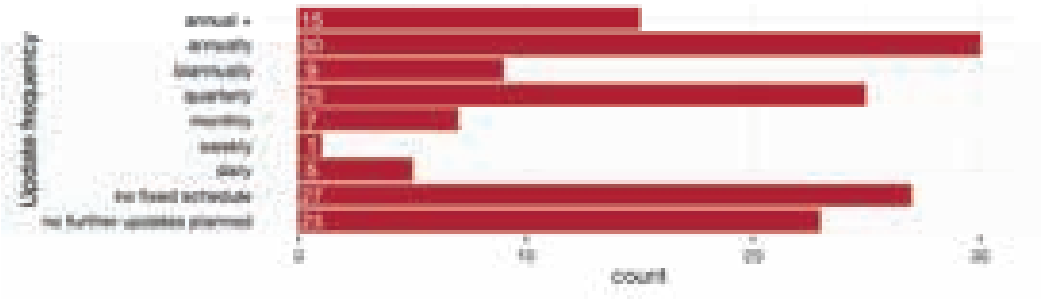

Figure 2: World Bank data catalogue update frequency

The **overall τ = 0.46**, which means slightly less than half of the datasets are updated according to schedule.

Table 3: The World Bank's tau breaks down as follows

update frequency	τ	count
daily	0.00	5
weekly	1.00	1
monthly	0.00	7
quarterly	0.80	25
biannually	0.33	9
annually	0.33	30
annual +	0.33	15
no fixed schedule	0.59	27
overall	*0.46*	*119*

To account for a small delay in publishing we added one day to the update frequency (the δ). Here, and in the other two case studies, we allow a 10% in relative delay (the λ). Furthermore, we assume "no fixed schedule" to be two years, which is generous. We set "annual +" to mean a thousand days.

The UK Data Catalogue (data.gov.uk)

The UK data catalogue, data.gov.uk, hosts more than 16,000 datasets, although at least 4,000 of them are currently unpublished.[8] According to the variable *last_major_modification*, which excludes minor revisions, most datasets were updated recently. Almost ¾ of them were updated in 2013.

[8] The metadata in its raw form is available here: http://data.gov.uk/data/dumps/

Figure 3: The UK data catalogue, histogram of last major modification

However, there is a substantial problem with missing data for *update_frequency*. This is one reason why the UK data catalogue does not perform well. According to data.gov.uk there is a wider issue of educating publishers on what metadata to include.

If we compare the distribution of all datasets with the one that omits missing *update_frequency* (only around 4,000 remain!), we see a different pattern. The updates are no longer concentrated in recent months.

Figure 4: The UK data catalogue, histogram of the last major modification. Grey bars include datasets with missing update frequency, orange bars exclude them.

The **overall τ = 0.25** which is a poor figure and below the other two case studies. However, as mentioned above almost ¾ of the update frequency data are missing.

Table 4: The UK data catalogue's tau breaks down as follows

update frequency	τ	count
daily	0.00	45
weekly	0.00	12
monthly	0.06	1445
quarterly	0.27	638
biannually	0.22	228
annually (and various)	0.38	1464
every 2 years	0.06	17
every 10 years	1.00	129
overall	*0.25*	*3978*

Given the strong pattern using all datasets, we might be inclined to assume the UK data catalogue does much better than the τ would suggest. The fact is, though, we cannot know without data. The distribution of *metadata_created* also has a spike in September 2013 (see figure 5). This

implies many datasets were added recently and that they may bias the *last_major_modification* variable. The release cycle is also highly irregular.

Figure 5: The UK data catalogue, histogram of metadata created

The London Datastore

At the time of analysis the London Datastore[9] hosts 537 datasets. They were published with the following pattern since January 2010.

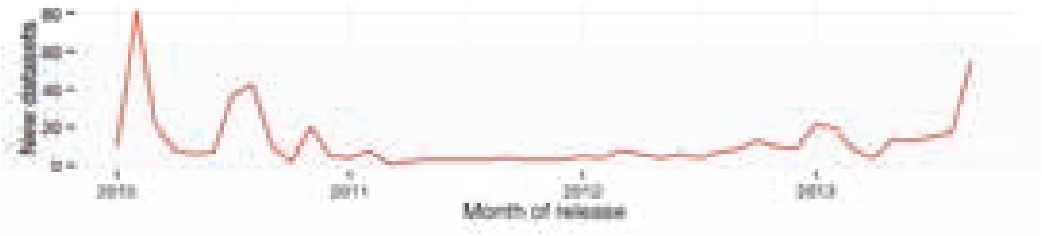

Figure 6: The London Datastore, new data releases per month

The big spikes at the beginning are months were the London Datastore released many similar datasets. For example, in August 2010 the Department for Education released a series of datasets. Or in October 2013 the London Fire and Emergency Planning Authority (LFEPA) added around a dozen datasets to the datastore.

The more relevant variable, however, is called *metadata update*. The metadata update is the "last updated date of the dataset or metadata (in the London Datastore)". As we can see in figure 7, for the London Datastore the month of September 2010 is a large outlier. We do not have a better explanation than a general update of the early releases.

Figure 7: The London Datastore, metadata updates histogram

[9] http://data.london.gov.uk, accessed 2013-10-15.

Otherwise the metadata updates slightly trail the release figures. They are *not*, as you might expect for an up-to-date catalogue, particularly concentrated in recent months. Below are figure 6 and 7 combined in one graphic.

Figure 8: The London Datastore, new data releases and updates combined

The **overall τ = 0.52**, which suggests, as with the World Bank, around half of the datasets are updated according to schedule. Some uncertainty persists as around 20% miss a measure of update frequency. However, the field "last updated date of the dataset or metadata (in the London Datastore)" is more general than needed.

Table 5: The London Datastore's tau breaks down as follows

update frequency	**τ**	**count**
daily	0.00	2
weekly	0.00	2
monthly	0.51	37
quarterly	0.49	57
biannually	0.20	10
annually (and various)	0.47	216
every 2 years	1.00	1
every 4 years	1.00	7
every 10 years	1.00	29
overall	*0.52*	*361*

Future research

The timeliness of data will remain a critical question because the demand for quality data will only increase. Thus, more research is needed in several areas.

A promising research question would establish different practices in data catalogues when it comes to updating datasets For example, arguably the biggest area of "dark matter" comes from deleted datasets. To update, a publisher uploads a new dataset and deletes the previous one. Where or how is this reflected in the metadata? At least in the UK data catalogue this scenario seems to be "very, very rare"[10], but practices differ across data catalogues.

[10] Personal email communication with a government official on 2013-11-28.

Future research should further assess the state of the metadata in catalogues and how to encourage use of standards, e.g. the uptake of the Dublin Core. There is a critical need that publishers are educated in leading practices of publishing data.

Another project could either look at dates within datasets or inspect the date ranges a dataset covers. Comparing these statistics against the last publication may uncover new ways and shortcomings of measuring timeliness.

In the future we also hope to see research that analyses larger samples of catalogues' tau. For example, how does tau vary over time? Are there differences in tau that are a function of geography, size or sector? Where can we find exemplar cases?

Summary

In this paper we addressed the need for up-to-date datasets in catalogues and proposed a new metric: tau. Three case studies validate the feasibility of implementing it. Moreover, the three cases represent different regional levels, yet all of them achieve a less than optimal score and fall short in their publication of metadata.

Thus, much improvement is possible. Timeliness is the third of the eight criteria of open government data and needed "to preserve the value of the data". [11] Measuring timeliness can put a spotlight on this criterion and therefore may foster efficiency and support the sustainability of the open data ecosystem, for example, by encouraging automated publication of data.

Building trust is difficult for a publisher and can easily be lost by neglecting to keep its data catalogue up-to-date. Third parties such as entrepreneurs are less likely to create start-ups and services on top of open data if they cannot rely on the longevity or timeliness of open data.

Standards are important for numerous reasons (see, for example, Jisc Digital Media, 2013). A standardised metric on timeliness, or any other characteristic, has also the potential to enable broader, more influential research.

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About the Author

Ulrich Atz

Ulrich Atz is Head of Statistics at the Open Data Institute (ODI). Ulrich holds a Diploma in Economics from the University of Mannheim and a M.Sc. in Social Research Methods from the London School of Economics. He has a broad background that blends modern statistical techniques with practical uses of data. At the ODI, Ulrich leads research projects, consults startups and governments on the business case of open data, and helps out with training courses. He regularly holds presentations and keynotes.

Creative Commons 4.0 Licenses: A Sui Generis Challenge?

Claudio Artusio*, Federico Morando**

*Nexa Center for Internet & Society (Politecnico di Torino), claudio.artusio@polito.it,
**Nexa Center for Internet & Society (Politecnico di Torino), federico.morando@polito.it

Abstract: *The* Sui Generis Database Rights *(SGDR) protection grants an exclusive right on databases when a substantial investment is required to collect and arrange the database contents. Since this specific protection makes any re-use of such contents impossible without an explicit permission, therefore directly impacting on the exploitation of Open Data, managing SGDR (where exsisting) –* e.g. *by adopting a license - is crucial for any public body who wants to make its data available for re-use. The paper examines the new features introduced in the 4.0 version of the Creative Commons Public Licenses, with particular attention to the treatment of SGDR to describe the suitability of the 4.0 version in the specific field of Open Data licensing and re-use. The evaluation has been conducted in light of the current EU legal framework on database rights, also considering the issue of interoperability with other existing database licenses.*

Keywords*: Copyright, Sui Generis Database Right, Public Sector Information, Creative Commons Licenses, Open Data*

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Introduction

Open Data needs open licenses (Krötzsch, Speiser 2011, p. 356, with further references). The current "copyright default" – i.e. the set of rights that the existing regime of copyright (and related rights) protection automatically grants to authors/creators – is such that, in the absence of a clear statement about the legal status of a dataset, it is safer to assume that data are legally locked-up preventing any kind of reuse (or copy). Therefore, when re-use is desirable, the terms under which data can be re-used should be explicit (Bizer, Heath, Berners-Lee 2009, Miller, Styles, Heath 2008). As Leight Dodds (2010) puts it, to open data, "*we need to be clear on what forms of re-use we expect or want to support*" (Dodds 2010, p. 13).

As most readers familiar with the Open Data domain already know (and as this paper will briefly discuss), there is a rich offer of open licensing solutions. In fact, several government and

communities adopt a diverse set of somehow similar legal tools. The question, from the point of view of a re-user of open (government) data is therefore: "*What license should we choose?*".

A first approach goes through the adoption of interoperability-proof solutions consisting of the dedication of datasets to the public domain (e.g., using the Creative Commons Zero, hereinafter CC0 waiver). However, this approach neglects the existing demand for attribution/provenance requirements (which is especially widespread amongst public sector bodies and frequently for good reasons, e.g., related with accountability) or share-alike clauses (which enable the typical self-defensive but inclusive approach adopted by online communities).

As Mike Linksvayer (2011) puts it, in particular when a share-alike approach is needed, "*a single universal recipient license (i.e., a single widely used copyleft license, or the equivalent) for all non-software works, including databases, is crucial*" *(Linksvayer, 2011, p. 2)*. The recently released CC Attribution Share-Alike license version 4.0 is one of the candidates for this role, since it finally manages all relevant rights (including the ones on databases) in a simple and consistent way. And the same can be achieved in the domain of "attribution licenses", where CC Attribution 4.0 may represent a standard solution reducing transaction costs, e.g., making it superfluous to read yet another license and check its attribution clauses.

The paper at hand is a first attempt to test the promises made by CC 4.0 licenses to finally become the global focal point for Open Data licensing.

The rest of this paper is organized as follows. In Section 1, we offer a bird's-eye view on the "market" for Open Data licenses. Section 2 focuses on the Creative Commons licenses, which are the main object of the paper at hand, providing a synthetic historical perspective. Section 3 offers an analysis of the main changes (from the Open Data point of view) introduced by the 4.0 version of the CC licenses. The following two sections offer an even smaller focus. Section 4 is dedicated to the EU database protection regime and its impact on open data initiatives, while Section 5 is devoted to the treatment of the *Sui Generis* Database Right (hereinafter, SGDR) in the Creative Commons Licenses. Finally, in Section 6 the Authors highlight some of the CC 4.0 licenses pros and cons in the view of exploiting such new licenses in the field of Open Data.

A Bird's-eye View on the Open Data License Landscape

Creative Commons licenses (here and below, CCPLs) are the most widespread general purpose licensing tools. These licenses offer to right-holders a menu of elements/modules (described in Section 2) from which they can pick their favourite combination. However, until the release of their (EU) 3.0 version, it was unclear if the CCPLs where an appropriate legal tool for the licensing of databases (potentially) protected by the SGDR (described in Section 4). This was one of the reasons because of which, in 2006, Talis[1] published the first public license specifically targeting Open Data and then funded the drafting of the Public Domain Dedication and License (PDDL). This activity then triggered the creation of the Open Data Commons (ODC) project, which is currently part of the Open Knowledge Foundation project portfolio[2]. To date, the ODC licensing suite includes the PDDL[3], the Open Database License (ODbL)[4] – which is a copyleft license – and an Attribution

[1] Talis is a firm developing Semantic Web solutions and, in particular, consulting and training services in this domain (http://www.talis.com/corporate/).
[2] http://opendatacommons.org/about/
[3] http://opendatacommons.org/licenses/pddl/

license[5]. All these licenses concern the rights covering a database as such (as opposed to the data it contains).

Moreover recently, i.e., since the release of their 3.0 version in various European jurisdictions (mostly in 2008-2011), CCPLs waived the SGDR[6], instead of licensing it at the same conditions at which they licensed copyright (see Section 5 for further details).

Finally, several national governments decided to draft their own licenses for the release of Open Government Data. One of the first countries to do so (also because of the choices of CC of waiving the SGDR) was the United Kingdom, with its "Click Use" license and its current non-transactional evolution(s), the Open Government License (OGL) version 1.0[7] and 2.0[8]. The OGL is essentially equivalent to other "attribution licenses", such as the CC or ODC Attribution licenses, but it also includes some specific provisions concerning "Crown copyright" and other clauses addressing standard public sector worries, such as forbidding uses suggesting any official status of modified information. The OGL approach was almost immediately and is still followed all over the world (e.g., in Canada) and in Europe in particular. For instance, France adopted its own License Ouverte[9], while Italy produced the Italian Open Data License (IODL)[10].

Table 1: Licenses of European government data portals (by V. Bunakov and K. Jeffery – "Licence management for Public Sector Information" (2013) – published under a CC BY 3.0 Austria license)

Country	Portal	Licence
France	Data.gouv.fr	Licence Ouverte
United Kingdom	Data.gov.uk	Open Government Licence
Italy	Dati.gov.it	Creative Commons Attribuzione - Non commerciale 2.5 Italia (CC BY-NC 2.5)
Germany	Govdata.de	Datenlizenz Deutschland – Namensnennung – Version 1.0 (recommended for common use) Datenlizenz Deutschland – Namensnennung – nicht kommerziell Version 1.0 (for exceptions)
Norway	Data.norge.no	Norsk lisens for offentlige data (NLOD)
Netherlands	Data.overheid.nl	No specific common licence but a recommendation for the agencies publishing data through the portal to use the framework of the Open Government Act, and to apply Creative Commons Zero of Public Domain if any licence is desired at all

[4] http://opendatacommons.org/licenses/odbl/1.0/
[5] http://opendatacommons.org/licenses/by/1.0/
[6] *Rectius* (and mainly for license-geeks), the licensor waives the right of using the *Sui Generis* Database Right as a tool to legally enforce the license clauses.
[7] http://www.nationalarchives.gov.uk/doc/open-government-licence/version/1/
[8] http://www.nationalarchives.gov.uk/doc/open-government-licence/version/2/
[9] http://www.data.gouv.fr/Licence-Ouverte-Open-Licence
[10] Version 1.0 (http://www.formez.it/iodl/) and 2.0 (http://www.dati.gov.it/iodl/2.0/).

Spain	Datos.gob.es	No specific licence but two parts in extensive legal notes that cover data re-use and are based on different pieces of Spanish national legislation
Belgium	Data.gov.be	No specific common licence. Each public service or government institution determines the terms and conditions governing access to and use of its data published through portal.

2002-2013: Ten Years (and Eleven Months) of Creative Commons Licenses.

Creative Commons is a U.S. non-profit organization founded in 2001, whose mission is to "develop[s], support[s], and steward[s] legal and technical infrastructure that maximizes digital creativity, sharing, and innovation"[11].

Building on the experience of previously existing phenomena (such as the Free/Libre and Open Source Software – FLOSS and the Copyleft model) and communities (as the Free Software Foundation that developed the GNU Free Documentation License) (Lessig 2004, Fitzgerald 2007, Elkin-Koren 2006), Creative Commons believes that the default rule of current copyright rules is no longer adequately regulating the circulation of intellectual goods in the digital environment, ultimately limiting the sharing of knowledge and information.

To support its mission, Creative Commons developed a set of legal tools to help users managing the rights they hold on their works; e.g., expanding the boundaries of the "All rights reserved" default regime, assigning broader permissions on their works (Aliprandi 2011) and clearly notifying their choice to other users (Elkin-Koren 2006, providing an external view on the Creative commons "paradigm").

Creative Commons develops its tools since 2002: some of them were modified and improved through the years, while others have been retired on the way[12]. Among them, first and foremost are the six CCPLs: those licenses have been going through a process of modification and fine tuning that brought them from the early version 1.0, launched in 2002, to version 3.0, released in 2007[13]. Finally, the brand new version 4.0 went public on November 25th 2013[14].

In short, CCPLs offer to right-holders a menu of elements/modules from which they can pick their favorite combination and including: "Attribution" (BY); "Non-Commercial" (NC); "No Derivative Works" (ND), meaning that only verbatim copies could be produced; and "Share Alike" (SA), meaning that the author requires creators of derivative works to adopt the same

[11] http://creativecommons.org/about
[12] For a list of CC tools which are no longer recommended and supported by Creative Commons (but still legally operating, though), see: http://creativecommons.org/retiredlicenses
[13] A timeline for Creative Commons major achievements is available at: http://creativecommons.org/about/history
[14] The CCPL 4.0 version official release announcement is available here: http://creativecommons.org/weblog/entry/40768

license used by him/her (the so-called "viral" or "copyleft" effect)[15]. The (meaningful) combinations of the previous elements generate six different licenses.

In addition, Creative Commons has also designed some other tools to further expand the permissions granted by the six "classic" licenses and foster the growth and availability of public domain works. Technically speaking, those tools are not licenses as they can rather be described as: an independent agreement attached to a CCPL to inform that additional permissions can be negotiated with the licensor (CC Plus); a waiver of rights to relinquish the exercise of such rights and thus (almost[16]) attribute the work to the public domain (CC0 waiver); and a mark to label a work that is no longer restricted by copyright, e.g. because the copyright protection has already expired (Public Domain Mark)[17].

As for the volume of CC licenses adoption worldwide, in 2010 Creative Commons estimated that approximately more than 400 million works (at least) were distributed under a CC license[18] (see figure 1).

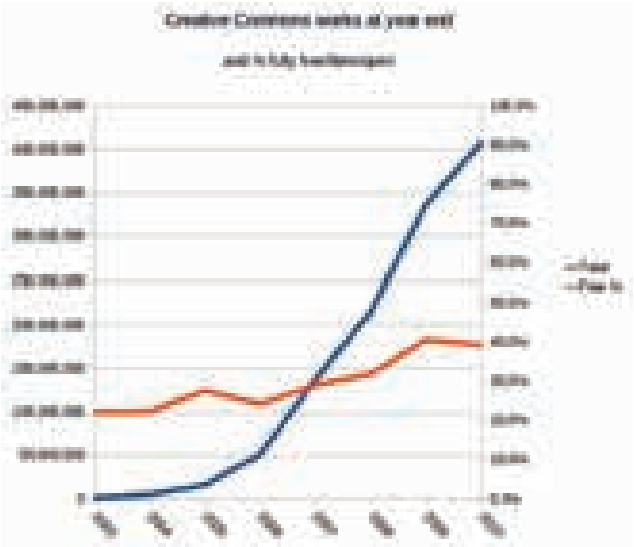

Figure 1: Approximate Minimum Total CC Licensed Works as of December 2010 (400+ million)

[15] More practical information about the CC licenses is available at: http://www.creativecommons.org

[16] Since waiving moral rights is not permitted in every single jurisdiction, adopting a CC0 waiver would not give the work a public domain-like status in those jurisdictions where the author can not relinquish the right of claiming a proper attribution of its work.

[17] For further details on those tools, check the following resources: http://wiki.creativecommons.org/CCPlus; http://creativecommons.org/about/cc0; http://creativecommons.org/about/pdm

[18] The Approximate Minimum Total CC Licensed Works is based on licenses reported by Yahoo search queries and Flickr and is the minimum number of licensed works across all licenses. For more details on the metrics and estimation process see: http://wiki.creativecommons.org/Metrics and http://wiki.creativecommons.org/Metrics/License_statistics

From 3.0 to 4.0 – How Did the CC Licenses Change

Major Changes

This paragraph examines the significant new features introduced in version 4.0 of CCPLs[19].

Without doubt the most significant change consists in the decision to put aside the porting process adopted so far. The porting process characterized the production of CC licenses up to the version 3.0 requiring the involvement of legal experts from different part of the world to craft localized versions of the licenses: more than mere translations, the ported versions are indeed a proper adaptation of the original licenses, since they introduce modifications to the original text to better comply with the specific legal terms in force within each jurisdiction and are intended to have the same legal meaning and effect as the original licenses (generic, international/unported) and the ported licenses of other jurisdictions with the same license version[20]. The new version 4.0, instead, has been released as single international license suite worldwide, whose text is intended to be legally valid and enforceable in every jurisdiction without needing any adoption. Creative Commons achieved this goal by involving all its affiliates around the world in the drafting procedure *ex ante*, instead of discussing with them the porting of the CC license suite, once released, *ex post*[21]. This new approach towards internationalization[22], required a closer interaction with the various CC affiliates' legal experts during the very draft of the text itself, in order to identify the most suitable legal language and terms: this led to the development of four subsequent drafts before the adoption of the final text[23] and three public discussion periods to gather further contributions and feedback[24].

To ensure as much legal enforceability as possible, some of the notoriously critical clauses has been provided with a new formulation. Both the *Disclaimer of Warranties* and the *Limitation on Liability* (Section 5) now contain a closing expression that excludes their application where this is prohibited by the law. The same caution has been used to manage moral rights in Section 2 b. 1.

Moreover, the wording of the severability clause (Section 8 b.) has been revamped explicitly considering cases in which the reformation of invalid/unenforceable provisions is not possible; in those cases, the provision will be severed from the license without effecting the remaining terms.

Another important addition pertains to the SGDR treatment: we will further examine this topic in the following paragraphs 3.2 b and 4.

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[19] Details on the 4.0 CCPLs drafting process are available on the CC Wiki page: http://wiki.creativecommons.org/4.0. Draft versions of the licenses are available at: http://wiki.creativecommons.org/4.0_Drafts

[20] For more details on the porting process see: http://wiki.creativecommons.org/Version_3#Further_Internationalization

[21] See: http://wiki.creativecommons.org/License_versions#International_License_Development_Process

[22] See: http://wiki.creativecommons.org/4.0/Internationalization; http://creativecommons.org/weblog/entry/29639?utm_campaign=newsletter_1111&utm_medium=blog&utm_source=newsletter

[23] Draft1: http://wiki.creativecommons.org/4.0/Draft_1; Draft2: http://wiki.creativecommons.org/4.0/Draft_2; Draft3: http://wiki.creativecommons.org/4.0/Draft_3; Draft4: http://wiki.creativecommons.org/4.0/Draft_4

[24] For a timeline of the drafting procedure see: http://wiki.creativecommons.org/4.0#Draft_timeline; for more details on the public discussion on the three drafts see: http://wiki.creativecommons.org/4.0_Drafts

Other New (Open Data-oriented) Features

We will skip over many minor changes that simply rephrased the previous wording and describe the most interesting additions to the 4.0 licenses in the perspective of Open Data initiatives (following their order of appearance in the Sections of the CC BY-NC-SA 4.0 license[25]).

a) Considerations for licensors and the public

The Copyright Law notice contains a new sub-portion with specific considerations to help users acknowledging the basic rules of a copyright license before adopting a CCPL to the material or while using the licensed material. A hyperlink to provide further information related to the license practicalities is also included[26]; such information is not part of the text of license.

b) Sui Generis Database Rights

As we said above, the inclusion of SGDR within the licensed rights has determined its mention in some previously existing clauses and the adoption of an *ad hoc* definition and section. The new treatment of SGDR is addressed in Section 4. As a result, should the licensed rights include SGDR that apply to the licensee's use of the licensed material, it is explicitly remarked that: SGDR are contained in the *License Grant* of Section 2 a. 1 (Section 4 a.); that extracting all or a substantial portion of a database in which the licensor holds SGDR and including it into another database (*in which the extractor of the original database contents has SGDR*) makes the latter (as a whole, but not its individual contents) an adaptation of the first, thus requiring its compliance with the terms and conditions provided by the license (Section 4 b.); that licensees have to comply with the *License Conditions* of Section 3 a. when they share all or a substantial portion of the database (Section 4 c.).

It is also clarified that Section 4 supplements and does not replace the obligations of the license; meaning that in case of SGDR the whole provisions of license do apply, not only those pertaining to SGDR.

The SGBR is now mentioned explicitly in the definition of *Copyright and Similar Rights* (Section 1 d.). Finally, the SGDR has been provided with its very own definition in Section 1 m.

c) From Author to Creator; from Work to Material

Arguably a consequence of the inclusion of the SGDR, the terms *Author* and *Work* have been turned into *Creator* and *Material*: given their broader meaning, this new couple seems to fit better than the previous one, in case the license is adopted to publish a database: when the database contents possess little or no creativity at all[27], they are usually consisting of mere information or data, therefore the term Material seems more appropriate to define such entity. For the same reason, the term Creator fits better to encompass the originator of both creative and non-creative works[28].

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[25] The full text of the license is available here: http://creativecommons.org/licenses/by/4.0/legalcode

[26] For the licensors: http://wiki.creativecommons.org/Considerations_for_licensors_and_licensees#Considerations_for_licensors; for the public: http://wiki.creativecommons.org/Considerations_for_licensors_and_licensees#Considerations_for_licensees.

[27] For the protection of non-creative databases see Section 4, below.

[28] The conclusion seems supported by the Database Directive itself, where it distinguishes between the *author* of a copyrighted database (art. 4) and the *maker* of a database protected by the SGDR (art. 7).

d) No sublicensing

The 4.0 version re-ordered the prohibition of sublicensing the material offered by the licensor under the terms of the CC 4.0 license. Section 2 a. 5 reproduces a previous remark of version 3.0[29] according to which every recipient of the material shared and/or modified by the licensee receives an offer from the licensor to use the material he/she (the licensor) published with the CC license on the same terms and conditions. More explicitly, the sublicense prohibition is also contained in the *License grant* (Section 2 a. 1). The choice of defining this condition more clearly within one single section reflects a generic tendency to make the text shorter and more schematic[30], but also a more specific care for ensuring as much interoperability as possible with other free licenses that contain a sublicensing prohibition[31].

e) No endorsement

Section 2 a. 6 features an interesting addition to the endorsement prohibition: not only the licensee can not assert or imply any connection with, sponsorship or endorsement by the licensor, he is now also warned that he is not "*granted official status by the Licensor [...]*". The "official-status" prohibition is contained very often in the text of standard licenses developed and/or adopted by public bodies opening their data[32]. This introduction is arguably a mean to align the CCPL with most of the existing Open Data standard licenses, in view of a better interoperability.

f) Modifications to the licensed material

The Attribution requirements contained in Section 3 (a) are now prescribing a stricter obligation to notify whether the licensed material has been modified and retain an indication of any previous modification33. Probably, the new requirement has been introduced to relieve in part the aforementioned concerns that frequently worries public bodies, when they are pondering to share their data34, and also for the sake of interoperability with licenses specifically developed to share database contents (e.g., with ODC Licenses35).

The EU Database Protection and its Impact on Open Data Initiatives

Databases receive a specific protection in Europe according to the Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases (hereinafter, the "Database Directive")[36]. In particular, the Database Directive protects the

[29] In the Miscellaneous Section 8. a.

[30] For instance, another sublicense prohibition was "buried" in the *Restrictions* Section of version 3.0 (4. a.), lacking in coordination with the Miscellaneous remark (8. a.).

[31] *E.g.*, both the Open Data Commons Attribution License (ODC-By) and the Open Database License (ODbL) contains a sublicensing prohibition at point 4.4 and 4.8, respectively.

[32] See, for instance, the French License Ouverte 1.0 (*supra* at note 9), the UK Open Government Licence 2.0 (*supra* at note 7 and 8), the Italian Open Data License 1.0 and 2.0 (*supra* at note 10), the Irish PSI General License (http://psi.gov.ie/files/2010/03/PSI-Licence.pdf)

[33] To check this and other differences with the previous 3.0 attribution requirements see the Attribution/marking treatment Comparison of treatment between Version 3.0 and 4.0d3 http://wiki.creativecommons.org/images/c/cb/Attribution_chart_%28v3_v_d3%29_.pdf.

[34] See the comments on No endorsement, *supra*, Section 3.2 e).

[35] Which requires to offer to the recipients all the alterations made to the original database along with every additional content. E.g., see point 4.6 (*Access to Derivative Databases*) of the OdbL v1.0: for a link to the text see *supra*, at note 4.

[36] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31996L0009:EN:HTML

investments in information processing systems[37]. As a result, two (non mutually exclusive) levels of protection have been established: a first level for databases eligible for copyright protection due to the nature of the database author's own selection and arrangement of the database contents (*Chapter II – Copyright*); a second level for databases which required a substantial investment in order to obtain, verify or present the database contents (*Chapter III – Sui Generis Right*).

The first level of protection extends the copyright protection to creative databases (Aliprandi 2012): the author has the exclusive right of reproducing in whole or in part, translating, adapting, arranging or altering in any other manner, distributing and communicating the database to the public. As copyright on artistic works, copyright on creative databases is granted for seventy years from the creation of the database.

The second level of protection introduced the SGDR in the European legal framework: according to art. 7.1 of the Database Directive, the maker of a database is granted the right to prevent "*extraction and/or re-utilization of the whole or of a substantial part, evaluated qualitatively and/or quantitatively, of the contents of that database*". The SGDR's term of protection is fifteen years from the completion of the database (or making available to the public, in case such availability is provided before the expiry of the term of protection calculated from the database completion)[38].

While the Database Directive does not provide a specific definition of "data" (Hughenholtz 2006), it clarifies that databases are a "*collection of independent works, data or other materials arranged in a systematic or methodical way and individually accessible by electronic or other means*"[39].

Arguably, the protection granted to databases (and particularly the European SGDR) represents a major legal constraints for the re-use of data. Because of the existence of database protection, any time users come across a set of information organized in a way capable to form a creative work or whose organization required a substantial amount of investment[40], they have to assume that any re-use is forbidden without the prior consent of the database author/maker. Similarly to copyright works then, adopting a licensing scheme has become a fundamental step for public bodies who want to open their datasets to third parties' re-use.

The Treatment of *Sui Generis* Database Rights in the CC Licenses.

While Creative Commons licenses were created to help authors and users sharing copyrighted works, originally they were not specifically designed to license databases. And even though they could have perhaps been used quite successfully since from version 1.0 to license compilations of data protected by copyright (given their creative nature), certainly the SGDR regime has not been explicitly addressed until version 3.0[41].

[37] See Whereas n. 4; 7; 10 and 12 of the Database Directive.

[38] Art. 9.1 and 9.2. of the Database Directive. Also worth of note is paragraph 3., which grants a renewal of the term of protection in case of substantial changes, particularly those that would require a substantial new investment.

[39] Art. 1.2. of the Database Directive.

[40] And, obviously, as long as the EU Database Directive (and further national implementations) or similar restrictions on databases do apply to them (*for instance*, in case databases are developed within Europe).

[41] With the only exception of ported licenses from Netherlands, Belgium, France and Germany: those countries, in fact, included references to their national legislation on database rights, thus encompassing databases protected by the Database Directive within the definition of "work" contained in the CC license. See the 2006 "*Database and Creative Commons*" document:

Indeed, around the time the porting process of version 3.0 licenses started, Creative Commons acknowledged that the SGDR topic was an issue to be solved; not only to ensure harmonisation between CC licenses around the world, but also to fill the gap with regard to the specific SGDR, whose broadening importance (also in connection with the emerging Open Data 'phenomenon') risked to discourage the adoption of CC licenses. At the same time, however, it was felt that the use of CC licenses for works eligible of protection under the Database Directive might have led to a proliferation of the SGDR protection in countries that do not recognise such right, with potentially negative effects on pure data contexts such as the scientific and research field[42].

A solution was found then, by adopting a three-principle approach according to which, in order to harmonise CC licenses without expanding the scope of protection beyond general copyright laws, a waiver solution was adopted: the licensor gives up his/her SGDR so that databases protected only by the EU *Sui Generis* rights would not trigger the terms and conditions of the 3.0 license (and therefore its restriction would not extend to mere facts and information)[43].

However, since Open Data initiatives were gathering momentum all around the world (with Europe being on the point of starting the revising process of Directive 98/2003/EC on the Re-Use of Public Sector Information[44], for instance), the current CC's policy to simply waive SGDR was questioned regarding its efficacy in the specific data context. As a result[45], version 4.0 opted for the full licensing of SGDR, showing the intention of Creative Commons to subject them to the same copyright terms and conditions: 4.0 CCPLs are now specifically regulating the terms and conditions that apply when SGDR are included among the Licensed Rights that the licensor has granted[46].

Section 4 is now gathering the licensee's rights and obligations towards SGDR protected material: it specifies the License Grant in case a licensee is going to use material protected by the SGDR[47]; it clarifies that if the database on which the licensee has SGDR contains all or a substantial portion of the licensor's database, then the licensee's database does constitute adapted material; it extends the attribution requirements to uses of the licensed material on which SGDR does apply.

As a matter of fact, other licenses have been developed with the specific purpose of regulating the re-use of databases and information held by public bodies: this is the case of the ODC Licenses[48] and various national standard licenses[49]. Therefore, the database challenge that Creative

http://web.archive.org/web/20110719001027/http://sciencecommons.org/resources/faq/databases/#dbreplicate; and the CC instructions to implement SGDR's in version 3.0: http://wiki.creativecommons.org/images/f/f6/V3_Database_Rights.pdf

[42] See CC's instructions "*On the treatment of the sui generis database rights in Version 3.0 of the Creative Commons licenses*", *supra*, at note 42.

[43] See CC instructions on SGDR, *supra*, at note 42.

[44] The new text has been approved on June 2013 and is available here: http://www.europarl.europa.eu/sides/getDoc.do?type=TA&reference=P7-TA-2013-0275&language=EN&ring=A7-2012-0404

[45] The database issue was debated at the 2011 CC Global Summit and eventually was suggested to move forward to a different approach. For a brief report of the discussion that took place during the Global Summit, see here: http://creativecommons.org/weblog/entry/29639

[46] See *supra*, Section 3.2 lett. b).

[47] The wording of Section 4 a. is now borrowing the language adopted in the Database Directive: see the Draft4 paragraph on the CC Wiki page, here: http://wiki.creativecommons.org/4.0/Sui_generis_database_rights#Draft_4

[48] See supra at note 3, 4 and 5.

[49] See *supra*, at note 33.

Commons is facing is not simply a matter of developing clauses compliant with the existing database legal framework, but also a matter of interoperability with other existing database licenses.

In this sense, progress have been made to match some characteristic prescriptions featured in most of the open data licenses (particularly those developed by public authorities) by prohibiting explicitly to sublicense the material[50], as well as prescribing to mark or indicate modifications to the original data[51] and not to assert any official status regarding the licensee's use of such data[52]. In addition to that, the adoption of the very Database Directive terminology contributes to improve lexical accuracy and clarity.

On the other hand, however, Creative Commons has not announced yet which open licenses are compatible with its ShareAlike licenses: providing this information would remove possible doubts and also conform CC licenses with a practise which is commonly adopted by most of the national Open Data licenses.

Also (while not strictly an interoperability issue), the 'classic' definition of commercial uses in the NonCommercial clause has been maintained the same, despite the ongoing debate on the opportunity of better qualifying it[53]; the necessity for a new solution would help user interpreting the clause and therefore infer whether a particular use would fall in the scope of the NonCommercial term or not. In view of the efforts made to re-arrange and concentrate the text for better clarity, the inclusion of a more precise definition of NonCommercial in an *ad hoc* sub-paragraph within Section 3 would have been beneficial; the current or revised definition could have been provided also with some practical examples or an external hyper-link to a resource on the CC website to further develop the matter (perhaps, specifying that both the examples and the hyper-link are intended for informational purposes only, similarly to the considerations for licensors and the public[54]).

More problematic though, seems the portion of Section 4 b. in which it is said that only databases in which *the licensee has SGDR* are adapted material, once they include all or a substantial portion of the licensor's database contents. According to a strictly literal interpretation of the clause, in fact, it would be possible to conclude that any time a licensee *does not* have SGDR on his/her derivative database, such derivative database should not be considered an adapted material at all.

Once the use of the Licensed Material is not resulting in some Adapted Material and (while involving the Licensed Material) what is shared is nevertheless something which is inherently different in its whole from the licensor's material, a paradoxical in-between entity seems to ensue, suggesting that not only the ShareAlike requirements (when a CC BY-SA or a CC BY-NC-SA license is adopted), but also the Attribution requirements may not bind the licensee.

One may argue that the aforementioned situation would imply a use of the Licensed material in "*modified form*" and therefore requires to comply at least with the Attribution conditions; but even if that is the case (and the final paragraph of Section 4 may actually help preserving the

[50] See *supra*, Section 3.2 lett. d).
[51] See *supra*, Section 3.2 lett. f).
[52] See *supra*, Section 3.2 lett. e).
[53] For the drafting debate on the implementation of the NonCommercial clause in version 4.0, see: http://wiki.creativecommons.org/4.0/NonCommercial
[54] See *supra*, Section 3.2 lett. a).

Attributions requirements[55]), the solution adopted in Section 4 b. seems capable of determining different interpretations and confusion regarding the necessity to comply with obligations related to database adaptations.

The risk is not simply theoretic; this may happen any time the contents of a EU database are included in a derivative database by users or entities outside Europe, where SGDR basically does not exists. European public bodies who wants to share their data may have concerns about the treatment of their database contents because of the way Section 4 b. has been expressed: not only a proper attribution to the public body, but also the obligation to indicate if data have been modified could be excluded in most cases. This could keep public bodies from using a CCPL, given the caution they usually take to preserve the integrity and official status of their data.

Conclusions

In conclusion, while it is still too early to provide any evidence on the practical benefits that this newest version could bring (given its recent publication), at least we can say that some of the new features has finally tailored CC licenses to the specific field of Open Data licensing.

Trying to evaluate the pros and cons of the new version 4.0, it seems that Creative Commons put a lot of effort into conceiving and managing a brand new drafting process leading to the release of one single text enforceable in every jurisdiction, thus reducing the proliferation of slightly different versions of their licenses in the view of a better interoperability between licenses available from different organizations around the world.Similarly, the three useful additions regarding a) the prohibition to sublicense, b) the prohibition to imply any official status and c) the requirement to distinguish the original material from its downstream modifications, may help ensuring as much interoperability as possible with other licenses specifically developed for database and information held by public bodies. Also the choice to implement a more condensed text will bring CCPLs closer to the usual structure of national Open Data licenses[56].

On the other hand, beside the doubts on possible ambiguous interpretations regarding the regime of adapted databases on which the licensee does not have SGDR, it should be noted that Creative Commons did not exploit the 4.0 drafting process also to provide a list of CC compatible licenses and finally solve some of the uncertainty regarding the bounds of the NonCommercial clause; while the latter is a delicate issue that notoriously CC takes in serious consideration[57] (and it is likely that the old definition was kept because an adequate solution was not found within the drafting period), it is hope that a list of CC compatible licenses will be added in the near future, also considering that such information is supposed to take place in the Creative Commons website, rather than in the text of licenses including a SA clause[58].

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[55] Where it is said that: "*You must comply with the conditions in Section 3(a) if You Share all or a substantial portion of the contents of the database*".
[56] See *supra*, Section 3.2 lett. d).
[57] As it is described here: http://wiki.creativecommons.org/4.0/NonCommercial#Overview
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About the Authors

Claudio Artusio

Claudio Artusio holds a degree in Law from the University of Turin and is a Staff Research Fellow of the Nexa Center for internet & Society of the Politecnico of Torino. Within the Nexa Center he performs support and research in the field of open contents & open licenses, public sector information and open access.

Federico Morando

Federico Morando is an economist, with interdisciplinary research interests at the intersection between law, economics and technology. He holds a Ph.D. in Institutions, Economics and Law from the Univ. of Turin and Ghent. He is the Director of Research and Policy of the Nexa Center for Internet & Society. From Dec. 2012, he leads the Creative Commons Italy project.

The Structural Adoption of Open Data in Governmental Organisations: Technology and Organisation in Practice

Martijn Hartog*, Bert Mulder**, Bart Spée***, Ed Visser**** and Antoine Gribnau*****

** eSociety Institute of The Hague University of Applied Sciences, The Netherlands, m.w.hartog@hhs.nl*
*** eSociety Institute of The Hague University of Applied Sciences, The Netherlands, a.w.mulder@hhs.nl*
**** Department of Information Technology, Province of South-Holland, The Netherlands, b.spee@pzh.nl*
***** Department of City Management, Municipality of The Hague, The Netherlands, edvisser@denhaag.nl*
****** Department of Urban Services, Municipality of The Hague, The Netherlands, antoine-gribnau@denhaag.nl*

***Abstract**: This article describes the growth of open government, open data and the means for transparency and accountability but aims to reflect on the bottlenecks and actual practicality of opening data to the public domain by two governmental bodies. The Municiaplity of The Hague and The Province of South-Holland of The Netherlands are part of 2 research programmes called 'Government of the Future', it's main goals are to explore and establish knowledge on societal innovation by new applications and possibilities of long term effects of ICT's in the public sector. Part of these programmes are themes as transparecny and open data, which are viewed form the somewhat pragmatic and operational side of its applicability. The paper shows the development within the governmental bodies and captivates the 'readiness' for open data.*

***Keywords**: Open government, open data, GEO data, governmental bodies, practice*

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Introduction

Today more and more governmental bodies encounter the effects of open government policies and transparency issues. Previous studies have shown the rise of a digital government (Scientific Council of Government Policy, 2011) and the need for frameworks in order to practically structure these deveopments into services rendered by governmental bodies (Mulder & Hartog, 2013) as a consequence for e-government and e-democracy developments. Open government and open data tends to focus on the purpose for transparency. But the dominating discussions surrounding open data seems to concentrate on reusage of so-called Public

Sector Information (PSI) and which parties should or could be involved (Henninger, 2013). Due to not knowing these terms of reusage as such , the practical implicity and applicability is somewhat ambigues.

The economic benefits from and by the use of open data as well as valueing the ecomocial and societal accountable effects are researched and argumentated in many studies (e.g. Longo 2011; McClean, 2011; Meijer, 2013; O'Reilly, 2010; Pollock, 2009; Uhlir, 2009; Vickery, 2011, De Vries et al., 2011). All of them seemed to share the same notice of ambuitigty or misinterpreting the grandeur of open data as rescue means for disclosure of PSI in order to achieve transparency.

In contrast previous studies (Halonen, 2012; Heald, 2006, 2012; Janssen, 2012; Pina et al, 2010) showed openness discussed in line with the mere expectations for transparency and accountability of the government as a neccesity. Ever since Perritt wrote on open government in 1997 many directions have been noticeble in the fields of administrative sciences. Openness has been hard to describe, thus many directions (e.g. economical and legal) where needed to assertain scientific and practical knowledge.

Some recent studies have shown a shifting attitude of the public in regard of perceiving openness or transparency by governmental bodies. The open data movement – or as Henninger (2012:85) stipulates 'two-way online transparency' – is seen enabling a participative writing society instead of a reading society (Henninger, 2013; Halonen, 2012). Which implies co-creation and participation could be achieved when communicating PSI with the public.

A different element of difficulty for open data can be seen in the changing formats for collaborations within the public sector (e.g. public-private partnerships). Before any data can be disclosed discussions grow on legal issues. In addition Gurstein (2011) mentions a 'data divide' in the process of public access which tend to only reach the technical elites, those better able to use and analyse the data. In addition Fioretti (2012) also challenges the interpretation of raw data by citizens. Lundqvist (2011) argues the specific role government should choose in disclosing data; does it just give data or should it also enable the development of applications or websites? Whilst others reflect on the effects of openness and open data on the trust in the government by citizens (e.g. Bannister & Connolly, 2011; Fairbank, 2005; Grimmelikhuijsen, 2012; Hood & Heald, 2006; O'Hara, 2012; Meijer, 2009; Rana et al., 2013) some research focuses on the lack of technical applicability and the publication process of open data (e.g. ; Zuiderwijk and Janssen, 2013).

Other ideas of openness and open data involves the positive effects on citizen empowerment, government processes (Meijer, 2013; O'Hara, 2012). Paled (2013) mentioned the effectiveness to improve decision making and services to citizens. In practice we can agree with Halonen:

> *" Open data is applied in various ways with lots of small-scale success stories available, mostly in the form of mobile-phone or web applications. These apps and websites – as innovative and useful as they are – are yet not the key issue when addressing the overall value of open data. These services make everyday life of citizens a tiny bit easier ..." (Halonen, 2012, p. 9).*

This notion is in line with this paper which is based on several explorations in 2012 and 2013 within 2 research programmes in collaboration with the Municipality of The Hague (2012-2014) and the Province of South-Holland (2013-2015) of the Netherlands. In order to assess the possibilities for a structural and practical approach of open data wihtin aformentioned organisations several semi-structured interviews with key experts (CIO's, legal representatives, senior GEO staff), civil servants (data source holders) and policymakers. This paper does not specify the digital government nor the economic or legal implications of open data but aims to

create insight in the reality of adapting open data, more specifc GEO data, as structural part of the organsiation within two large governmental bodies. We intent to draw the lessons learned for further research on realising open data on an operational level. We orientated on (locational) GEO services and data due to the fact these (regional) data are quit extensive and used for many public services within local governments as well as provinces.

Open Government

With the rise of e-government ande-democracy solutions governments have been assessing a certain stability in relating services and policy to the needs of citizens (Pina et al., 2010). Some studies focused on the power of social software (Fischer et al., 2011). As Harrison et al. (2012) points out:

> *" The idea of using new technologies to support, expand, or re-invigorate democratic practices is not novel. The history of 20th century media has demonstrated that the introduction of new communication technologies routinely gives rise to intense speculation about their impact on the processesand practices of democracy ..." (Harrison et al., 2012, p. 85).*

Efforts of e-decmoracy to engage citizens in participation and structural e-government solutions for online government services have now resolved more or less in open technologies involving sharing data over the internet, resulting in the term and object of study 'open government data' (Yu & Robinson, 2012). As previously mentioned PSI and the public disclosure of data is hard to match one on one for accountablity or transparency (2012:178). Yu & Robinson also mention that vagueness of 'open government'. They stipulate on the notion of separating technological from political openness—separating the ideal of adaptable data from that of accountable politics—will make both ideals easier to achieve. In order for public servants to more readily embrace open data and realize the full range of its benefits, contentious politics of accountability should be separated (2012:208).

Since Obama mentioned the openness of government in 2009 as one of the pilars of his administration many initiatives have been deployed for a sustainable approach. The Netherlands is a member of Open Government Partnship (OGP) initiative . OGP aims amogst others to secure concrete commitmens from governments to their citizenry to promote transparency and empower citizens (OGP, 2012). Every partner / country is expected to declare their endorsement on open government and form concrete action plans. The Ministry of Interior and Kingdom Relations is responsible for the Dutch action plan. On of the main goals of this action plan is to advocate a transparent government and an active availabilty of PSI (2013a:10-15). In order to do so many sub-actions and terms of refinment as well as milestons are defined. One of them is the framework of providing open data, which should be based on the Law Market and Government and the new guideline for re-use of PSI (2013a:11). This main goal is in line with a earlier exploratory report of the Council for Public Management concerning the possibilites of openness and open governmental data (Rob, 2012). In 2013 The Ministry also presented a vision on 'Open Government' mentioning open data as an explicit medium to create transparency (2013b). The core elements of an open government is considered to be: a transparent, facilitating, accessable and reliable government (2013b:8-9).

The European Commission also considers open data as a powerful tool in engaging citizens and adding value to data. It provides a framework in order to accomplish opening data (EC, 2011). The

Dutch Ministery responded by providing 5 steps for Provinces and Local Governments to realise open data (https://data.overheid.nl/handreiking, 2014):

- Step 1, how to organise open data as a start
- Step 2, selection of data sets
- Step 3, legal check
- Step 4, organise the publication process
- Step 5, make data findable and accesable

In the everyday life of governmental bodies as a Province of Local Government there are a lot of formats, frameworks and Laws to take into consideration when opening up data. In the practice of open data legal issues rise to the occasion when discussing openness. The Data Protection Act and Freedom of information act have regulated the importance of making data sets available since 1991, especially concerning privacy. The last Act aims to create the possibility to assess governmental bodies on good governance. This is a reactive process where government often make great efforts to provide information adequeateluy. With current internet and ICT developments it has come increasingly easier to publish data on beforehand.

Open Data

The effective use of open data is a difficult subject to assess. The drive towards increased public transparency and allowing for enhanced data–enriched citizen/public engagement in policy and other analysis and assessment is certainly a very positive outcome, but open data and its usage is hard to define (Gurstein, 2011). Gurstein and Halonen are two authors who believe the effectiveness of open data has yet to be proven.

For an effective approach to open data the useful outcomes should be made availbale and adapted for the widest possible range of users and therefor ensuring a range of considerations needs to be included in the open data process (Gurstein, 2011). Advocates of open data are vocal about the potential positive impacts on democracy. These impacts are significantly harder to identify and need much more research in order to produce comprehensive and reliable results.

In addition, we must realise the difference between transparency and democracy-oriented goals that are usually associated with the freedom-of-information movement and the technology and innovationoriented goals of the open-data movement (Halonen, 2012). Although freedom of information and public sector reform are important contributors to the Transparency Agenda, the most important motivating factor is arguably the growing realization that the state holds enormous quantities of information (McClean, 2011).

Halonen defines 'Open Data' as a term usually refering to non-personal data that is accessible to all and can be freely used, re-used and distributed by anyone. Re-use of data is made possible by releasing data in machine-readable formats and under such a licence that typically allows both commercial and non-commercial usage (2012:18). Yu & Robinson (2012) distinguish the technological and philosophical meaning of raw, unprocessed data which allows individuals to reach their own conclusions (2012:189).

The basic principles (of re-usability) by Tim Berners-Lee of open data are typically listed in a five-star model as follows (Halonen, 2012:19; Berners-Lee, 2010):

- ★ Data is available on the web (in whatever format), but with an open licence
- ★★ Data is available as machine-readable structured data (e.g. in Excel, instead of an image scan of a table)
- ★★★ As in two stars plus non-proprietary format (e.g. CSV instead of Excel)
- ★★★★ All the above plus use open standards from W3C (RDF and SPARQL) to identify things, so that people can point at things created by others
- ★★★★★ All the above, plus linking your data to other people's data to provide context

As Davies distinguishes raw data (2010, 12) the Dutch Parliament encourages public disclosure which she describes as sources of raw PSI (2011:

- Which are public
- Free of copyrights of other rights of third parties
- Paid from public funds, made available for the execution of the specific tasks
- Preferably conform open standards
- Preferably machine readable

Within The Netherlands the National open data portal (www.data.overheid.nl) offers the possibilities for governmental bodies to upload there data. Since this is not compulsory many governmental bodies choose otherwise. Governmental bodies gained much data in order to manage and support business processes both in terms of policy and management. Information accompanying these processes comes from internal and external sources. All this resulted in diffuse structures and quality.

The Practice of Open Data

The Municipality of The Hague

With more than 500.000 inhabitants The Hague is one of the largest cities in The Netherlands (CBS, 2011) and due to its number of issues and supporting data sets an interesting object of study. Since 2003 The Hague developed 'The Glass City Hall' to enlarge her transparency and customer focus with ICT. Characteristics of the data architecture and ICT infrastructure were: single storage and multiple use of data, the use of core registration, division into layers and domains, the use of standards.

After an internal investigation in 2007 The Hague noticed the fairly large amount of map viewers, which created disturbance amongst citizens. The internal procedures of map viewers features suppliers, management and exploitation which were cluttered inefficiently amongst several services. In 2008 a concern wide WebGIS service was investigated with the assumptions: single registration, multiple use and a service-oriented architecture using open standards. 'WebGIS' had to be a service-oriented architecture consisting out of three layers.

- Data layer with Oracle Spatial databases, in whicht object-oriented data is stored
- Application layer with a map enigin and a GEO server
- Presentation layer with map viewers and a GEO portal

In 2009 The Hague choose Geoweb software and an ArcGIS-server from Esri. The software framework was implemented in 2010 and became operational in 2011. Two Oracle Spatial databases were connected with BORIS (a databse with objects in the public domain) and WebGIS,

supporting topographical surgaces, aerial photographs, panorama photos and cadastral information.

With the renewal of the GEO services Open data has been on the agenda of The Hague for a number of years. In 2011 there was decided to establish open data as agenda issue for the whole organization (Commission Letter, 2011). But despite the fact that the immediate 'data hunt' supplied several sources for data sets and applications, the data stopped being opened. Despite the fact that some source holders seemed reluctant in opening their data related to their working processes, an important lesson was the necessity of standardized formats, up-to-date, automatically reachable data sets which contains enough information for developers. We then noticed that opening data was not a natural process. An important element is the attitude and dissemination of open data policy by management. The organization has to invest in the quality, quantity and sustainability of data sets, which are or should be opened not knowing if there is even a demand for the (specific) data. Other reluctant remarks where: managing open data costs money, why should we publish it? How should data be published and is it even part of my job?

In 2012 the Municipality decided to define their policy as 'Open Data, *unless'* (Commission Letter, 2012) after the example of the Ministry of Interior and Kingdom Relation which mentions her 'Open Government, *unless'* policy regarding open data (2013a; 2013b). 'Unless' takes into consideration data which may only be opened if personal information is excluded from the data sets, does not form any risk for governance and / or any legal restrictions (Commission Letter, 2011).

Aside the local level the Municipality of The Hague also focuses on the neighbourhood and regional level with collaborative neighbour municipalities and the metropolitan area (see figure 1).

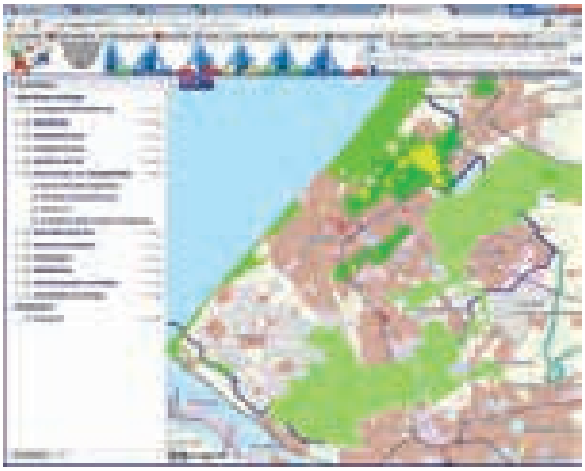

Figure 1: Region viewer The Hague (Retrieved 18 December 2013)

The Hague also participates in a project on Regional Collaboration GEO-information. The project group has enabled a viewer visualising open GEO data / services of the participating cities. In 2014 the project will launch a metropolitan variety with the ability to compare material of other EU cities (see figure 2).

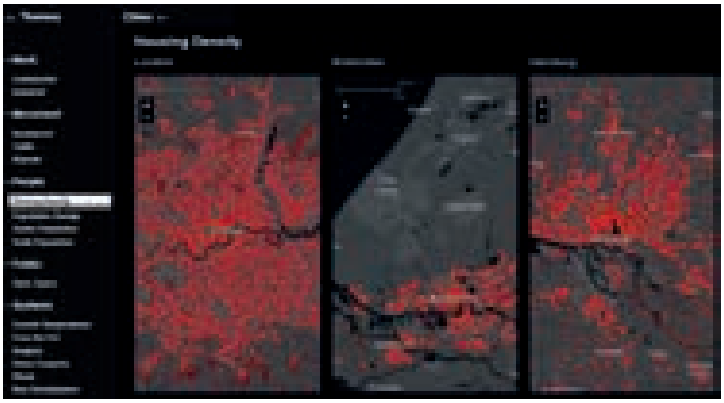

Figure 2: Urban Observatory, compare cities around the world and regions (Retrieved 18 December 2013

In order to stimulate openness The Hague has appointed a central project leader and advisor in order to connect with the other 3 large local governments within The Netherlands (Amsterdam, Rotterdam and Utrecht) and create awareness and necessity of opening data by source owners and source holders. The framework which is used focuses on 'Open data, *unless'* policy, adaptation of open data within the information architecture, conditions of information and ICT as well as stimulating a creative and pro-active approach; 'by design' rather than ad hoc. Another perspective is to activate an open data store with not only raw data but also creating a platform for sharing knowledge and experience / ideas. The Hague will not itself produce 'apps' if no valid reason presented itself, it prefers to leave the initiatives for the society in order not to disturb any possible business models.

The number of data sets is still growing. Since 2012 the municipality opened more than 200 data sets and thus enabling the creation of dozens of applications build by students, developers and others.

In 2013 a project started to explore the full extent of opening data sets. In addition the process of publication has been described. Any doubt of publication is measured by a legal representative with the Freedom of information act. Eventually the management of the department decides whether the data is opened fully or partially. Despite the municipality wide adoption of 'Open Data, *unless'* policy, there is still a lot of cold feet concerning open data; explaining and convincing source holders is very time consuming. In the meantime The Hague is also exploring how data can be made available as Linked Open data, by participating in a National project 'Platform Implementation Linked Open Data' (http://www.pilod.nl/wiki/Hoofdpagina, 2014).

The Province of South-Holland

The Province of South-Holland gives home to 3.5 million people on an area of 2.900 km2, which makes it the most densely populated of the twelve Dutch Provinces. The Province has around 130.200 registered businesses. The province also boasts various centres of knowledge and expertise, including three universities in Leiden, Delft and Rotterdam, the TNO research laboratories, Estec and the Innovation Centre's. The provincial capital is The Hague, which is the seat of national government and the Queen's official place of residence. The main challenge of the provincial administration is the co-operation with the state government, the municipalities of

South-Holland, the neighbouring provinces and the regional water boards (www.zuid-holland.nl, 2013).

10 years ago data were only supplied to third parties for a supplier's fee after they had signed a user statement, confirmed by the province. In 2006 the Ministry of Interior and Kingdom Relations requested data to be available for free. It turned out that there was no legal basis on which the province based their policy as data-supplier and no reason for the data not to be freely available. The concerning data was not a major source of revenue for the province, as is the case of many municipalities. As a result, the decision was relatively easy to take to realize free data whilst open data was not yet introduced.

In December 2007 the Provincial Geo Register (PGR) was formed due to a new policy framework. Since then all GEO data of all the provinces was freely available, although a central portal with accessible / downloadable data sets was still missing. At the end of 2008 the first version of the PGR was launched. The first version was based on INSPIRE legislation which enabled provinces to function as large suppliers data, with strong demands concerning availability per province. Due to the inability to realize these high claims form the EU the PGR enabled joint forces. In 2009 all provinces were affiliated with PGR containing a mere 10 data sets.

In 2010 IT architects created a strategic vision for the province directing towards open source, open procurements and open data. This vision was the basis for the 'Open Provence' policy (Province of South-Holland, 2011). The policy connects to the central governments directive for open government as mentioned in chapter 1. The policy extends the reactive approach of the Freedom of Information Act and suggests pro-active availability of data.

The PGR has now over 1000 open data sets (2013) and does not only measure up to the demands of INSPIRE but PGR is used for many different sorts of data. On a monthly basis data of the Province of South-Holland is downloaded between 200-500 times. In 2014 a project will start researching the simplification process of the services structure enabling real time data modelling and downloading. The data is also used by several governmental agencies for policy analysis and calculation using different combination of the data. Opening up provincial data using PGR has created several advantages for the province:

- Data is up-to-date.
- Cost reduction of Eur. 50.000, - a year for time used gathering specific information.
- Harmonisation of many definitions with beneficial comparable options.
- Uniform of terms of use.

Conclusion and Discussion

The on-going research programmes have shown to generate interesting insights. Being both rather large specimens of governmental organisations it seems inevitable that the practice within the organisations runs slow when compared to ICT developments and the current developments on economical and societal valuing of (linked) open data. All the interviewees acknowledge the fact that global initiatives seem to rise and grow, whilst they are stilling working on the fundaments of open data and its acceptance within the organisational processes or defining to whom the data belongs. The more positive outcome involves the capacities of technical infrastructure to automate data approaches without manual actions involving civil servants.

Central systems of open data accessibility seem to generate success by its stability and controllable usage and can even reduce costs. The reluctant postures of deniability towards opening data as a standard versus the 'why not open it all' seem to be part of the cultures within both organisations. This questions the organisational culture as success element in introducing open data on a structural basis.

In this stage of the research programmes the outcome of open data seems to solely depend on targets and goals related to open data mainly discussed in policy, which supposed to create foresight and accountability towards generating transparency. Interviewees stipulate on the necessity of this kind of stimulation and active marketing.

One main question in regard to this attitude is creating clarity on the actual ability of open data and what you can achieve with it. Another question focuses on the users / customers thus question vs. demand of the data; as long as these are not defined data source holders are reluctant to open their data. Persuasion often comes from both CIO's, policymakers and advocates of open data, but with regard to this point policy seem to be the keyword. Open data is therefore presented not as the end but the means. It seems that the thematic approaches generates (some) clarity on channelling the users and necessary data.

Advocates and key experts of open data from both governmental bodies mention the need for structural support of open data and the possibility of bringing open data in front of the processes as well as assigning a legal representative and technical specialist on a central position. Both focusing on stimulation and support of the quality of data as well as forming specific knowledge and information concentrating on open data of the whole organisation. The new and innovative character of open data demands flexibility in order to explore and develop new methods.

The research programmes on which this paper is based upon are still running. What we wish to achieve with the programmes is aggregating knowledge and experiences with best practices for other Provinces and Municipalities adapting open data both structurally and operationally. We see shortcomings in the literature on more adaptive and pragmatic approaches for civil servants and governmental bodies to obtain knowhow and expertise on "planning" open data. In future research we will focus on expanding our best practices with organisational, cultural, legal, technological and functional insights and creating overall indicators to identify major key elements in order to benchmark best practices.

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About the Authors

Martijn Hartog

Martijn Hartog is a project leader and researcher at the eSociety Institute of The Hague University of Applied Sciences. He is in charge of the research programmes 'government of the future' concerning an open and transparent government. His fields of research concern open government, e-government and e-democracy. He previously functioned as advisor within several Dutch governmental agencies, such as the Ministry of General Affairs / Ministry of Transport, Public Works and Water Management / Dutch Public Broadcast Agency and the Municipality of Rotterdam.

Bert Mulder

Bert Mulder is an associate professor of Information, Technology and Society at The Hague University of Applied Sciences and founder of the eSociety Institute. His main objective concerns strategy development for a broad and innovative appliance of ICT within the society. Prior to this he worked as an information advisor of the Dutch parliament and as Head of the IT department at Veronica Broadcasting Organization.

Bart Spée

Bart Spée works at the Province of South-Holland as senior GEO-IT specialist at the IT department and is currently project leader of open data and transparancy. He has more than 10 years experience with GEO information (e.g. mobile GIS, data-collection, datamanagment, analysis and consultancy). He studied Human Geography, specializing in GIS and Cartography at the University of Utrecht.

Ed Visser

Ed Visser graduated in 1981 as urban planning engineer and started working for the Municipality of Rotterdam. First, as a policy officer urban planning and from 2000 as a GIS consultant. In 2008 he graduated as geo-information scientist and started working for the Municipality of The Hague. He is a consultant GEO information at the Department of City Management since 2010.

Antoine Gribnau

Antoine Gribnau is an information manager and functional manager GEO Information Systems at the Municipality of The Hague. In 2013 he became project manager at the Sustainable The Hague foundation and at the end of 2013 he became project manager of the concern wide open data project.

The Organization Gap in the Provision of Public Information and Open Data - The Case of the City State of Bremen, Germany

Herbert Kubicek

Institute of Information Management Bremen (ifib), kubicek@ifib.de

Abstract: *Many guidelines, handbooks, and implementation models for open government data have a strong technological bias and are rarely based on empirical evidence. For the non-technical aspects, moreover, nearly all advocate a cultural change towards more openess. A case study of the City State of Bremen, Germany, which has a relatively long tradition of providing government documents pro-actively via a central Internet portal, reveals evidence that organizational aspects are more important. Figures collected show differences between publishing information and registering them in the central portal, and that the low registration rate is due largely to a lack of clearly defined processes and responsibilities, in particular for the pro-active mode of provision. The paper presents figures on the different degrees of compliance with publication obligations by departments, a critique of the present organization structure, an alternative model for the publication of documents, and argues that raw data should be provided primarily on demand.*

Keywords: *Freedom of Information Act, Implementation Models, Open Government Data, Organizational Culture, Organizational Integration, Technical Integration*

Some Remarks on the Present Discussion of Open Government Data

There is high consent in academic discussions, political debates, and public opinion polls that today's governments have to become more open in order to meet citizens' expectations. Open Government, as originally defined in the Directive of US President Obama (e.g. Lindner and Wilson 2011, Ubaldi 2013), is characterized by transparency, participation, and collaboration, with Open Government Data as the foundation and enabler of such a government. I argue that there are a few misconceptions in this debate that run the risk of neglecting important aspects and giving wrong or short-sighted recommendations.

Open Government Information: Documents + Data

Stage models such as the Open Government Implementation Model of the City of Vienna have a strong technological bias in defining open data as the foundation for participation and collaboration (Krabina et al. 2013). Participation and collaboration are social processes performed by human beings with varying degress of technical support. Data are defined as machine-readable information. The main concern in practical processes of citizen participation is access to

government documents, in paper and/or electronic form, and not to raw data. It may at times be helpful to obtain access to the raw data on which reports and expert opinions are based, but, more often than not, information easily readable by human eye is much more relevant for Open Government than machine-readable data (see also Hu & Robinson 2012).

While most open data portals in Germany take this relationship into account and include documents, they tend to neglect the difference in content and context. Opening government documents has a long tradition, mostly under the heading of Freedom of Information (FoI), and has been established long before the advance of information and communication technology (ICT) in the government-citizen interaction. Therefore, some authors recommend the OGD community should take a closer look at developments in this field, which is more concerned with the relevance of information, conflicting citizens rights, and legal provisions rather than with technical issues such as data catalogues, data formats, and licenses (e.g. Hu & Robinson 2012, Ubaldi 2013, 4ff.).

Open or Not ? – No Simple Decision

The FoI regime is characterized by strong legal regulations, As most government information concerns various basic rights, their publication requires a delicate balance between the fundamental right to know and the privacy rights of the people concerned, business secrets, security requirements, intellectual property rights, etc.. While this is at the core of most of the FoI legislation, OGD advocates try to avoid this problem by simply defining open data as data that is not personalized. As the issue of personalized and non-personalized data is by no means black and white, in many cases some data fields have to be eliminated from larger data sets before publishing, equivalent to blackening lines with personal information in documents. This task has to be assigned within each agency and requires legal and subject related qualifications.

Re-active and/or Pro-active Modes of Opening

Mary Francoli (2011) identifies two models of information management for opening government information, a re-active and a pro-active mode. Pitrowski (2010) speaks of a pro-active and a requester model. The re-active or requester model includes the right of access to certain kinds of government information by request. A unit within in each agency decides on each individual request and whether it is in line with the legal obligations and whether some of the exemptions mentioned above apply. In the pro-active model there is a legal obligation, internal directive, or encouragement by the head of an agency to publish certain kinds of information on an Internet platform of the agency or at a higher level of government.

The open data community, without a doubt, demands a pro-active mode for all kinds of non-person related data and criticizes the FoI regime because of its re-active mode. But this correlation does not hold true for all cases, in particular not for the case of Bremen, where the relation is exactly the reverse: Documents are published pro-actively in a central information register, while raw data are provided by request. The reasons for doing so will be explained later in the paper.

Cultural and/or Organizational Barriers

Most studies on barriers to opening data (and documents) refer to cultural barriers, in particular an antiquated, outmoded culture of the official secret principle, and advocate a cultural change as a

prerequisite for successful implementation of OGD (e.g. Krabina et al. 2013, Ubaldi 2013). This approach, however, is based on prejudice and not on evidence, and it does not define what constitutes a culture and how it can be changed. Furthermore, it neglects other barriers, which in reality are arguably more relevant.

Organization culture is a multi-dimensional phenomenon including visible artefacts, conscious attitudes, and underlying basic values or norms. According to Schein (2004), it is not only about "What leaders pay attention to". In order to assure compliance it requires an appropriate organization structure, systems, and procedures.. But there are not many papers on open data dealing with intra-organizational issues, and those that do touch on the issue do so only in a quite general way. As an example, a recent paper issued by the OECD stresses the need for "appropriate institutional structures" to "ensure that those making decisions about the release of data do so in a rigorous and consistent fashion" (Ubaldi 2013,p. 34). With regard to the internal organization, Ubaldi points to the need for establishing "adequate workflows for data gathering, integration, validation, release, approval, grating, update and re-use or promotion". But rather than providing examples of what adequate workflows may look like, she only adds that in some cases the process of online data release is supported by an organizational culture of data-sharing and re-use which facilitates process reengineering, while in other cases the internal culture of public sectors institutions is not conducive.

Another example is the Open Government Implementation Model developed by the Centre for Public Administration Research and the Office of the CIO of the City of Vienna. It speaks of a "control gap" in Data Governance with respect to the release of data in OGD portals (Krabina et al. 2012. p. 6) and identifies the production of data catalogues, internal data monitoring, and the planning and implementation of approval cycles as new tasks of Data Management or Data Governance in the public sector. The Model suggests 10 steps or measures for implementing Open Data in an agency (pp. 27 -28). The basic goal is the establishment of an OGD Competence Centre for internal and external communication. While for most of the tasks methods and checklists are presented, the local organizational provisions in the data owning units are not discussed in detail..

In summary, most of the OGD literature takes a position outside the government agencies and deals with the interface with external partners. It concentrates on the demand for data, modes of delivery, and conditions for re-use, e.g. data catalogues, search functions, meta data, data formats, licenses, fees, but does not concern itself with how these requirements may be met within an agency. And the few contributions that do address this issue tend to give recommendations that are rather general and based on expectations and not on evidence. However, the City State of Bremen provides some evidence on intra-organizational regulations for a pro-active mode of Open Information as well as on the compliance to these rules and the reasons for deviations. A study undertaken for the Bremen Senator of Finance offers the unique opportunity to take a detailed look from inside. Of course a case study does not allow for generalizations, but it is good for the falsification and differentiation of common views and misconceptions. Moreover, this exploratory approach allows for the identification of hitherto neglected issues and factors.

The Advanced Regulations and the Lack of Compliance with Bremen FoI

Bremen is the smallest of the sixteen Federal States in Germany, with 650,000 inhabitants living in the two cities Bremen and Bremerhaven. Each has its own state and city government and state parliament. Many government processes are subject to state legislation.

FoIA Regulations in Bremen

Bremen was not the first Federal State in Germany to issue a Freedom of Information Act (FóIA), but in 2006 it enacted the most advanced legislation in Germany. Like the other state Acts and the federal Act in Germany, the BremFoIA allows access to public information without special reasons, barring five exceptions, e.g. privacy concerns, business secrets, intellectual property rights, public concerns, in particular public safety and security, as well as ongoing decision making processes. In addition, all government agencies in Bremen must publish certain kinds of documents and register them in a central electronic information register, which can be accessed online at www.bremen.de. Publication is mandatory for a handful of documents, such as organization and filing plans and administrative directives (Section (2) and (3) and (4a)) while "further suitable documents" listed in Section (4) shall be published pro-actively (see Figure 1).

§ 11 Disclosure Requirements

(1) The authorities should maintain registers by which existing information collection and purposes can be identified.

(2) Organizational and filing plans without reference to personal data are to be made generally available in accordance with the provisions to this Act .

(3) Every public authority shall publish the administrative directives and instructions of general interest, which have been issued or changed after this Act has come into force. There will be no publication if an application for access would be rejected under this Act.

(4) The authorities shall make the plans, directories, and directives mentioned in clause 1, 2, and 3 as well as other suitable information without any reference to personal data or business and trade secrets generally available in electronic form and report this information to the central information register according to clause 5. Further suitable information includes: recommendations, statistics, expert opinions, reports, brochures, judicial decisions existing in the agency, information to which access has been granted already under this Act, the Senate decisions and its communications to the state parliament as well as documents, records and decisions of public meetings.

(4a) Clause 4, sentence 1 shall also apply to contracts of general interest, concluded after 12 March 2011. The contracting party according to § 1, clause 1 gives notice of this before the closing.

(5) The Free Hanseatic City of Bremen sets up a central electronic information register in order to facilitate finding the required information. The public authorities are obliged to report on particular laws, ordinances, published administrative directives, and rules and agreements with employee representatives to the information register.

(6) Details are regulated by decree of the Senate.

Figure 1: § 11 Brem FOIA (own translation)

It took nearly two years to set up the central information register and the procedures and tools for decentralized registration. The register is a reference database with standardized meta data, while the original documents are held locally by their respective owners. A special registration module has been provided to all agencies within the common content management system for the website www.bremen.de by the central IT and eGovernment unit under the direction of the Senator for Finance (Finance Ministry) as well as a user manual providing lists of meta data.

One year after implementation the state FoI commissioner in his annual report noted that only few documents had been registered and consequently asked the Senate for improvement. The

Senator for Finance, responsible within the State Government, established a task force with representatives from the other government departments that initiated three regulatory measures:

- a decree that relieves the agencies of running their own directory of public documents in case they use the central register,
- an addition to the Senate's internal rules of procedures that all agencies have to apply the technical and organizational standards issued by the Senator of Finance, including the set of meta data mentioned above,
- for each decision taken by the Senate an obligation to assess whether the decision and the respective documents are suitable for publication according to the provisions of the FoIA.

But even within the Finance Department itself and after reminders, only a handful of units registered a few of their administrative directives and instructions.

The FoIA Evaluation in 2010

The Act had been limited for five years and its further existence was dependent on a positive evaluation. The author of this paper has been commissioned with this evaluation (Kubicek and Lippa 2010).

There are about 150 agencies falling under the BremFoIA. In February 2010 they had registered 3,053 documents. These agencies were sent a short questionnaire about their experience with requests and pro-active publishing, and, for example, were asked how many documents of the different kinds specified they had published so far. Only 36 questionnaires were returned, and not all of them had been answered completely. With regard to the obligatory documents, only 21 of the 36 agencies had published and registered their organization plan, and only 12 registered administrative directives. And for the "further suitable documents" which "shall" be published, the registration rate was even lower: Only nine agencies had published "Decisions taken by the Senate", seven published "Reports" and six "Minutes of public meetings".

In the survey the FoI Officers were asked about reasons for the low registration rate in terms of the extent that they agreed with a few statements. One such statement was about resistance against the unconditioned access to official information (Figure 2).

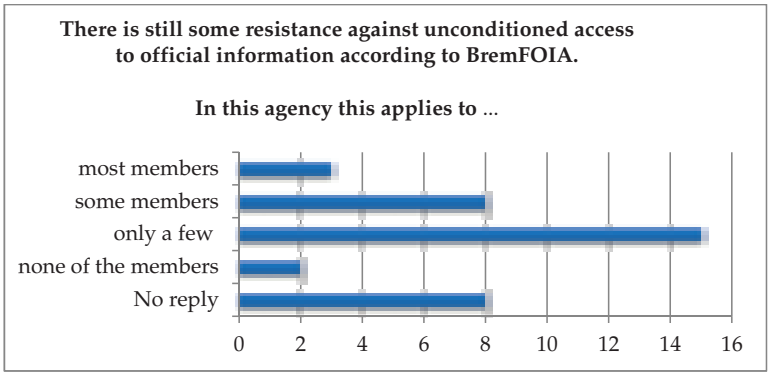

Figure 2: Resistance to access according to Brem FoIA (Survey of FoI Officers 2010) (n=28)

Only two FoIA officers reported that no one in their agency thinks this way. Fifteen said "only a few", and three said "applies to most members." Although this indicates some kind of cultural barrier, altogether the interviews led to the conclusion that, with but a few exceptions, low registration was mostly due to a strong organizational asymmetry between the two modes within the BremFoIA: While there is a clear task assignment for dealing with incoming requests (re-active mode) and the technical editorial work was clearly assigned, the selection and assessment of suitable documents in the pro-active mode was however much less straight forward.

In order to overcome this deficit, the evaluation report recommended to define the task of the FoI officer in the agencies more clearly in order to relieve them of running statistics of requests. The goal would be to have them elaborate a detailed plan together with the head of the agency and the press office, for which documents, in particular reports, expert opinions, and directives shall be published. Moreover, there should be reports on the status of the plan every six months. While the BremFoIA was extended by the State Parliament in 2011 and the obligation for statistics was removed, nothing was added concerning the organizational issues of the pro-active mode.

Technical Improvements

Instead of negotiating organizational issues with her Senator colleagues, the Senator of Finance ordered the removal of some of the technical barriers identified in the evaluation study. One member of the IT Unit was commissioned to establish a working group of FOI officers from the departments and assigned a budget for IT projects. We may call her and the working group the FoI Competence Centre.

The group decided to investigate the extent to which the registration of documents can be automated and how the search function may be improved. Automated registration was the easiest for press releases since there is a web-based press-archive within the same Content Management System. Several government departments are filing their communication with the parliament and parliamentary committees. The FoIA Competence Centre within the IT Unit developed a tool that browses the archives and selects the meta data. The implementation of the automatic registration of press releases led to a huge jump in the number of registered documents in 2013 (Table 2).

Another measure was to improve the search function. When developing the technical concept of the register, the author of this paper and the staff in the IT Unit were convinced that an index-based search would deliver better results, but it turned out that the quality of the search results completely depends on the quality of indexing, which was revealed to be disappointingly poor across the departments. People are used to the Google search and to entering key words for a full text search. As the register is only a reference database and the documents are stored locally, a trick was found to allow for a full text search by entering either a summary or the entire document text in an additional meta data field.

Additional Dynamics from an Open Data Competition

So far the regulation and practice in Bremen dealt with documents. An extension with regard to raw data in an open mode became part of the agenda in January 2011 when the German Federal Ministry of the Interior invited the federal states to participate in building a common Open Data platform. This served as a starting point to participate in an Apps4Germany competition by providing useful data sets. As the newly elected senate also had planned for an Apps4Bremen

competition in its coalition treaty, Bremen joined the federal competition and introduced an additional category with an award for developers from Bremen (data would however be made available to all developers). As the prizes were to be awarded at the CeBIT 2012, there was a clear timeline and deadline for the acquisition of data from the government departments.

The author of this paper was commissioned to conduct a feasibility study on OGD in Bremen and to prepare for the App4Bremen competition. Interviews were conducted in several departments to create a starting inventory of data sets. Because of the commitment in the coalition treaty and the deadline resulting from the integration in the national competition, many concerns brought forth by data owning bodies could be overcome:

- First, within each department the owners of possibly relevant data had to be found. Neither the FoIA officer nor the editors of the central information register felt responsible because it was not about documents, but about data stored in large legacy systems or in local Excel files. Several iterations were needed to obtain a release decision and to clarify the technical and legal conditions such as privacy obligations, liability, licensing, and charging issues.
- In technical terms, dynamic data in particular, such as the scores of water or air quality testing, raised new questions. An Excel file can be made accessible by download as simply as a PDF document. Dynamic data are updated continuously or at regular intervals. External access to the respective internal database would be desirable, but, due to security reasons, cannot be allowed. The environmental department was very cooperative and creative, and set up a tool to update the water quality data on a weekly basis.
- It did not seem appropriate to integrate the data sets into the central information register by the same meta data as documents as they do not have an author, a date of publication, or a type of document. Rather, relevant attributes are data formats, licence conditions, cycles for updates, granularity, etc. Since it was too early to establish a new meta data standard for open data sets, a free text product sheet has been proposed. In some cases it turned out to be more complicated to get this product sheet from the data owners than the data itself.

The data sets and product sheets were published via a separate data catalogue available at www.bremen.de. The Apps4Bremen competition was successful for several reasons:

- There was active participation of app developers from Bremen and beyond.
- Interesting apps have been developed and submitted. One of them was selected by Microsoft as a prototype for a generic City Cruise ("Open Cities Bremen").
- The Free Hanseatic City itself was awarded one of three prizes for the provision of its budget data by the Federal Minister of the Interior at the CeBIT 2012.

For further extension, an online request form and process have been provided: Incoming requests are immediately published on www.daten.bremen.de. The FoIA Competence Centre forwards the request to the data owning unit and the processing is visualized by traffic light symbols. All the data from the Bremen catalogue (are forwarded to the national OGD portal www.govdata.de. With more than 100 records, Bremen is among the Federal States that submits the most data sets to the national portal.

The Compliance Study 2012

In October 2012, Hamburg, another German City State, replaced its State FoIA with a Transparency Act, demanding the pro-active publication of a larger list of documents as well as any raw data held by the government, barring the traditional exemptions (privacy, business

secrets, security, etc.). This initiated a debate in the Bremen parliament about a further amendment of the BremFoIA. Before revising the Act, another evaluation has been commissioned to ifib. This time an in-depth study of four government departments has been carried out: Education and Science, Environment and Construction, Finance, and Social Welfare, Youth and Women.

To prepare for the interviews a comparison has been made of the number and kinds of documents in the Central Information Register and those published on the departments' websites within www.bremen.de. The data show some very interesting differences (Table 1).

Table 1: Number of documents centrally registered vs. published on local web-sites (Feb. 2013)

Kind of document	Press releases		Senate communications		Administrative directives		Reports		Contracts	
Department	Reg.	Web	Reg.	Web	Reg.	Web	Reg.	Web	Reg.	Web
A	2172	2172	469	???	58	> 100	4	> 50	1	0
B	1410	1410	23	> 50	6	1.377	0	127	0	0
C	1268	1268	546	???	64	>	459	> 500	23	0
D	1909	1909	26	???	57	> 100	33	>100	0	0

- Press releases make up by far the largest share of all documents in the register
- Communications of the Senate, although not obligatory, are the second most frequently registered type of documents. There is no central archive and no separate section on the department´s web sites. In each department there is however one liaison person responsible for the cooperation with the Senate's chancellery and, with the exemption of Department B, they register the documents themselves.
- Although according to the law, administrative directives must be published and registered, they are not. The number of documents on the web sites is much larger and, again, Department B shows an extraordinary difference. The same is true for reports: there are many more on the web and the biggest difference is for Department B.
- Although contracts have been explicitly added in the recent amendment of BremFoIA, two departments have not registered a single item.

With regard to the reasons behind this lack of compliance, the disregard of publishing contracts may be different from the other cases. Here we may assume a culture of official secrets existing alongside the FoIA exemptions related to privacy rights and business secrets. With all the other kinds of documents, the interviews revealed other reasons why documents have been published but not registered:

- Owners of documents question the value of the register (Why register centrally, if you can find the documents with Google on the pages of the department - especially as the search in the register is perceived as not optimal?)
- Official documents have to be accessible, which affords special treatment. Before publication via the central register there is a check for accessibility, while for publishing the document on their own sites, there is not.
- It is a hassle to input the meta data, in particular, to find the appropriate key words.
- Uncertainty about which documents may be published given the exemptions in the FOIA and, for example, what to do with personal data in a document.
- Overall, too little time or tasks that are considered to be more pressing (by the person him or herself as well as by the superior levels).

The low registration figures of Department B can be traced back to different reasons. The biggest section in this department is the Environment section, which, according to several sector-specific laws, has the obligation to provide access to information via a separate Bremen Environmental

Information System. People in this department assumed that sector-specific laws override general law and therefore thought that BremFoIA does not apply to them. It was easy to develop an automatic export to the central register, and the number of documents from this department immediately jumped from 600 to almost 2,000.

In order to overcome the problem with entering meta data, the FoIA Competence Centre hired a student of library science who scanned the departments' web sites and registered any document she could find there. This led to huge increases. In October 2013, a total of around 25,000 documents were made accessible via the Central Information Register (Table 2).

Table 2: Number of documents registered by department (Oct. 2013)

Department No of Documents	2010	2012	10/2013
for the Interior and Sport	208	1,789	2,103
for Justice and Constitutional Affairs	207	344	553
for the Environment, Construction and Transport	635	1,983	3,149
for Economics, Labour and Ports	316	1,161	2,287
for Education and Science	213	1.,580	1,802
for Finance	564	1,436	3,191
for Culture	19	599	718
for Social Welfare, Children, Youth and Women	552	2,011	3,348
Chancellery	88	6,028	7,208

But external support is not a sustainable measure to improve compliance with the obligation to publish. And in addition to the reasons mentioned above, the overall organization and governance of the FoIA implementation does not seem effective. The organization gap identified in the first evaluation was therefore analysed in more detail. There are big differences and a high degree of ambiguity in relation to the question of who is responsible for the entry of individual documents in the register. There is no control of the fulfilment of the obligations and thus no pressure in the departments. FoI and OGD are not seen as high priorities and tend to be perceived as a duty opposed by external forces and are treated so accordingly.

Closing the Organization Gap by an Object-oriented Task Assignment

Neither BremFoIA nor the decree on the disclosure obligations or the Common Procedural Rules of the Senate include any regulation of the assignment of responsibilities for the selection, assessment, and registration of the required or suitable documents (assignment gap Arrangements for monitoring the implementation of these obligations are absent as well (control gap). There are only procedural concretisations for reporting entering, data including the definition of metadata.

Organizational Openness

Figure 3 shows the organizational arrangements for the pro-active publication of documents developed in the Finance Department. There are different sections, e.g. Tax, Budget, Personnel, and Organization. In each section there is an editor who registers documents with the web-based

tool provided by the Competence Centre. He or she is trained in operating this tool, but is only partially familiar with the content of the documents depending on how long he/she has been in the section and on the position held. Editing is not a full time job, all editors have other duties, mostly in IT support. If a document owner forwards a document for registration, the editors check accessibility and enter the meta data and a link to the document. But they do not feel responsible for going around and asking their colleagues in the department whether they have any new document coming under the law. One of the reasons is that their colleagues do not like to be asked and the editors do not wish to annoy their colleagues.

Editors, except for one case, are not identical with the FoIA officers who receive the individual requests for access. In Figure 1 there are therefore no lines between editors and FoI Officers.

Again, the asymmetry mentioned in the first evaluation report became obvious: The arrangements for the handling of individual applications (re-active mode) were relatively clear and are more or less forced by the procedure itself. If a request for access arrives at an agency, it needs to be processed by someone sooner or later. If the agency does not respond, the applicant can call upon the State FoI Commissioner.

While individual requests through their very existence force reactions and rules, this is not the case with a legal obligation to publish documents pro-actively. If no one enacts a government structure clearly defining responsibilities and control mechanisms that cover all units producing documents and data sets, no effective practice will emerge. And even if a structure is enacted, as in the case of the finance department, it is not necessarily effective. The present structure with one editor for all kinds of documents within a section of the department is certainly not effective. As already mentioned, the editors are not able to decide whether a document is relevant or not, and there is no way they can obtain an overview of all legal documents that are enacted. They furthermore lack the time and do not wish to bother their colleagues with such requests. It is thus completely up to the units that compile the documents to decide whether to initiate a registration process. If they are interested in publishing a document, there is some uncertainty whether it is permitted with regard to privacy and intellectual property rights and other restrictions. Should they however not identify any restrictions, it is much easier to send the document to the web master and ask him or her to upload on the department's website than to tell the FoI editor the meta data, in particular keywords and categories.

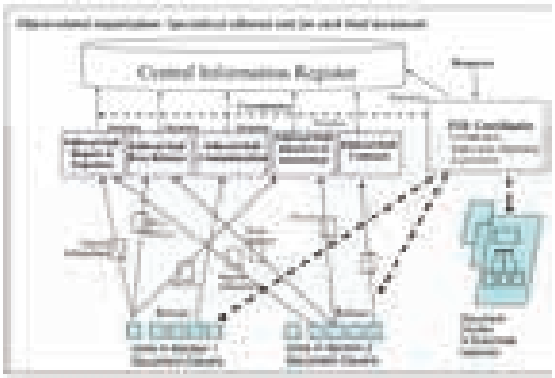

Figure 3: Present organization of the obligation to publish documents according to § 11 BremFoIA (Example of the Finance Department, according to a circular in 2008)

In the current organization there is no position responsible for complying with the obligation to select, publish, and register certain kinds of documents from the pool of heterogeneous and diffuse types of documents. There are neither incentives for high registration rates nor penalties for underreporting. In the terminology of social science technology research, the process of the selection and registration of documents according to FoIA is not sufficiently embedded into the established organizational and technical structure and processes of the departments. As with the early government web sites, the central register has been developed with its own frontend and backend and has not been integrated with functionally similar existing provisions. It has also not been linked to existing organizational responsibilities for certain kinds of documents. Under the condition of such an organizational openness, it is therefore no surprise that FoIA activities remain a foreign body in the government departments. Accordingly, the challenge is to find ways for better technical and organizational integration with existing provisions.

Responsibilities by Document Types

At present, the task of selecting suitable documents is not assigned at all; the task of registration is assigned as a central function for all kinds of documents. As there are already responsibilities for some kinds of documents (such as press releases, senate communications, administrative directives, statistics, and contracts), there is an option to assign the selection and the registration tasks to those units already dealing with the respective document types. This can be called an object-oriented FoI organization. Figure 2 illustrates the principle.

But there are differences between the government departments, and centralized responsiblities for the different types of documents are lacking in many cases. Departments therefore shall only be obliged to develop their own organizational arrangement by assigning five FoI related tasks for each kind of document falling under the FoIA (see Table 3).

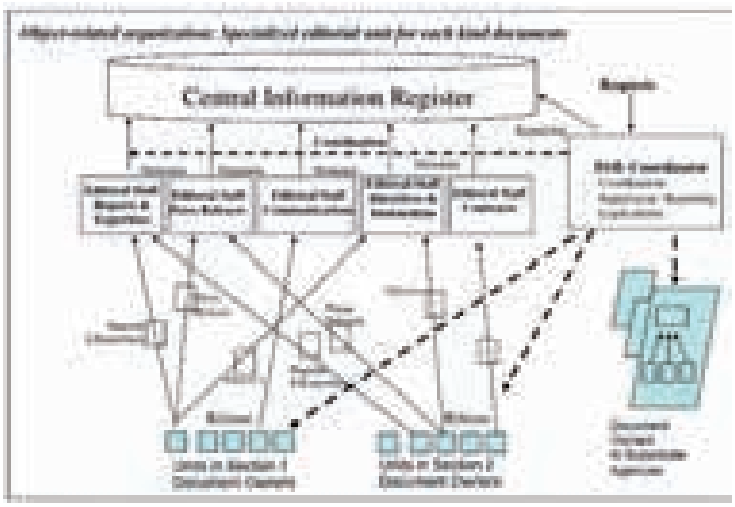

Figure 4: Object-oriented FoI Organization by Document Type

Table 3: Matrix for the Assignment of FoIA-related Functions to Kinds of Documents

Task **Type of document**	Draft / Production	Release/ Check for exemptions	Internal publication (DMS)	External publication and registration	Quality control of register entries
Press releases					
Communications of the Senate					
Administrative directives					
Reports, Expert opinions					
Statistics					
Contracts					
.....					

Reporting Duties

In order to close the control gap there is a need for monitoring compliance with the law. Senators are not happy with an obligation to report about the performance of their department to a colleague within a peer structure of government departments. Therefore, an annual report to the parliament has been recommended.

FoI Coordination Officer

Even when the tasks related to the pro-active publication are distributed by document type there still is a need for additional comprehensive functions that should be assigned to a FoI coordinator:

1. ensure the task assignment according to the above table in the department,
2. coordination with the responsible agencies in the subordinate authorities,
3. counselling on the publication of individual documents under the FoIA exemptions,
4. representation of the departments in the interagency working group,
5. monitoring compliance with the publication requirements through spot checks in the register in terms of completeness and accuracy,
6. participation in the future annual reports by the Senate to the parliament on the compliance with the disclosure requirements.

Opening Data by Request

The structure outlined so far cannot be applied equally to the pro-active provision of data for several reasons. As experienced during the acquisition of data sets for the Apps4Bremen competition, there are usually at least two different data owners, one responsible for the content and one for the technical administration. Responsibility for content is furthermore not only assigned to a few members of staff but, to many. Here we run again run into problems regard the uncertainty about the legal assessment, updating cycles, security concerns, and so on. While one may argue that all these issues must be clarified for data bases, it has to be recognized that most of the data held in government agencies is meaningful only to the units immediately concerned. As the name “raw data” suggests, they have to be processed and put into context for further processing. In a State Government without a central IT Governance and relatively little experience with data governance in the autonomous departments, there is almost no chance to set up a

comprehensive and effective organization for OGD. It is easy to provide a few data sets as low hanging fruits, but even their sustainability is a challenge. Given the experience in Bremen with the provision of raw data by request, there is no advantage to be gained by establishing a complex structure in all the departments for the provision of data — including data which the public may never request. For the time being and given the quite low number of requests, individual provision seems completely sufficient for both sides. It is generally not private citizens who are requesting data, but rather persons with some professional ties, who, in most cases, know exactly what they want. And when a request comes up it is easy for the Competence Centre to forward it to the data owning unit. Transparency of handling the requests by the traffic light symbols serves as a compliance catalyst.

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About the Author

Herbert Kubicek

Herbert Kubicek has retired as Professor of Applied Computer Science at the University of Bremen and continues to work as Senior Researcher in the Institute of Information management Bremen (ifib)

Elements for the Development of an Open Data Marketplace

Anneke Zuiderwijk*, Euripides Loukis**, Charalampos Alexopoulos**, Marijn Janssen*, Keith Jeffery***

*Delft University of Technology, Faculty of Technology, Policy and Management, The Netherlands, {a.m.g.zuiderwijk-vaneijk, m.f.w.h.a.janssen}@tudelft.nl
**University of the Aegean, Department of Information and Communication Systems Engineering, Greece, {eloukis, alexop}@aegean.gr
***euroCRIS, United Kingdom, keith.jeffery@keithgjefferyconsultants.co.uk

Abstract: *Many open data platforms are currently under development aiming to stimulate the potential advantages of the publication and use of open government data. In particular the development of open data platforms in the form of marketplaces, where open data providers and open data users trade and share data and data services, can stimulate the realisation of these advantages. Yet, only little research has been conducted on the development directions of open data platforms to realise such marketplaces. This study aims to identify elements for the development of future electronic open data marketplaces. This aim is attained by investigating the literature and discussions with experts, which resulted in the following elements: 1) bring stakeholders together, 2) provide rich metadata, 3) enable data quality assessment, 4) ensure trust, security and critical mass, 5) have an appropriate revenue model, 6) provide use cases, training and support, 7) provide technical support: open data processing tools, 8) provide a full API for machine-to-machine operation and 9) target multiple nationalities. The results of this study can be used to develop and improve open data marketplaces to stimulate the realisation of open data advantages.*

Keywords: *Open data, Marketplace, Platform, Elements, Development Directions*

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Introduction

Various studies have shown that the publication of public data has considerable potential to provide citizens, researchers, companies and other stakeholders with many advantages. These advantages include, but are not limited to, increased transparency (Bertot, Jaeger, & Grimes, 2010; McDermott, 2010), better services to citizens (Charalabidis, Ntanos, & Lampathaki, 2011), increased participation and interaction of stakeholders, empowerment of users and

providers of open data (Neuroni, Riedl, & Brugger, 2013) and economic growth and value creation (Borzacchiello & Craglia, 2012).

To stimulate these potential advantages of the release and use of open government data, numerous platforms have been developed in the last decade. For instance, open data platforms have been developed by national governments (e.g., Data.gouv.fr, 2013), local governments (e.g., Berlin Open Data, 2013; Open Government Wien, 2013), the European Commission (European Commission, 2012) and organisations and projects which are not country related (e.g., The ENGAGE project, 2014). These platforms have diverse characteristics, focus on different aspects and may complement each other (Zuiderwijk, Janssen, & Parnia, 2013).

The literature suggests that open data platforms which facilitate interaction between open data providers and open data users could play an important role in stimulating the realisation of open data advantages (e.g. Chun, Shulman, Sandoval, & Hovy, 2010; Evans & Campos, 2013; Lee & Kwak, 2012; Maier-Rabler & Huber, 2011). Interaction between open data providers and users can be stimulated by so-called *marketplaces.* Marketplaces are places where suppliers and customers can meet each other (Henderson & Quandt, 1980) to indicate their intention to buy or sell certain products which eventually match and may be settled (Schmid & Lindemann, 1998). In the case of open data, open data providers and users can use a marketplace in order to interact and collaborate by trading and sharing open data and data services including advice and assistance in an open cooperative environment. As such, a marketplace can encompass various stakeholders and provide many types of data and numerous data services.

Despite the fact that numerous open data platforms have been developed, only few existing open data platforms actively stimulate the interaction between open data providers and open data users in the form of marketplaces. In addition, only few researchers have paid attention to the potential development directions of open data in general, and open data platforms in particular, in the near future (e.g., Lindman, Rossi, & Tuunainen, 2013; Vickery, 2011). Furthermore, these studies are mainly focused on high-level development directions for open data marketplaces, and do not pay attention to specific elements that these marketplaces could have, and which are necessary for progressing in this area. The objective of this study is to contribute to filling this research gap by identifying elements for the development of future electronic open data marketplaces. The identification of these elements can help in making better predictions for the evolution of marketplaces and in taking actions which may positively or negatively influence future developments in this area.

This paper is organised as follows. In the following sections the research approach is presented and literature regarding electronic marketplaces and open data platforms and marketplaces is discussed. Thereafter we describe the expert discussions which are used to identify the elements for future open data marketplaces. We bring this paper to a close with conclusions about elements that need to receive attention for the development of future open data marketplaces.

Research Approach

The approach of our research can be divided into three main steps. First we identified the developments influencing open data marketplaces. This was done by investigating the literature in the field of open data. Articles were found in databases such as Science Direct, Scopus, ACM Digital Library, IEEE Xplore and Google Scholar. We sought for journal and conference articles,

books, governmental and non-governmental reports and other information in various databases. Eventually 20 papers were used to provide an overview of the main developments in the field of open data platforms. These papers can be found in section three of this article.

Second, the general developments which may influence the development of open data marketplaces were organized by discussing them with fourteen experts from various fields, including the field of open government and e-democracy, public administration and engineering. Table 1 provides an overview of the expert details. Experts from various countries were consulted because we wanted to take into account open data marketplace developments in various contexts. Expert discussions took place during a workshop at the Conference on E-Democracy and Open Government (CeDEM) in 2013 in Austria, and in addition we consulted experts via e-mail.

Table 1: An overview of the experts consulted for this research.

Expert number	**Occupation**	**Sector**	**Country**	**Method of engagement**
Expert 1	Civil servant	Information Architect	Netherlands	Focus group
Expert 2	Civil servant	Information manager	Netherlands	Focus group
Expert 3	Consultant	Information Technology and Services	England	Focus group
Expert 4	Researcher	E-government	Austria	Focus group
Expert 5	Executive director	Information Technology and Services	Uganda	Focus group
Expert 6	Senior Program Officer	Nonprofit Organization Management	Uganda	Focus group
Expert 7	Researcher	E-government	Austria	Focus group
Expert 8	Researcher, course director	E-government	Austria	Focus group
Expert 9	Researcher and civil servant	Information Technologies & New Technologies	Greece	Focus group
Expert 10	Campaigner	Nonprofit Organization Management	Scotland	Focus group
Expert 11	Unknown	Unknown	Unknown	Focus group
Expert 12	Consultant	Information Technologies	United Kingdom	E-mail
Expert 13	Consultant	Information Technologies	Greece	E-mail
Expert 14	Consultant	Open Communication Systems	Germany	E-mail

Third, based on the identified developments influencing open data marketplaces and on the expert discussions, nine elements for the development of future open data marketplaces were identified.

Step 1 – Identifying Developments Influencing Open Data Marketplaces

In this section we define the main concepts used in this article and we describe important developments which influence future open data marketplaces.

Electronic Marketplaces

Schmid and Lindemann (1998) write that historically marketplaces have evolved as institutions which allow "customers and suppliers to meet at a certain place and a certain time in order to announce buying or selling intentions which eventually match and may be settled" (p. 193). The evolution of information and communication technologies has led to the development of electronic marketplaces, which have enabled buying and selling at various times and spaces in the most efficient manner (ibid). Electronic marketplaces are virtual, technology-enabled trading spaces (Matook & Vessey, 2008), which can also be seen as intermediaries (Matook, 2013). Electronic markets emerge in various fields nowadays, such as the stock exchange (e.g. NASDAQ Stock Exchange) and goods exchange (e.g. eBay). These electronic marketplaces support the exchange of numerous types of products and services with different types of actors (Schmid & Lindemann, 1998) and information exchange and payments among buyers and sellers (Matook & Vessey, 2008).

A number of electronic data marketplaces have already been developed in the field of open data. For example, InfoChimps focuses on obtaining business value from Big Data (see www.infochimps.com/marketplace). A part of the open government data could be considered to be big data as well, but this does not count for most open government data. As a consequence, this marketplace does not well address other stakeholders than businesses and it does not focus on open government data in particular. Other examples of existing marketplaces are the Windows Azure Marketplace (http://datamarket.azure.com/), and Timetric (https://timetric.com/), which are also focused on commercial use. For instance, users of the Windows Azure Marketplace have to pay when they desire more than ten data transactions per month.

Open Data Platforms and Marketplaces

Open government data are released increasingly (Whitmore, 2012) and many open data platforms have already been developed by governments are various levels (e.g. federal, ministerial, municipal) all over the world. In this article we consider open data platforms to be platforms that are often owned by a single party (in this case governments) and that are used to make open government data available to the public. Various actors are involved in publishing and using open data on these open data platforms (Dawes & Helbig, 2010; Helbig, Cresswell, Burke, & Luna-Reyes, 2012), such as open data providers, open data legislators, open data facilitators and many different types of open data users (e.g. citizens, researchers, journalists and developers).

The literature shows that there are considerable differences in the development of open data platforms (Braunschweig, Eberius, Thiele, & Lehner, 2012). For instance, the 50 repositories surveyed by Braunschweig et al. (2012) showed many differences in terms of openness. Zuiderwijk et al. (2013) investigated 35 functionalities of three open data platforms and also found that the investigated open data infrastructures are very diverse and focus on different aspects. The literature also provides some insights about similarities regarding open data platforms. After data providers have published their data on open data platforms, open data users may find these data,

although most open data portals lack enhanced search capabilities (Tinholt, 2013). Furthermore, some open data portals redirect users to the websites of specific governmental organizations, which makes it far more cumbersome to obtain these data compared to data that can be obtained from a central repository (ibid). The impediment of data fragmentation has also been found in other articles (e.g., Conradie & Choenni, 2012).

Many open data platforms lack standards and Application Programming Interfaces (APIs) and much open data is not machine readable or the data are provided in a proprietary format (Braunschweig et al., 2012). Kuk and Davies (2011) also emphasize the importance of APIs for machine-to-machine operations for open data. Open data providers usually publish their data without having contact with the data users. For instance, most open data portals lack tools for an effective dialogue with and for participation of users (De Cindio, 2012; Tinholt, 2013). On the other hand, research of Loukis, Charalabidis, and Alexopoulos (2014) has shown that open data platforms increasingly provide a wider range of open data marketplace functionalities, influenced by the principles of the Web 2.0 paradigm, and oriented towards the elimination of the clear distinction between providers and consumers of such data, and the support of data 'pro-sumers' (i.e. users who both consume and produce such data).

It was found that current open data portals often do not provide guidance to open data users on how to assess the data relevance and to investigate its feasibility to formulate positions (Evans & Campos, 2013). Usually only discovery metadata are provided with open government data and there is a lack of rich contextual metadata (Zuiderwijk, Jeffery, & Janssen, 2012), which are important for the interpretation of open data correct interpretation of open data and distilling knowledge from them (Foulonneau & Cole, 2005; Jeffery, 2000; Schuurman, Deshpande, & Allen, 2008; Vardaki, Papageorgiou, & Pentaris, 2009).

After the data users have found the data, they are usually not able to use the same open data platforms where they found the data to analyse, visualise, cleanse, curate, combine or link the data. There is some debate in the literature about whether this should be enabled by governments. Robinson, Yu, Zeller, and Felten (2009) argue that governments should provide simple open data platforms which are mainly focused on providing data. They state that private organizations could act as intermediaries which take the governmental data from these platforms and provide the data to citizens in an understandable way. On the other hand, this means that people who do not want to make use of intermediaries often have to search somewhere else for the tools to use open data. As a consequence, only the users with the appropriate technical skills can use the data. Open data use by people with less developed skills is therefore less stimulated by these platforms.

Step 2 - Organizing Developments: Expert Discussions

In this step the developments that were identified in the previous step are organized with the aim to end up with only a limited number of principal ones, which can then be used to derive development directions. The following statements and questions were presented to the experts.

1) The main target group of [the open data platform] should be the scientific communities.
2) [The open data platform] should be a marketplace for open data and collaboration.
3) [The open data platform] should be an open public data reputation management system.
4) [The open data platform] should put emphasis on rich metadata.
5) [The open data platform] should provide a rich collection of data curation tools.

6) [The open data platform] should provide a rich collection of data visualisation tools.
7) [The open data platform] should develop cases of using the platform.
8) [The open data platform] should focus on a standardization proposal for annotating open data sets for scientific usage.
9) [The open data platform] should provide a complete data repository.
10) [The open data platform] should provide a full API for machine-to-machine operation.
11) [The open data platform] should target multiple-nationalities.
12) What should be the [open data platform's] dissemination steps towards sustainability?
13) Which other steps/domains/USP's should [the open data platform] target according to you?

According to their preferences, the experts received these statements and questions either on paper or online. On this paper or in the online survey the experts were asked to state to which extent they found this statement important on a range from one (very unimportant) to seven (very important). Thereafter the experts were asked to explain their opinion in a text box. Subsequently, a group discussion took place in which the experts were asked to explain what they had written in the online and paper surveys. After the statements had been discussed, the more general questions (12 and 13) were discussed. The experts were also asked if there were other elements that were not included in the statements but that they assessed as important for a specific open data platform. Two authors of this paper were present during the discussions and one of them took notes. The whole session, including a general introduction, completing the surveys and the subsequent discussions, lasted for approximately 75 minutes. Additionally, three experts were consulted via e-mail. They were also provided with the online forms with statements and questions and they were also asked to explain their assessments of the statements. No group discussions took place with these experts. Based on the discussions and the e-mail consultations, development directions for open data marketplaces were identified.

Step 3 - Identifying Elements for Open Data Marketplaces

In this section we discuss the elements of future open data marketplaces. In contrast with Robinson (2009), who argues that governments should provide open data platforms which are mainly focused on providing data, our discussions with experts revealed that future open data marketplaces should stimulate the interaction of open data providers and users. For example, expert 12 stated that "other data.gov sites do not provide this facility so it could be [a] unique selling point […]".This implies that the aspects of an open data marketplace could be integrated into open government data portals. Based on the discussions with the experts, an envisioned future open data marketplace was developed (see Figure 1).

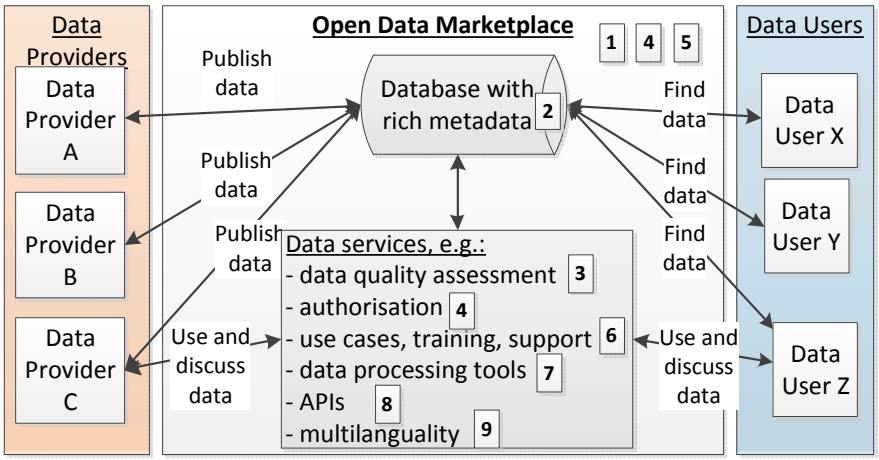

Figure 1: The envisioned future open data marketplace (the numbers in the figure refer to the identified elements).

Figure 1 represents an envisioned open data marketplace which integrates the identified elements for open data marketplaces. The database in this open data marketplace could merely contain metadata, but would preferably also contain the data themselves. Although the experts sometimes disagreed on the importance of certain developments, in general we could identify the following nine elements for the envisioned open data marketplace.

Bring Stakeholders Together (match supply and demand)

Even though markets are conventionally understood as places of commercial exchange and competition (e.g., Schmid & Lindemann, 1998), the expert discussions showed that open data markets could also be places of collaboration. Six out of the fourteen experts emphasized the need of an open data marketplace to provide mechanisms for interaction and collaboration, such as exchanging messages and data. This is in line with Davies (2012) who has also argued in favor of collaborating on open data as a common resource. The envisioned open data marketplace enables open data providers and users to find each other and interact. Thus, such marketplaces combine social aspects (e.g. user interaction) and technical aspects (e.g. the metadata and data system for supplying and demanding data). Research of Mayer-Schönberger and Zappia (2011) shows that there is currently a lack of evidence of collaboration between open data users and Velikanov (2010) writes that the regulation and facilitation of participation may become problematic when the number of participants becomes enormous. More research needs to be conducted on how collaboration in open data marketplaces could be stimulated.

Although this was not mentioned by the experts, in our opinion the provision of data should be connected to requests for data, in this way gearing the provided data to the needs of open data users. While the data are originally provided by governmental authorities, private organisations and individuals can curate and extend these datasets and uploading the curated and extended dataset. In this way the government can make use of the knowledge of the crowd and use new knowledge to improve their data provision, as well as their policy making and decision making. In the envisioned open data marketplace intermediaries can also offer data services to open data

users (Davies, Perini, & Alonso, 2013; Mayer-Schönberger & Zappia, 2011). The users can decide whether they want to make use of the service. One of the experts stated that an open data marketplace "should make users aware of what's on offer and facilitate its distribution".

Quoting from one of the experts, "marketplace provision requires a high degree of accessibility design to facilitate strong use". The reason for this is that in an open data marketplace for collaboration, different stakeholders involved in publishing and using open data are connected, such as civil servants and citizens. The marketplace should make it possible for the stakeholders to collaborate as also suggested by the literature (Davies, 2012; De Cindio, 2012), for instance, by creating groups and working on or using datasets together or by helping each other in finding certain data.

Provide Rich Metadata

With regard to the essential elements and development directions of an open data marketplace, expert 12 emphasized that the envisioned open data marketplace should provide a "combination of many datasets, rich metadata, some processing facilities and – specially – associated social networking/cooperative support […]". Also four other experts expressed that rich metadata are important for future open data platforms, whereas expert 10 disagreed with this and the other experts did not have a strong opinion about this. According to the experts in favor of rich metadata, emphasis should be put on rich metadata by combining discovery, contextual and detailed metadata (Zuiderwijk et al., 2012), so that advantages such as increased interoperability, better interpretation and better organisation can be achieved (Berners-Lee, 2009; Duval, Hodgins, Sutton, & Weibel, 2002; National Information Standards Organization, 2004). For instance, the CERIF metadata model could make it easier to interpret datasets by providing information about how the data were created, by who, when, and other information. This model also makes datasets more interoperable, as it allows for interconverting common metadata formats used in open data using CERIF as the superset exchange mechanism (Zuiderwijk et al., 2012). CERIF can be mapped to various other metadata models commonly used on open data platforms. Various initiatives have already initiated the harmonization of metadata between data catalogues. For example, the World Wide Web Consortium is also working on the Data Catalog Vocabulary (DCAT) for metadata about structured data resources (W3C, 2013).

Enable Data Quality Assessment

Experts 8, 12 and 13 noted that the envisioned open data marketplace should provide information about the quality of datasets, as several types of open data users need this information to assess whether a particular dataset is appropriate for their purpose. The open data platform of the United Kingdom is already using such a data quality rating system (Read, 2012). Based on a quality rating users can decide whether they will use the dataset in a certain way. A rating system could make it easier to use data and generate value from it. Moreover, open data providers can use the wisdom of the crowd to learn from their feedback and to improve their datasets and policies. Based on the rating, they could perform further research and improve datasets. Nonetheless, it should be noted that user ratings are also contentious and subjective, since different users may assess the quality of one dataset in different ways. Furthermore, someone could organize a number of people to assign high data the highest quality, which is also known as the "claque effect" (Velikanov, 2010). A

contribution to a partial solution to this problem could be the development of a framework on how the data quality could be assessed. For instance, the literature on Information Quality (IQ) can be used to select the appropriate quality aspects that need to be rated and develop a quality assessment framework (Batini, Cappiello, Francalanci, & Maurino, 2009). Yet, the problem of subjectivity cannot be solved completely.

Ensure Trust, Security and Critical Mass

De Cindio (2012) writes, that a climate of mutual trust can be stimulated by fostering peer-to-peer, public dialogue among participants. Moreover, to create a position of trust in the open data marketplace, a critical mass of users is needed. For instance, many users are needed to assess the quality of the data to make the quality rating system useful. If only few people rate the quality of datasets, the reliability of this rating is low, while rating from many users could reinforce trust. Moreover, a critical mass of users is needed with regard to bringing together suppliers and users of datasets. If there are not enough stakeholders demanding data, the suppliers would not use the marketplace and trust would be low. At the same time, if many people would demand datasets, but there would be only few suppliers, trust in the marketplace would also be low. Trust should also be increased by clearly showing where certain data are coming from and how they were created. Related to trust, open data marketplaces need to ensure security. For instance, security can be created by using authorisation systems for users, by using secure payment systems to pay for open data services and by clearly explaining to the users which licenses and conditions apply to the use of specific datasets.

Have an Appropriate Revenue Model

Various revenue models can be used for open data marketplaces (Ferro & Osella, 2013). One possible model is that an open data marketplace is funded by one or more governments, which makes it possible to provide data for free to the users of the platform. Free open data provision or open data provision at no more than a reasonable reproduction cost is often seen as one of the core principles of open data (e.g., Open Knowledge Foundation, 2005; Sunlight Foundation, 2013; Tauberer, 2012). On the other hand, one could also think of a revenue model in which individual users or private organization to a certain extent pay for open data use. For instance, users could be asked to donate money to support the platform or can be asked to pay for additional services that are offered, such as garuantees about when data are published or garantuees about quality checks of the data. Moreover, entrepreneurs can create applications based on open data and earn money by exchanging this product or service for money (Ferro & Osella, 2013). The same can be done with other open data services, such as selling services such as aggregating, comparing, analysing and visualising data by intermediaries. It is also possible to provide basic services for free, while asking money for more advanced services. One of the experts expressed that private sector innovation is one of the most important aspects of the envisioned marketplace.

Provide use Cases, Training and Support

The open data marketplace can stimulate the advantages of open data by developing exemplar cases of using the platform and providing training and support for open data providers and users.

Eight experts stated that this is an important aspect, and this could also stimulate the interaction between various stakeholders involved in the publication and use of open data. Use cases can provide an example of how open data platforms can be used, in this way also providing help, training and support. Open data users should be provided with support to build and sustain useful tools and services (Davies, 2012). One of the experts stated that support should also be provided with regard to providing clear information about the licenses that apply to open data.

Provide Technical Support: Open Data Processing Tools

Future open data marketplaces can provide services which help with analysing, visualising, cleansing, curating, combining or linking the data on the marketplace itself, so that the users do not have to search for tools for performing the above types of data processing from other sources. This characteristic of the marketplace enables and assists open data users with less technical knowledge and skills to use open data. The data can then not only be found in the open data marketplace, but they can also be used and discussed there. Public dialogue among participants is often lacking in open data portals (De Cindio, 2012). Additionally, tools for visualizing data should be provided, which can make it easier to understand and interpret the data. Eleven experts emphasized the importance of visualizing open data, however, one expert also pointed at the problems that can arise when users try to visualize data that should not be visualized. Another expert pointed at the idea to warn users if certain use behaviour does not make sense, for instance, if a user tries to visualize certain values that should not be visualized. Moreover, during the discussions one expert suggested to have different options for technical and non-technical users. The system as a whole should be very simple and easy to use for non-technical people, but it should be possible for technical people to use more complicated options.

Provide a Full API for Machine-to-Machine Operation

Nine experts stated that it is important that the envisioned open data marketplace provides a full API for machine-to-machine operation. Such an API can be used, for example, to enable automated search to find datasets or to make the publication process easier. Furthermore, API's allow for the development of mashups that combine data from different sources (Bizer, 2009) and the development of value added services. In this way APIs may provides technical support for the better and more effective use of open data platforms. Rich metadata enables such APIs.

Target Multiple Nationalities

Eleven of the thirteen experts expressed that it is very important that multiple nationalities are targeted. Open data platforms should make it possible to collaborate in an international level. Although the integration of datasets from different countries is very complex, the use of thesauri, lexicons and multilanguality might stimulate international collaboration in the use and exploitation of open data. Especially the comparison of heterogeneous data from different countries poses a risk, as there may be differences between these data which complicates their interpretation. Once again rich metadata (including multilingual ontologies) is the underpinning.

Conclusions

The objective of this study was to identify elements for the development of future open data marketplaces. In the first step of our methodology we made a literature review to identify developments related to potential future open data platforms. Subsequently, the developments were discussed with experts, so that we could assess and organize them. This step resulted in an overview of nine elements for the development of open data marketplaces: 1) bring stakeholders together (match supply and demand), 2) provide rich metadata, 3) enable data quality assessment, 4) ensure trust, security and critical mass, 5) have an appropriate revenue model, 6) provice use cases, training and support, 7) provide technical support: open data processing tools, 8) provide a full API for machine-to-machine operation and 9) target multiple nationalities.

For this research experts in several countries were consulted, but most of them were from Europe. It would be interesting to examine whether these development directions are also valid outside Europe, and in agreement with the perceptions of the main stakeholders there. Moreover, the implementation of the development directions should be tested and monitored. Future research could concentrate on testing whether the development directions can be applied.

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About the Authors

Anneke Zuiderwijk

Anneke Zuiderwijk is a researcher in the Information and Communication Technology section of the Faculty of Technology, Policy, and Management at Delft University of Technology, the Netherlands. Her research focuses on the development of a socio-technical infrastructure that improves the use of open data, see: http://www.tbm.tudelft.nl/nl/over-faculteit/afdelingen/engineering-systems-and-services/sectie-ict/medewerkers/anneke-zuiderwijk-van-eijk/.

Euripides Loukis

Dr. Euripidis Loukis is an Associate Professor of Information Systems and Decision Support Systems at the University of the Aegean. He is the author of numerous scientific articles in international journals and conferences. His research interests include e-government, e-participation, information systems impact and internal/external determinants, business process adaptation and medical decision support systems.

Charalampos Alexopoulos

Charalampos Alexopoulos is a PhD Candidate at the University of the Aegean and Research Associate in the Information Systems Laboratory (ISL/AEGEAN-RU), working on high-level policy making, research and pilot application FP7 and national projects. As computer science graduate from the University of Peloponnese with MSc in management information systems from University of Aegean he has published in scientific conferences on IS evaluation, open data, enterprise interoperability and e-Government.

Marijn Janssen

Marijn Janssen is a professor in ICT and Governance in the Information and Communication Technology section of the Faculty of Technology, Policy, and Management at Delft University of Technology, the Netherlands. His research is focused on open data, shared services and information infrastructures. More specifically, his research concerns the design and governance of public-private service networks. He serves on several editorial boards and has published over 280 refereed publications. For more information, see: www.tbm.tudelft.nl/marijnj.

Keith Jeffery

Keith Jeffery is now retired from the Civil Service and working as a consultant. Previously he was Director IT and International Strategy at the Science and Technology Facilities Council. Keith holds 3 honorary visiting professorships, is a Fellow of the Geological Society of London and the British Computer Society, is a Chartered Engineer and Chartered IT Professional and an Honorary Fellow of the Irish Computer Society. Keith is currently president of ERCIM and was president of euroCRIS, and serves on international expert groups, conference boards and assessment panels.

The Politics of Open Government Data

Emmy Chirchir*, Norbert Kersting**

Westfälische Wilhelms-Universität Münster, Germany
**Graduate School of Politics (GraSP); e_chir01@uni-muenster.de*
***Institute of Political Science ((IfPol); norbert.kersting@uni-muenster.de*

Abstract: *The latest Open Data Index (OD index) and Open Data Barometer (OD barometer) results released in October 2013 during the Open Government Partnership (OGP) Summit in London give an assesment of the state of open government data (OGD) globally. Taking Kenya as an example, it scores very low on the OD index but highly on the OD barometer, even better than countries such as Belgium and on par with Switzerland. Although the scoring is different, both results suggest that Kenya has a readiness-impact gap. Reflecting on the two scores and drawing from literature, this paper argues that the gap is caused by the limitations of government to implement open government data in ways that promote value generation. It further demonstrates that for some countries like Kenya, the blurred lines between politics and government inhibit the growth of OGD.*

Keywords: *Open Government, Open Data, Politics, Participation, Collaboration*

Introduction

Despite Kenya's progress as the first country in Sub-Sahara Africa to launch an open government data (OGD) platform coupled with its emerging and vibrant technology scene, it scores poorly on the OD index. However, on the OD barometer Kenya is ranked highly at par with countries like Switzerland. A comparison between the results from the OD index and the OD barometer (Figure 1) point towards more substantial and comprehensive gaps in the implementation of OGD that are not just limited to releasing open data itself but in the whole OGD ecosystem.

Kenya's rank differs on the OD index and on the OD barometer, but both scores confirm that the success of OGD initiatives depends on an appreciation of the political and institutional environments within which these initiatives operate. From the total OD Barometer results for Kenya, one can conclude that a readiness - impact gap exists. Kenya scores fairly on the barometer, and especially on the readiness assessment (49.70/100) which according to the barometer means it has the capacity to generate and sustain value but scores poorly on impact (21.55/100).

Readiness is also confirmed by Braunschweig et al (2012) whose assessment of the technical capacity of the Kenya Open Data Initiative (KODI) platform prove that it has all the necessary features required to host open data. The country is also well poised to take advantage of information and communication technology (ICT) infrastructure, a liberalized telecommunication sector and a growing multisectoral ICT and innovation culture (McKinsey & Company, 2013; Communications Commission of Kenya, 2013). According to Google Trends Kenya tops the global

statistics representing the highest online search volume for open data. Although this is merely an anecdotal tip, it could be an indication of the interest and demand for open data in the country (Google Trends, 2013).

In short, the technical infrastructure needed to implement OGD and the demand for open data exists however the readiness-impact gap suggests that this is not enough to drive impact. Having good quality data only is also not enough. Diverse use and re-use of OGD is needed to generate value (for example social, economic, political value) which in turn will drive impact. Use of data is however influenced by open government data supply factors one of which is the government's commitment and political leadership (World Bank, 2013).

This paper is intended as a starting point for further research and more grounded analysis on the influence of politics and the role of government in OGD. It is often assumed that governments are willing and ready to release data. However there are challenges that governments face with regards to supply and demand (users) of data. Using an example of Kenya, with reference to its scores on the OD barometer and the OD index as well as existing literature, this paper will discuss how some of these factors may explain the gap between Kenya's readiness and impact scores. In the first section, the OD index and the OD barometer will be discussed briefly. Therafter the role of government in OGD will be highlighted to guide the understanding of how government in its role is not only an enabler but it can also be an inhibitor of OGD. This will be done by describing two ways in which the government has an influence on OGD through the existing system of government and through the kind of relationship it has with the users of OGD (private and civil society sector). It concludes with relevant lessons drawn from OGD initiatives with better rankings such as the United Kingdom (UK) and the United States of America (US) initiatives.

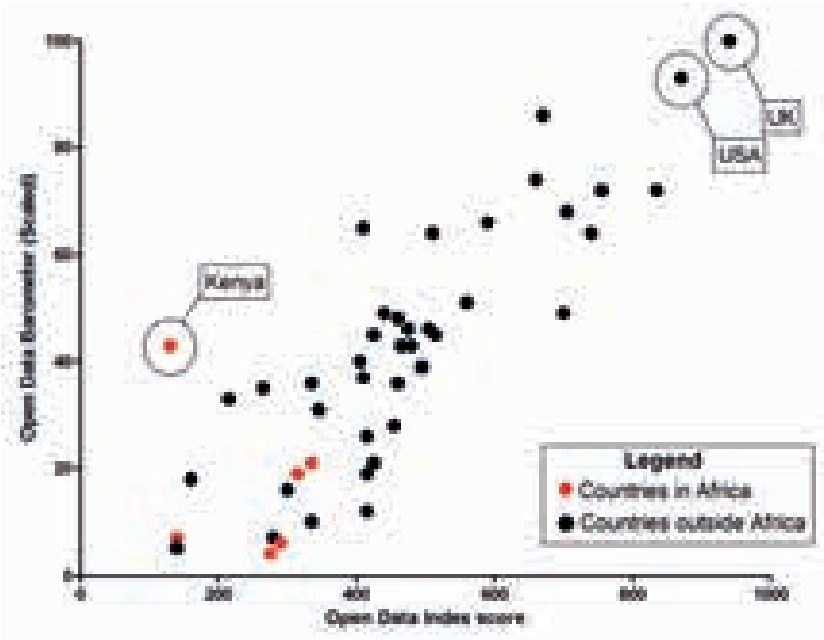

Figure 1:. Readiness-Impact gap. OD Index adopted from Open Knowledge Foundation (http://census.okfn.org) and OD Barometer adopted from World Wide Web Foundation (http://www.opendataresearch.org/barometer).

Open Data Index and Open Data Barometer

The OD index is an initiative of the Open Knowledge Foundation (OKF) and its working and local groups (Open Knowledge Foundation, 2014[1]). OKF uses volunteers' advocates and experts to contribute to the Index. It measures the state of 10 datasets in different sectors for example transport data (availability of timetables), financial and civic information data (government spending, election results), legislative data, geodata and data on the environment. These datasets are assessed against 12 criteria derived mostly from the definition of open data. The index checks availability and openness of data by asking if data exists, is digital, online, available to the public, free, machine readable, in bulk, updated and if there is an open licence used. The results are displayed as shown on Figure 2 where the indicators are represented by symbols and responses are marked either red (no), green (yes), blue (not sure) and grey (no data). Although the OD index is a data-centric measurement of the state of OGD, it shows the extent to which governments are actually releasing data in relation to open data quality, availability and accessibility.

The OD barometer on the other hand goes beyond looking at data and considers the different factors that affect OGD implementation and practice. Designed and supported by among others the World Wide Web, it combines secondary and peer-reviewed expert survey data to measure OGD (Open Data Research Network, 2014[2]). It measures the state of OGD on three levels: readiness, implementation and emerging impact. The barometer takes into account factors such as the presence of a right to information law, how much the government supports OGD uptake by its citizens, demand for data, a country's readiness for OGD implementation, actual implementation and OGD impact.

Both methods have strengths and weaknesses but they complement each other. The ODB gives a broader perspective of the global state of OGD and takes into account certain contextual factors while ODI focuses on the question: how open is open data based on open data standards. Whether these contextual factors and standards are applicable to all countries and the extent to which they affect implementation and impact remains unanswered. For example, the presence or absence of legislation or policy such as, the freedom of information law. Described as the 'cornerstone of OGD' (Jetzek, 2012) this law may not exist in countries that have OGD platforms including Kenya. To what extent does its absence affect the impact of OGD or are the existing policies in use sufficient? Similarly for data–centric assessments, it may be worth distinguishing data on a global scale by asking which data is relevant for which country. An example is ranking an OD initiative by assessing availability of open transport data and timetables for countries where the transport system is not structured in terms of timetables such as in Kenya or not structured at all.

The Upper Hand

An OGD ecosystem is a macro and micro understanding of the complex relationships between OGD stakeholders/actors and their environment, which together make up the elements of the ecosystem. Literature, using the ecosystem metaphor to describe OGD generally agree on four main groups of elements. These elements which Lock & Sommerville (2010) refer to as 'key ingredients' are necessary for a conducive and sustainable OGD ecosystem. Consistent in most of

[1] Available at http://census.okfn.org.
[2] Available at http://www.opendataresearch.org/barometer.

the literature are: data, technology, actors/community/stakeholders/users, institution/organizational elements and policy or legal elements (Mutuku & Colaco, 2012; Davies, 2013; Alonso, 2012 & Harrison et al, 2012; Dawes, 2012). These elements have mutual relationships in their specific social, economic and political contexts.

In an OGD initiative, the government has the integral and dynamic role as the source/supplier of data. In addition, tasks and responsibilities related to OGD such as formulation of policies or laws and financing directly involve the government. In some contexts, government is also a consumer of data and the convener of potential users. Reaching out to potential users also depends on the relationship between the state and non-state actors (for example the private and civil society sectors) and the level of the governement's openness and readiness for participation and collaboration, all of which are key to OGD's success. Often in resource constrained contexts, government will only have the capacity to set up an open data platform. It can be therefore be argued that in a way, government regulates the factors within the OGD ecosystem.

Government's multiple roles are however discouraged by some advocates of OGD who argue that it can have a negative effect on release of data because governments are known to be ''bureaucratic'' and ''inwardly oriented'' (Gigler et al., 2011 p.19). They have and continue to be the custodians of public sector information, therefore gate-keeping what becomes public and what does not – the case being no different for Kenya.

Some advocates argue that government should just publish the data and leave it for other stakeholders such as the private sector to re-use and create value from it to avoid the negative influences of politics, power struggles and " … undesirable limits …" (Robinson et al 2009, p.163; De, 2005). Other groups of OGD advocates insist that government must go beyond publishing data and initiate engagement between the data and the targeted users especially the wider public for whom it has a public service obligation (Leadbeater 2011; Jetzek et al, 2012; Ubaldi, 2013). This involves widespread awareness and mobilization of data use, re-use and potential benefits.

A closer look at the OD index scores reveals that only a few datasets are available and/or are completely open in Kenya (Figure 2). Key datasets such as government spending and company registries are least likely to be available (0% and 5% respectively) as open data, suggesting that OGD initiatives for example in Kenya, are not yet releasing datasets that could be vital for holding governments and public officials accountable. The OD barometer as well as the OD index show that almost all the countries score poorly on availability and accessibility of these kinds of datasets especially on land and company registry.

The OD barometer report claims that out of the total datasets evaluated "less than 1 in 10 datasets are published as full open data (71 of 821)" (Davies, 2013, p.14). Even when available, they are not published as fully open but with restrictive laws. Eventually this manifests itself in the value generated and the impacts. The OD barometer indicates that there is a strong correlation between the accessibility and availability of datasets that facilitate government's accountability and a country's ranking on political impact. It cites Denmark's example where the availability of accountability data is high and so is the country's ranking on political impact (Davies, 2013).

On the other hand, datasets that are politically sensitive such as land, registry and budget or spending data could cause governments to suppress the release of data because of hidden interests and the risk of losing face or political careers if exposed. In this case, the government may shy away from publishing more data especially if there is a chance that this may lead to backlash from civil society or citizens.

However if adequate and publicly accessible legislation that cover data collection and publishing exist, governments will be obliged to release more data. If this leads to access to data or information that exposes corruption or misuse of public funds, the assumption is that this would raise the level of accountability, public trust and legitimization of government.

Figure 2. Screenshot of the Kenya OD index score of individual dataset adopted from Open Knowledge Foundation (http://census.okfn.org).

Government as an institution is political by nature. The term institution refers to a set of rules (formal and informal), actors and bureaucracies that determine behavioural roles, constrain activity and shape expectations and are most involved in policy making (Keohan & Murphy, 1992; Hammond, 1996). Likewise, OGD is a political process because policy making is a political actors and process making datasets "political objects" (Davies, 2013; OECD, 2003).

As noted by Robinson et al. (2009) so long as government controls the supply of data it will influence the presentation and formatting of raw government data. In the Kenyan constitution the right of citizens to access government information is provided, however the main policy makers who assent to critical laws such as freedom of information are politically elected or appointed into office hence the influence of politics in opening up government data or government information in general is unavoidable. This becomes evident in the OD barometer as different countries decide on how or where the data should have the greatest return on investment depending on its definition and perception of OGD and its benefits.

Open Data Initiatives are not intended to be an extra budgetary expense because data is assumed to be available and integrated into the daily activities of government. Nonetheless, the process (technical, legal) has cost implications. This affects how the policies and strategies are formulated and how resources for OGD are distributed. It also determines which datasets are prioritized and the main target group. For example the UK's emphasis has been on data that supports economic returns and innovation although the OGD movement in the UK was largely

driven by the civil society with a different perception and objective for OGD (Bates, 2013). The OD barometer results on impact show that for the UK, its weakest point is generating social impact from data because its emphasis and priority is on data for innovation and economic growth.

Another example is the US portal (http://www.data.gov/) with an emphasis placed on the communities section reflecting its objective of increased engagement (Davies, 2013). The US emphasizes datasets that lead to innovation and increase engagement of citizen's with government. The question is should the government decide on which data to prioritise and how should it do this whilst ensuring that users' heterogenous needs are met?

In such a scenario, the extent to which the data/information needs of the citizens or the potential users are aligned with those of government is worth questioning. This is not to say that users of data should be suspicious of their governments and the data rather that they should be aware of the motivation behind publishing data as this may explain why some datasets are open and others are not or how the datasets are structured and displayed.

There may be disagreement on the role of government in OGD, however its influence on the use and re-use is undisputed because it is the main source of the data as well as the policies and frameworks that guide open data initiatives (Harrison et al., 2012).

Open Government Data without Open Government?

OGD's effectiveness must start with an open system of government. The meaning of 'openness' of government includes the extent to which citizens can monitor and influence government processes through access to government information and access to decision- making arenas (Meijer et al 2012; Wojcik in Kersting, 2012).

Government should not only open up its information or data to its citizens but also itself as a public institution where citizens can 'get in' and actively participate. Open government data and specifically participation in government decision and policymaking relies on this "invited space" (Wojcik in Kersting 2012, p. 128). In an ideal setting, the Government allows increased diffusion of information and invites broader participation, which Meijer et al. (2012) refers to as 'vision'(transparency) and 'voice'(participation). This requires a willingness to change traditional government secretive culture and organization. Considering this typical nature of government, the political sensitivity of some government data, governments may react cautiously rather than openly especially in less democratic systems.

Bates (2013) and Huijboom N. & Van den Broek T. (2011) highlight the closed nature of government institutions as a reason for poor implementation of OGD. Bates (2013) terms them "institutional firewalls" that protect the interests of the powerful in society who fear the possible disruption of their activities by OGD (pp.135-136). OGD may exist in a closed system but it will not thrive and its impact will be thwarted by the very same agencies that implement it (Peled, 2013). More optimistic opinions will downplay the significance of an open government system for the success of open government data. In reality, such contexts are the ones that are in need of open data in order to encourage more transparency.

Technology may have 'disrupted' how governments communicate and release information, but its application to the development agenda depends on political goodwill and priorities. The Kenya Open Data Initiative's launch depended a lot on political goodwill. The then champion of OGD, a government official himself, faced difficulties in acquiring data from the government ministries

and agencies although he had approval for the initiative directly from the president (Majeed, 2012).

Release of data also depends on how governments perceive and understand OGD. For a long time information control has been equated with power because it "allows policy makers and bureaucrats to regulate markets, institutions and individual behaviours'' (Green, 2001 p. 78). This debunks an unstated assumption by OGD advocates that governments are ready and willing to open up previously locked up information. It is therefore still difficult to have sustainable open government data initiatives in such contexts where government not only sees release of data as release of government secrets but also as a loss of revenue and a loss of power (Peled, 2013).

In the context of young and emerging democracies, OGD initiatives should be encouraged, but at the same time and with the same effort so should more open government, more democractic processes and other institutional reforms that support the ecosystem in which OGD develops. This paper recognizes however, that emerging democracies may face challenges in building traditions of democratic processes while at the same time embracing open government reforms and open data. Even in established democracies and OGD initiatives such as the US, full transition to OGD systems has been impossible and change has been slow (Peled A., 2011; 2013). It should be noted that (e)democracy and democratic principles are not prerequisites for OGD rather they are supporting factors. Research indicates that more democratic governments have more returns on OGD initiatives (Tinholt, 2013).

Collaboration and Participation

The "standard model" for developing countries sees open data as pre-existing data being published and intermediaries using this data to create/add social or economic value (Davies et al, 2013, p.6). The OD barometer explains that most African countries have placed emphasis on developing "a community of intermediaries" as is the case in Kenya and Ghana (Davies, 2013, pp. 32, 33). It is often assumed that once government has published good quality open data the citizens will have the capacity and access (technical, economic and physical) to re-use the data. However the diverse needs and capacity of potential users is a challenge for government and necessitates collaboration with other stakeholders such as intermediaries or info-mediaries to meet some of the needs and generate value for all.

Leadbeater (2011) argues that "government does not have the skills needed on the scale required" to effectively harness data (p.17). Actors such as the media, civil society organizations (CSOs) or technology enthusiasts usually have the capacity to interpret the data and present it to the general public in formats other than the original statistics or numbers for example through the development of apps or journalistic reports informed by data. The fact is that neither government nor the the actors on their own have the resources to effectively take advantage of OGD.

A system of collaboration between the private sector and CSOs is encouraged to distribute OGD in relevant formats to a wider public. Collaboration can be promoted by pro-actively working with companies including local communities, groups, technology enthusiasts and hackers. Technology entrepreneurs, who need open data in raw, structured, machine-readable formats, can convert this kind of data into applications or information that is re-usable by the wider public.

However, these collaborations do not happen automatically as most governments are wary of the other sectors. The relationship between the public and private sector is marred by distrust.

The two sectors are often presented as being on two opposite sides – one focused on profit making and the other on social goals. This overshadows the critical role played by the private sector and CSOs. Jetzek et al (2012) highlights the tension that exists in the process of implementing OGD citing the blurred borders between users, intermediaries and suppliers of data.

In Kenya, the new public-private partnership law has allowed for more collaboration between the public and private sectors which is relevant for OGD especially in generating economic impact from OGD. Technology entrepreneurs as well as government can take advantage of this law to create more relationships for example through the provision of expertise/skills, capital investment and loans. More collaboration would support the ecosystem as opposed to viewing government only as a supplier of data and the other actors as the demand-side of OGD.

CSOs play the role of user, producer (generating data), intermediary and as advocates by keeping the government in check and pushing the OGD agenda. An example is in Uganda where the involvement of international non-governmental organizations (UNICEF) and civil societies as champions of OGD has seen successful effort (CIPESA, 2013). "Civil society occupies an important third space between the state, the market and the individual, in which people can debate and tackle action. While lacking the regulatory power of the state and the economic power of market actors, civil society wields power through its networks of people"(Rahemtulla 2011, p.34).

The NGOs and CSOs can also leverage on their relationships with governments in persuading them on the importance of OGD and even explicitly supporting OGD initiatives for example Datos Publicos in Argentina and the World Bank in Kenya and Moldova. An example of such a multisectoral collaboration is the Code4Kenya pilot program where the government, NGOs and the private sector joined together to create an awareness of open data and its potential use within their organizations. The program was a push from these different stakeholders to accelerate use of data and participation by the general public. One out of the four programs was by Twaweza (CSO), Ministry of Education (government), Africa Media Initiative (Media, CSO), iHub research (not-for profit) and individual technology experts. This resulted in an application (app) called *findmyschool*.[3] Using data from the government, it provides users with information on schools in Kenya according to location, performance and so on. The information is presented in visualized, easy to understand forms. This encourages more participation of the general public, re-use and generation of new meaningful data. It drives demand for data as all actors including citizens experience the significance and use of OGD. Additionally, it provides vital feedback on data usage and even on educational issues to the government. Here the CSO and the not-for-profit organization bridged the gap between government data from the Ministry of Education and the wider citizens for example parents looking for a suitable school for their children in a specific county/region.

This example shows the bridging role of the intermediary between the suppliers and the consumers of data, converting raw data into impact by adding value in form of visualizations, maps or apps. Ubaldi (2009) puts it well: "competitive advantage has to come from offering innovative value-added services on top of data, and providing opportunities for business start-ups. However caution has to be exercised to ensure that data is valid, accurate and meets open data principles"(p.19). This trend may also lead to negative impacts such as the rise of a digital elite where only a certain section of users have access to the raw data and are therefore able to subjectively re-use, or manipulate the data (for propaganda), blurred accountability (data curation

[3] Available at http://findmyschool.co.ke/

by whom and how?), privacy and data security issues among others (Ubaldi, 2009). Who, how, and when data is collected and published should be guided by laws and policies. Policies developed or adjusted to promote open data processing from collection and curation to data consumption and storage.

Unlike other sources of data, government's data in general is valued for its reliability, scope and comprehensiveness (Lakomaa & Kallberg, 2013; Ubaldi, 2013). CSOs, citizens and private sector like the media will be motivated to look for data that works therefore governments should not view opening data as an end but rather as a means to many ends such as innovation and business growth. Sustainability and demand for data will be driven by evidence of data that has made an impact for example in seeking justice or confronting public authorities without fear of repression of users and under the protection of adequate laws.

Conclusion

Data from the OD barometer and the OD index suggest that the data publishing – data impact gap lies in implementation. This paper has argued that because government is the central institution implementing OGD it influences the impact. This paper acknowledges that for weak or young democracies opening up government data amd developing collaborative and participatory spaces that encourage data use and re-use still remain a challenge. Not only are these governments working to develop these other democratic practices but for many with OGD initiatives, it may be too early to measure impact.

Government is also averse to projects where they have limited knowledge or experience because of the risk of failure. In addition, its institutions do not adapt to technology as fast as other sectors do (Ubaldi, 2013). It does not have all the knowledge and capacity to innovate and create value from data that will sufficiently meet the needs of its citizens, yet as the supply-side it influences the demand and use of data. One way of mitigating this is by partnering with other stakeholders such as the private and civil society sectors early in the project to encourage further innovative use and re-use of data.

Further, government should develop internal partnerships within itself by institutionalizing OGD and changing the culture and attitudes of government agencies and officials. Cultural and institutional change within the public sector is needed to shift the attitude of viewing government data as official secrets or sources of revenue (Ubaldi, 2013). Importantly, public sector workers and civil servants need to understand the use and potential impact of OGD. This empowerment will enable them to become users themselves and gradually become champions for OGD from within the public agencies. The UK has one of the most advanced OGD initiatives at national and sub-national levels. Additionally it has well institutionalized OGD infrastructures hence OGD has support at the top, the bottom (demand from citizens and CSO) and the middle from the civil servants and agencies who are trained and conditioned to have 'data by default ' (Halonen, 2012; Davies, 2013). Public servants are mandated to publish open data sets that are identified as high value and support 'hackdays' and events around OGD (Davies, 2013, pp. 27, 28). This is the essence because ideally government is a supplier and consumer of OGD and hence it should also contribute towards closing the feedback loop between the demand and supply sides of OGD.

The main challenge still remains in realizing the impact of OGD and further developing appropriate methods of measuring this impact. This is an area that requires more research. A

question for future research to consider is whether it makes sense to look for social impact where government has clearly (and maybe explicitly) placed more emphasis and resources on data for economic growth and innovation. It may be more pragmatic, in such situations, to investigate social impact as a secondary benefit of other processes of impact such as ecomonic growth and innovation rather than as a direct impact of governments' OGD initiatives.

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About the Author

Emmy Chirchir

Emmy Chirchir is a PhD candidate at the Graduate School of Politics, Department of Political Science, University Münster (Germany). Her main research interests are centered around open data, open goevernment, ICT and governance, (e)participation and democracy.

Norbert Kersting

Prof. Kersting is a professor for Local and Regional Politics at the Department of Political Science, University Münster (Germany). His research areas include: Comparative Political, local government, democratic theory, e-Government, development studies, bureaucracy research and political research methodology. He also chairs the International Political Science (IPSA) Research Committee 10: "Electronic Democracy".

Assessment and Visualization of Metadata Quality for Open Government Data

Konrad Johannes Reiche*, Edzard Höfig**, Ina Schieferdecker***

*Fraunhofer FOKUS/FU Berlin, konrad.reiche@fokus.fraunhofer.de
**FU Berlin, edzard.hoefig@fu-berlin.de
***Fraunhofer FOKUS/FU Berlin, ina.schieferdecker@fokus.fraunhofer.de

Abstract: *An increasing number of datasets from government, public organizations and institutions are published as open data. Metadata that describes them, are cataloged at central places to enable a better access to these datasets. Quantifying the metadata quality can help to measure the efficiency of a catalog and discover low-quality metadata records which prevent the user from finding what she is looking for. We researched and implemented a range of metrics from the field of metadata quality assessment as part of an open data platform. This paper describes the platform that automatically assesses the quality of different open government data portals using the CKAN catalog software. The results are aggregated and visualized through a web application in order to establish a continuous and sustainable monitoring service.*

Keywords: *Open Data, Metadata, Data Quality, Government Data, CKAN*

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Introduction

With rise of the open data movement, government and public agencies start to open up their data for public use. The technical tools for implementing this infrastructure are, often distributed, repositories for the datasets and typically centralized catalogs for metadata. Metadata are used to describe the datasets and provide information and search capabilities. Central to the operation and success of the metadata catalogs and their interoperability is the quality of the metadata they provide. In this context, we understand Metadata quality as "fitness for a purpose".

We have been designing and implementing the German Open Data Portal1 (GovData) which harvests metadata from different German portals on municipal, state, and federal level and from different domains such as statistics, geo information or environmental information. One of the issues that we encountered was the diverse metadata quality of the different portals, which does

[1] https://www.govdata.de

not only complicate the harvesting but also limits the services of GovData in terms of adequateness, completeness, accuracy and correctness of the metadata provided. We started our research in order to get an overview to survey and improve metadata quality.

Metadata

Metadata is used to catalog and index the datasets. Data about data has become the most used, yet underspecified, definition for the term metadata as it allows different interpretations by various professional communities. Not too long ago, metadata was only a concern of information professionals engaging in cataloging, classification and indexing. Often cited examples are libraries and librarians using catalog cards to assess the content and location of a book. Today, there are much more creators and consumers of digital content which also needs to be cataloged. Arguably, the term metadata is used a lot less, but the digital content is described, indexed, and cataloged by metadata. Metadata consist of a set of information pieces about information objects it describes. Thus, the term metadata can be refined in its definition as follows:

> ***Definition 1****: Metadata. The sum of statements that is associated with any (set of) information objects at any level of aggregation.*

Please note that such an information object can consist of a single information resource (an image), multiple information resources (a data series) or be even a whole information system like a database. The structure of metadata can be highly diverse. The intended use, context but also technical circumstances determine, how much metadata is structured, how well this structure is defined and how strict the structure is enforced.

Catalogs

Catalogs, sometimes also called repositories, are a commonly used technical tool for implementing a metadata infrastructure. Catalogs facilitate the collection, publication, presentation and search of metadata. Metadata describe information resources and provide information like authors, maintainers, formats, descriptive free text, etc. The referenced resources typically do not reside in the same repository. Metadata, in turn, is organized in a centralized and possibly standardized way using catalogs.

Metadata Quality

Quality is both objective and subjective. It depends on the context what quality means, how quality can be determined and what the implications are. Government data is primarily opened to enable transparency, innovation and new businesses building on the open government datasets. By that, it is not only crucial that the datasets themselves are of high-quality, but likewise the metadata need to be of high-quality.

Today, the number of available datasets on an open government platform is also a political issue. The platforms advertise their effectiveness by displaying the total number of datasets available. While this is a great quantity factor, it is not a quality factor. Making the data accessible, does not imply that the users will find the resources they are looking for. Content publisher have

to ensure that the resources are credible and discoverable. The credibility is bound to the quality of the content. The discoverability is bound to the quality of the metadata.

Hence, the fitness of metadata, i.e. the metadata quality, can be defined by the effectiveness in supporting the functional requirements of the users it is designed for. With this in mind, the following definition for metadata quality is proposed:

> ***Definition 2**: Metadata Quality. Metadata quality is the fitness of the metadata to make use of the data, i.e. of the information resources, it is describing. Metadata's fitness determines the level of enabling to find, identify, select, and eventually obtain the information resources. Metadata quality is inversely proportional to the metadata user's uncertainty about the described information resources.*

Quality Metrics

Because of its subjective dimensions, quality is not easy to measure. Often, only objective quality attributes are measured. Furthermore, there are complex attributes which have no single measure. For example, in the case of metadata records there are attributes like accuracy, accessibility, conformance to expectations, completeness, comprehensibility or timeliness. For each of these attributes another measure is more appropriate. Thus, the measures are by no means equivalent, but rather measure different aspects of an attribute.

Xavier Ochoa and Erik Duval (2006) have aggregated a rich set of metadata quality metrics. These metrics were developed for repositories managing metadata records of learning objects, but we find that they are defined in such a general manner, that they are suitable for application to open government metadata. A selection of their metrics together with refinements and additional metadata quality metrics developed in our research are discussed in the following text.

Completeness

A metadata record is considered complete, if the record contains all the information required to have an ideal representation of the described resource. While the attribute of completeness again can be very vague, one way of constructing a metric for this is to simply count the total number of fields and all fields, which have been set to a value which is not *null*. The completeness metric q_c is then defined as the ratio of number of fields and number of completed fields:

$$q_c(record) = \frac{\sum_{i=1}^{n}[record[field_i] \neq null]}{n}$$

Weighted Completeness

While the completeness metric is straightforward it comes with the drawback of treating every field with the same importance. The relevance of a certain metadata field depends strongly on the context. The problem is addressed by specifying a weight to each field. The weight w_i is a numerical value which expresses the relative importance for the fields to each other. This would allow to assign a weight of 1 for semi-important or regular fields, a weight of 3 for important

fields, but also a weight of 0 for fields which should be excluded completely from the measurement. The weighted completeness q_w is then defined as follows:

$$q_w(record) = \frac{\sum_{i=0}^{n} w_i \cdot [\, record[field_i] \neq null \,]}{w_i}$$

Accuracy

The accuracy metric measures how accurate the metadata record represents the associated resources. There are field types where this can be expressed with a Boolean value. Either the given information is correct or not. This example is illustrated in Figure 1, where the resource format type is checked against the actual format returned by the host.

Xavier Ochoa (2008) proposes that the correctness can be understood as the semantic distance between the information given through the metadata record and the information given through the resource. The semantic distance d_i is the difference between the information a user can extract from the record and the information the same user could extract from the referenced resource itself.

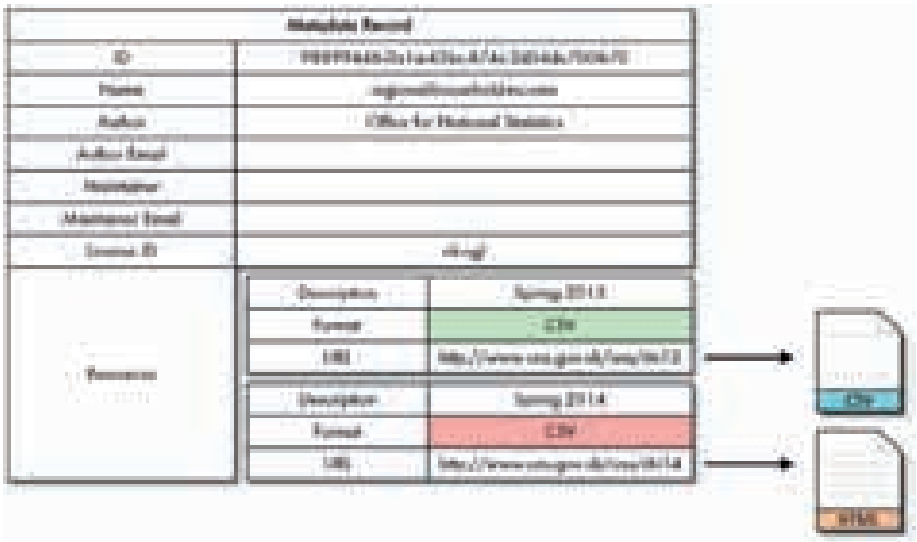

Figure 1: Example of an accuracy metric implementation validating the file format of the resources

A shorter distance implies a higher accuracy of the metadata record. With this approach the metric q_a could be expressed with the following calculation:

$$q_a = 1 - \frac{d_i(record[field_i])}{n}$$

The difficulty resides in d_i, which is the distance measurement of the field value $record[field_i]$. Different fields require different, tailored distance measurements. For numbers and dates the offset can be computed, for categorical values a predefined distance table can be used, e.g. declared language and actual language. The language distance between Spanish and Italian is shorter than between Spanish and Japanese.

Richness of Information

The vocabulary terms and the description used in a metadata record should be meaningful to the user. For that the metadata need to contain enough information for describing uniquely the referred resource. This can be done by measuring the amount of unique information present in the metadata. The approach originates from the field of information theory. In this work the metric will be called richness of information, as it describes the procedure better. In general, the richness of information metric q_i is defined as follows:

$$q_i(record) = \frac{I(record[field_i])}{n}$$

Where the function I returns a quantification of the information content. For numerical and vocabulary values this can be defined as 1 minus the entropy which can be expressed with the following function:

$$I(field) = -\log P(field)$$

Whereas $P(field)$ is the probability for value to occur in a set of metadata records. For free text the term frequency-inverse document frequency (tf-idf) is proposed. A numerical statistic which reflects how important single words are relative to a collection of documents. Here the term frequency tf, the document frequency df, the total number of documents m and the total number of words n is used.

$$I(text) = \frac{\sum_{i=1}^{n} tf(word_i) \cdot \log\left(\frac{m}{df(word_i)}\right)}{n}$$

Readability

The readability metric measures the degree to which a metadata record is cognitive accessible. The readability describes how easy a user can comprehend what the resource is about after reading the metadata record. To implement this metric several readability indexes could be used. One of these is the Flesch-Kincaid Reading Ease which measures the comprehension difficulty when reading an academic text. This reading ease score for English texts can be computed by applying the following function q_r:

$$q_r(record) = 206.836 - 1.015\left(\frac{words}{sentences}\right) - 84.6\left(\frac{syllables}{words}\right)$$

For this calculation the total number of words, sentences and syllables is required. Although the metric aims to describe results for scores on a scale between 0.0 and 100.0, negative values and values above 100.0 are possible, as well.

Availability

Metadata records contain URLs which point to the actual resources. The availability metric assesses the number of reachable resources. A resource is available, if the resource can be retrieved from the given URL. Thus, the following function definition is used for the metric q_{av}:

$$q_{av}(record) = \frac{\sum_{i=1}^{n} [resource\ i\ availabile]}{n}$$

Misspelling

Readers which are proficient in a language might halt for a moment on words written incorrectly. The number of spelling mistakes might not be a very important measure, as opposed to the availability of resources, nevertheless it influences the information quality. For the misspelling metric q_m the number of spelling mistakes are counted:

$$q_m(record) = 1 - \frac{m}{n}$$

Where m is the number of spelling mistakes and n is the total number of words.

Platform: Metadata Census

We implemented the presented quality metrics and applied them to a set of metadata. In order to make them reusable by others, they are implemented as part of a platform: Metadata Census. A web application acts as a "quality-dashboard" to survey the quality of selected CKAN-based catalogues in a continuous way.

There is a range of functional requirements which have been identified for the Metadata Census:

- A continuous, CKAN-based metadata harvester
- A schemaless data store
- The presented quality metrics
- A Scheduler for triggering the harvesting runs
- A module for metric reports
- Some visualization to allow users to grasp the analysis results
- A leaderboard, to enable comparison of metadata quality between repositories

The harvester component is required to gather the metadata locally, but also to access it afterwards, even if the repository is not online at the point in time. Due to the number of metadata

records, it would not be feasible to perform all the operations in memory. Different repositories might use a slightly different metadata schema. A schemaless data store can then organize and manage the metadata in a natural way.

The quality metrics form the core functionality of the implementation and it should be possible to easily add new quality metrics. The scheduler is required to continuously monitor the quality. For the metric reports we needed to decide how a single metric score is computed. The problem of making a comprehensible assessment is not necessarily solved by a large number of scores. The results also need to be broken down into smaller information pieces to make the outcome better understandable. Visualization can also help to reduce the information noise for a more natural interpretation. Open data is inherently political. In fact, open data has a competitive appeal. A leaderboard could be instrumentalized to compare the metric scores of different repositories with each other and encourage this competition.

Visualization

An appropriate visualization is crucial to enable the communication of quality assessment in a way that goes beyond a sheer quality metric score. The sustainability is created when the data providers are enabled to investigate the source for the lack of quality through visualization. An effective approach for this is to generalize where possible and specialize otherwise.

This is shown in Figure 2. Every detail page for a quality metric has a score meter and a histogram. The score meter does not induce additional information but it helps to grasp the overall state visually. The histogram shows the metadata quality distribution grouped by the different score ranges. This clearly communicates how many metadata are affected by low-quality and in which seriousness. Below are the more advanced, respectively more specialized visualizations. Visualization is not necessarily a graph or a diagram, thus it can also be a plain table with highlighted fields. For instance, for the availability metric it is relevant which metadata records are affected by dead links. Further, it should be easy to examine the dead links. This requires a dynamic interface, for example input fields in order to filter the result list.

Visualization can also be used to describe the same information in different ways. Treemaps are used to illustrate the results of the completeness metric (Figure 3). This way the nested nature of metadata records is exploited. Again, dynamic interfaces are used to enhance the visualization. The Treemap display two results. On the one hand, how is the metadata record structured in general, like what fields are there and how are they nested, and on other hand how often these fields are actually used. Switching between these two results in an animated transition helps the investigator to see what fields stay and what fields are marginalized because they are not used at all.

For the more general pages like overview of metadata quality of a repository over time the obvious choices are made and the aggregated score is shown on a line chart.

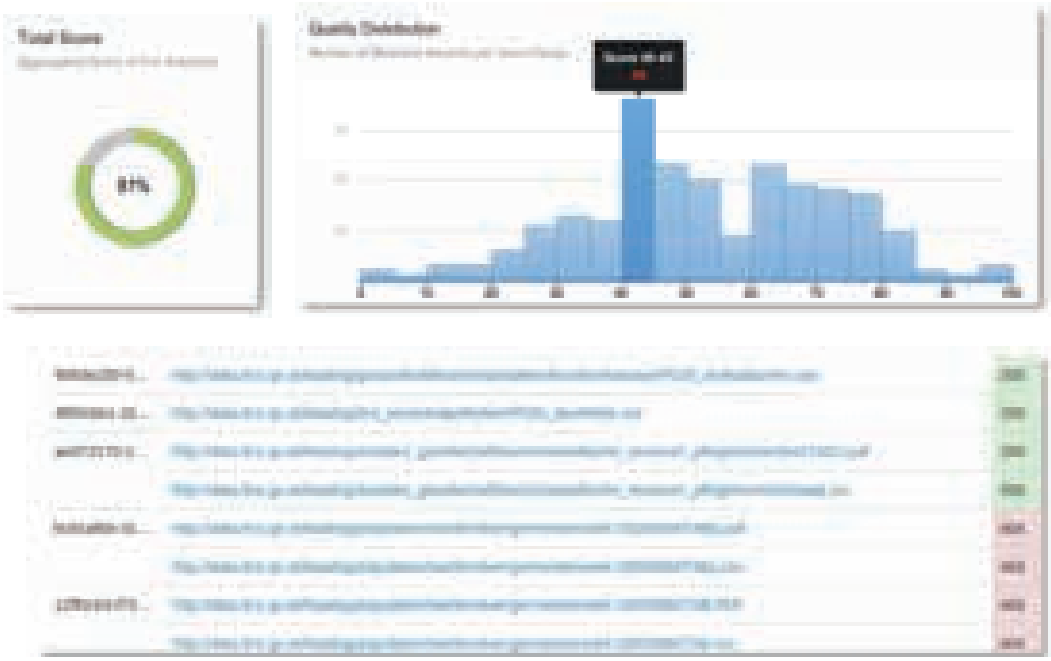

Figure 2: View components to communicate the results, e.g. metric score meter, quality score distribution (chart), link availability (table)

Figure 3: Treemap2 illustrating the metadata completeness

[2] Treemapping is a method for displaying hierarchical data by using nested rectangle.

Case Study: Open Government Data

The developed approach for an automated quality assessment of metadata and its prototypical implementation by Metadata Census have been tested for a set of open government data portals. For this task catalogues from around the world have been selected. The results are shown in Table 1 in form of the leaderboard. The repositories are sorted by their aggregated score.

The aggregated scores give an overview about the score distribution. More details are reviewed through the metric reports (Figure 2). The completeness metric shows that there are no metadata records which fill out every available field. The completeness metric report also helps to identify fields that are seldom used, for instance *Maintainer Email*. This, then again can be used to plan quality improvements. For example, if the field *Author* has only been completed in 80% of the records, the focus should be to improve the remaining 20%. The weighted completeness metric has a better score than the completeness metric. Now, due to the field weighting there are metadata records which satisfy the completeness for every field.

The accuracy metric has the worst overall results for most of the repositories. Often the MIME type is simply not correct. This can also be an indicator that the actual resource is not available directly through the given URL, but through an additional link.

The readability metric does not reveal a lot of information. Some repositories do better, some do worse, but when investigating the results something becomes evident: many descriptions are too short. An improvement would be to compute the Flesch reading ease only on texts with a certain length.

The availability metric is one of the most useful metrics. A repository with too many dead links can quickly render the whole repository useless. The metric has the clear drawback of only delivering the state from the moment the URLs have been checked. Often resources are only temporarily not available, which raises the need for measuring such quality factors over time and for averaging the results.

The misspelling metric detects some typical typos. Not every detection is always an actual typo. The misspelling dictionaries also need to be updated continuously and additional language support is required to cover the full range of all languages in use.

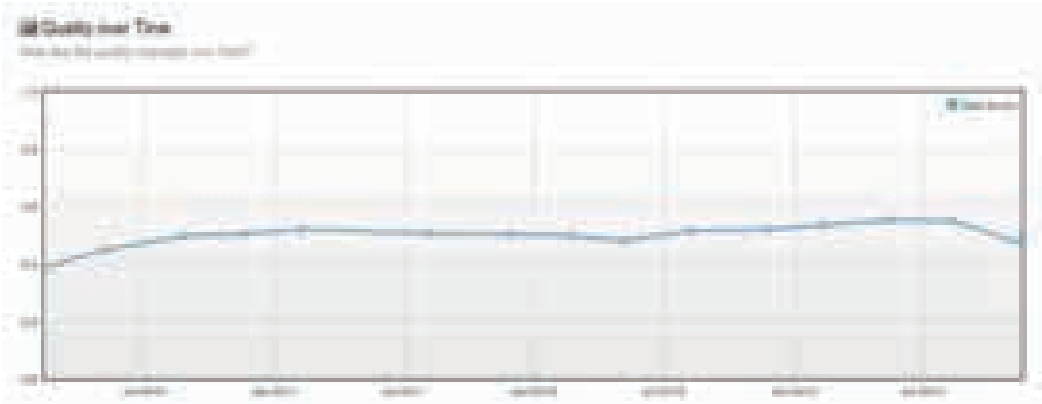

Figure 4: Analyzing the aggregated quality over time shifts the importance towards quality improvement

While single metric results can give interesting insight it is of even more interest to investigate the quality change over time. Such a monitoring can be seen in Figure 4. This way the focus shifts to metadata quality improvement. After all, this has to be the concern when managing a metadata catalog. Small changes in the overall quality go back to different reasons. For example, the quality increased slightly after a large set of metadata have been removed. Thus, further parameters like the number of metadata records should be included in the result, as well.

Table 1: Ranked repositories based on their average score computed through different quality metrics

Rank	Repository	Score	Completeness	Weighted Completeness	Accuracy	Richness of Information	Readability	Availability	Misspelling
1	data.gc.ca	74	79	81	20	86	71	79	97
2	data.sa.gov.au	71	77	82	0	63	72	86	98
3	GovData.de	67	55	87	56	44	79	81	99
4	data.qld.gov.au	66	73	78	0	67	59	60	99
4	PublicData.eu	66	64	67	32	84	42	70	98
4	data.gov.uk	66	62	67	28	85	44	74	97
4	africaopendata.org	66	70	68	53	20	55	87	100
5	datos.codeandomexico.org	65	65	75	0	55	37	100	100
6	catalogodatos.gub.uy	63	70	78	52	64	65	74	100
6	data.openpolice.ru	63	58	81	64	0	100	100	100
7	dados.gov.br	61	53	72	39	87	44	57	100
8	opendata.admin.ch	59	58	68	100	12	35	100	100
9	data.gv.at	57	51	65	0	21	59	68	100
10	data.gov.sk	49	48	58	7	51	37	92	100

Another important feature of Metadata Census is the ability to weight the importance of the quality attributes according to the current purpose of portal evaluation. This flexibility in assessing the metadata quality allows to develop a better understanding of the weaknesses and strengths of a metadata portal and to derive options for improvements.

Conclusion

The experimental results of evaluating the selected portals demonstrate the applicability of the developed platform Metadata Census. The purpose of this research was to assess the metadata quality of open government data portals; the Metadata Census is a first prototype for an automated and flexible evaluation mechanism to carry out such a task.

The quantification of metadata quality attributes was addressed by quality metric functions. Effectively, metrics are used to measure these quality attributes. Although quantifications were performed, it became quickly evident, that they do not cover every possible quality attribute. The presented quantification of metadata quality cannot satisfy a metadata quality assessment to its full end.

The proposed method has another weakness: The use of an algorithmic approach is too limited to discover all subtleties that result in quality flaws. However, keeping the actual objective of improving metadata quality, this is not necessary at all. The importance does not reside in creating very high-quality metadata records, but in improving those who have a very low quality. Metadata Census prototype provides ways to sort these records out. For instance, the quality distribution histogram can list those, which have a very low quality. From there on, a repository can be advanced greatly by improving this group of metadata.

Furthermore, a platform like Metadata Census has two functions. On the one hand as an investigative tool to find metadata of low quality and on the other hand as a competitive one. Open data is instrumental and so can be metadata quality. A leaderboard, such as the one implemented, can be used to engage data provider in improving their metadata. This, of course, requires public provisioning and acceptance of such a tool.

In the future, we will investigate how to improve the definition of metadata quality attributes and of their measurement functions. Besides, the technical implementation of Metadata Census is an early design. There are many ways to improve its functions, as well as the function's behavior including

- Supporting a wider range of repositories
- A metadata revision system
- A live quality feed
- Support for domain-specific languages for metric definition
- Quality measurement as a service

CKAN is just one repository software. Socrata is another widely used open data platform which serializes its metadata to JSON. By further abstracting the metric analysis implementation we could make this option easily available. In addition, with every repository dump added to the database of the Metadata Census, the size increases linearly. This approach introduces a lot of redundant data, which could be eliminated by implementing a metadata revision system.

Furthermore, in order to reveal quality issues in a finer granularity single quality changes could be presented as a live feed. Finally, while new metrics can be easily added, the next step would be the development of a domain-specific language to design quality metrics. Quality is subjective, hence there is a need for more possibilities to create customized metrics and customizations of the Metadata Census.

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About the Authors

Konrad Reiche

Konrad Reiche is a graduate student at Freie Universität Berlin where he is pursuing a Master's degree in Computer Science. As a working student at Fraunhofer FOKUS he is responsible for the metadata management of GovData.de, the data portal for Germany. For his Master's thesis he researched on metadata quality of open government data.

Edzard Höfig

Edzard Höfig holds a PhD in Engineering from the Technical University of Berlin and is currently working as a Post-Doc at the working group for Model-Driven Engineering and Quality Assurance of Software-Based Systems at Freie Universität Berlin. Edzard's research is focussed on attribution and provenance questions related to open data. He also investigates dynamic data streams in urban environments.

Ina Schieferdecker

Ina Schieferdecker heads the Competence Center on Modeling and Testing of System and Service Solutions at Fraunhofer FOKUS, Berlin, coordinates Open Data and ICT for Smart Cities at Fraunhofer FOKUS and is also a professor of Model-Driven Engineering and Quality Assurance of Software-Based Systems at Freie Universität Berlin. Her research interests include model-driven engineering, software quality assurance, conformance, interoperability, and certification.

Technology and Architecture

Exploiting Linked Open Data and Natural Language Processing for Classification of Political Speech

Giuseppe Futia*, Federico Cairo**, Federico Morando***, Luca Leschiutta****

*Nexa Center for Internet & Society, DAUIN - Politecnico di Torino, giuseppe.futia@polito.it
**Nexa Center for Internet & Society, DAUIN - Politecnico di Torino, federico.cairo@polito.it
***Nexa Center for Internet & Society, DAUIN - Politecnico di Torino, federico.morando@polito.it
****Nexa Center for Internet & Society, DAUIN - Politecnico di Torino, lua.leschiutta@polito.it

Abstract: *This paper shows the effectiveness of a DBpedia-based approach for text categorization in the e-government field. Our use case is the analysis of all the speech transcripts of current White House members. This task is performed by means of TellMeFirst, an open-source software that leverages the DBpedia knowledge base and the English Wikipedia linguistic corpus for topic extraction. Analysis results allow to identify the main political trends addressed by the White House, increasing the citizens' awareness to issues discussed by politicians. Unlike methods based on string recognition, TellMeFirst semantically classifies documents through DBpedia URIs, gathering all the words that belong to a similar area of meaning (such as synonyms, hypernyms and hyponyms of a lemma) under the same unambiguous concept.*

Keywords: *DBpedia, Natural Language Processing, e-democracy, Text Categorization, White House Speeches*

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Introduction

Text has been described as "arguably the most pervasive--and certainly the most persistent--artifact of political behavior" (Monroe & Schrodt, 2008). Therefore, the systematic analysis of official texts is traditionally one of the instruments in the toolkit of those who want to make sense of political processes. Technology has greatly expanded the potential of such analysis, both by making tedious activities (e.g., looking for and counting keywords) much quicker and less error prone, and by greatly expanding the availability of texts to be analyzed (e.g., the Web is making virtually any relevant political text available to anybody in the world, mostly without

charge). Automatic speech recognition is expanding even more the rich set of available documents to analyze, transforming any recorded speech into a text. The growing popularity of blogging and then social network and micro-blogging platforms expanded further the potential of a systematic analysis of political texts, encompassing not only the analysis of texts produced by politicians and journalists, but also the automatic analysis of the viewpoint of ordinary citizens.

A more recent and relatively less explored strand of literature built on the previous ones, to explore whether democratic deliberation could be supported by natural language processing (NLP) tools, in order to enable citizens to pre-process an input to take more informed decisions (e.g., Muhlberger, Stromer-Galley & Webb, 2012; Jensen & Bang, 2013). The paper at hand fits in this last strand of literature, developing a framework to use NLP techniques to assist anyone interested in categorizing political speeches, including citizens who are forming their own political opinions. In particular, we will describe a first and preliminary attempt to do so using TellMeFirst (TMF), a tool for classifying and enriching textual documents leveraging the DBpedia knowledge base[1] and the English Wikipedia linguistic corpus.

Section 2 of this paper describes related approaches to the content analysis concerning political texts. Section 3 provides the reasons for using DBpedia as knowledge base for text classification in the political domain. Section 4 explains the TMF approach to text categorization. Section 5 reports the results of the text analysis with TMF. Section 6 draws the conclusions, and outlines some future developments.

Related Works

Automated content analysis concerning political texts progressed at a fast pace since Benoit and Laver's seminal works (Benoit & Laver, 2003; Laver, Benoit, & Garry, 2003) focusing on *wordscores*. (Wordscores is a procedure, still widely used, to infer policy positions --i.e., the scores-- associated with a document, on the basis of a training set of pre-classified documents. See Lowe, 2008 for a detailed description of this approach.) Similar techniques, with different statistical assumptions, have also been proposed by Slapin & Proksch (2008), also leading to the production of the Wordfish software[2]. Following these and other works, e.g., the one of Simon & Xenos (2004), more complex semantic analysis techniques are also becoming tools to assist and partly substitute the human coding of political content. For a recent and extensive survey of methods for the automatic analysis of political texts (which would be outside of the scope of this paper), we remand to Grimmer & Stewart (2013).

Sentiment analysis techniques, originally developed for marketing purposes, are more and more used to infer the political implications of the big flow of data exchanged on social networks and micro-blogging platforms (e.g., Tumasjan, Sprenger, Sandner, & Welpe, 2010 or Ringsquandl & Petković, 2013).

This paper fits in a third and relatively less explored domain, focusing on the use of natural language processing (NLP) tools to support and inform the political participation of citizens. In this specific domain, for instance, Muhlberger, Stromer-Galley & Webb (2012) discuss how NLP tools can empower participants to provide more informed input into public comment processes

[1] http://dbpedia.org/.

[2] See http://www.wordfish.org/publications.html for a list of related publications (and applications to various cases).

related to federal and state agency rulemakings (in the US). To our knowledge, the paper at hand may also be the first one using Linked Open Data, and in particular the unique URIs exposed by DBpedia, to unambiguously identify the categories of political texts. (Related works specifically connected with our TMF NLP technology are mentioned in Section 5.)

DBpedia as a Knowledge Base to Enable the Classification of Political Texts

As described by Grimmer & Stewart (2013), "assigning texts to categories is the most common use of content analysis methods in political science. For example, researchers may ask if campaigns issue positive or negative advertisements [...], if legislation is about the environment or some other issue area [...]. In each instance, the goal is to infer either the category of each document, the overall distribution of documents across categories, or both." Text classification consists in assigning a document to one or more categories or classes among a number of possible classes. When categorization is performed on the basis of documents' topics (often called "semantic" categorization), the set of possible categories is part of a taxonomy, an ontology or knowledge based where nodes are "concepts" or "topics". Since in most machine learning-based classification systems, such as TMF, categorization is accomplished by calculating a similarity score between target document and all possible categories, classification process works the more successfully the greater is the coverage of the domain of interest in the knowledge base.

DBpedia has proven to be a very suitable knowledge base for text classification, according to both technical reasons and more theoretical considerations (Mendes et al., 2012; Hellmann et al., 2013; Steinmetz et al., 2013). DBpedia is directly linked to the arguably largest multilingual annotated corpus ever created, which is Wikipedia: thus, it is technically perfect for automated tasks in the fields of Natural Language Processing and Text Mining. As lately noticed, "DBpedia has the potential to create an upward knowledge acquisition spiral as it provides a small amount of general knowledge allowing to process text, derive more knowledge, validate this knowledge and improve text processing methods." (Hellmann et al., 2013). Besides, concepts within DBpedia (called "entities" and identified by URIs[3]) are the result of a semantic consensus collaboratively reached by a wide community of Internet users (the "Wikipedians"). An effective criterion for classifying documents on the Web, in fact, should not be imposed from above, but it should follow the same principles of freedom and transparency that have always been the essence of the Internet itself.

The uneven coverage of different topics in Wikipedia is reflected in the DBpedia knowledge base with a greater or lesser presence of entities and relationships between entities. If a Wikipedia article is particularly full-bodied and rich in information, it will be characterized by numerous inbound links, and will have a very rich and structured infobox: accordingly, the profile of the corresponding DBpedia entity will be more complex. This has a deep impact on a DBpedia-based classification software, because documents about some topics will be classified more accurately than others.

As explained by Brown (2011), the political coverage in Wikipedia is "often very good for recent or prominent topics but is lacking on older or more obscure topics". Assessing the accuracy of

[3] For example: http://dbpedia.org/resource/Barack_Obama.

Wikipedia in reporting gubernatorial candidate biographies who ran between 1998 and 2008 in US, and the accuracy of the US gubernatorial election results reported on Wikipedia, Brown also notices that Wikipedia's greater flaws are the omissions rather than inaccuracies.

As an indicator of the coverage of a topic in Wikipedia, we detected the Wikipedia category[4] that seemed to describe more accurately that topic and we count how many Wikipedia articles fall into that Wikipedia category.

In order to compare the coverage of US politics with the coverage of politics of other countries, we identified three main areas of political domain, selecting in each area three Wikipedia categories for the countries of interest (i.e, United States, United Kingdom, and France). These main areas, which correspond to the graphs below, are: (i) conduct, practice, and doctrine of politics of a country (see Figure 1, in orange); (ii) official government institutions and offices of a country (see Figure 1, in blue); (iii) politicians involved in the politics of a country (see Figure 1, in green)[5].

Figure 1: Comparison between the coverage of US politics and the coverage of politics of other countries

TellMeFirst Approach to Text Categorization

TellMeFirst is an open-source software for classifying and enriching textual documents via Linked Open Data[6]. TMF leverages Natural Language Processing and Semantic Web technologies to extract main topics from texts in the form of DBpedia resources. Every DBpedia resource (for instance http://dbpedia.org/resource/Barack_Obama) has a corrisponding article in Wikipedia (http://en.wikipedia.org/wiki/Barack_Obama), therefore TMF output is a list of Wikipedia topics intended to be the main subjects of the input text.

Like other software of the same kind (e.g., DBpedia Spotlight[7], Apache Stanbol[8], TAGME[9], etc.), TMF exploits DBpedia as a knowledge base for topic extraction and word sense disambiguation. DBpedia is a suitable training set for any machine learning-based approach, because it is directly linked to the wide, cross-domain linguistic corpus of Wikipedia. In order to accomplish document categorization, TMF adopts a memory-based learning approach, which is a subcategory of instance-based learning, also known as "lazy learning". Its distinctive feature is that the system doesn't deal with creating an abstract model of classification categories (aka "profiles") before the

[4] http://en.wikipedia.org/wiki/Help:Category.
[5] A query on DBpedia (stored locally in a Virtuoso triplestore) traverses chains of skos:broader relations, using SPARQL 1.1 Property Paths, in order to obtain all members of each subcategory of a specific Wikipedia category: select distinct ?member where { ?member http://purl.org/dc/terms/subject ?cat ?cat skos:broader* http://dbpedia.org/resource/Catgory:Name_of_Category }.
[6] http://tellmefirst.polito.it/.
[7] https://github.com/dbpedia-spotlight/dbpedia-spotlight/wiki.
[8] http://stanbol.apache.org/.
[9] http://tagme.di.unipi.it/.

actual text categorization process, but it assigns target documents to classes based on a local comparison between a set of pre-classified documents and the target document itself (Cheng et al., 2009). This means that the classifier needs to hold in memory all the instances of the training set and calculate, during classification stage, the vector distance between training documents and target documents. Specifically, the algorithm used by TMF is k-Nearest Neighbor (kNN), a type of memory-based approach which selects the categories for a target document on the basis of the k most similar documents within the vector space. The variable k in TMF is always equal to 1, thus the winning category is the one which has higher similarity with the target document.

TMF training set consists of all the Wikipedia paragraphs where a wikilink[10] occurs. These textual fragments are stored in an Apache Lucene[11] index, as fields of documents which represent DBpedia resources. In the TMF index each DBpedia resource becomes a Lucene Document that has as many Lucene Fields as the paragraphs where a link to that resource occurs[12]. At classification time (following the "lazy learning" approach) the target document is transformed into a Lucene boolean query on all index fields, in order to discover conceptual similarity between the document and all textual fragments surrounding a wikilink in Wikipedia. To calculate similarity, TMF uses the Lucene Default Similarity, combining Boolean Model of Information Retrieval with Vector Space Model: documents "approved" by Boolean Model are scored by Vector Space Model. The similarity between two documents can be viewed geometrically as the distance between two vectors that represent the documents in a n-dimensional vector space, where n is the number of features of the entire training corpus.

In a Lucene query, both the target document and the training set become weighed terms vectors, where terms are weighted by means of the TF-IDF algorithm. The query returns a list of documents in the form of DBpedia URIs, ordered by similarity score. Scoring formula is:

$$\text{coord-similarity}(q,d) = \frac{V(q) \cdot V(d)}{|V(q)| \cdot |V(d)|}$$

where q is the query, d is the training document, V(q) is the query weighted vector, and V(d) is the document weighed vector. The above equation can be viewed as the dot product of the normalized weighted vectors, in the sense that dividing V(q) by its euclidean norm is normalizing it to a unit vector. Once we got the sorted list of results, we can apply RCut thresholding to keep only the first n topics and discard others.

TellMeFirst Effectiveness in the Domain of Interest

In order to verify the effectiveness of the TMF classification process, we used as test set the profiles of the US Presidents published on The White House website[13]. We run TMF on these documents performing two test suites. In the first test suite we submitted the US Presidents profiles to TMF and we collected the classification results. For each profile TMF provided as output the seven most relevant topics (in the form of DBpedia URI) of the document sorted by relevance. On the basis of our evaluation criterion, a topic detection result is correct if the first DBpedia URI refers to the US

[10] http://en.wikipedia.org/wiki/Wikilink#Hyperlinks_in_wikis.
[11] http://lucene.apache.org/.
[12] This technique has been borrowed from the DBpedia Spotlight project (Mendes at al., 2011).
[13] http://www.whitehouse.gov/about/presidents.

President described in the profile[14]. Results show that TMF managed to identify the first topic of a text with precision of 95.4%. In the second test suite, slightly more challenging, we automatically removed all the strings referring to the main topic's label (e.g. label "Barack Obama" for the topic http://dbpedia.org/resource/Barack_Obama), nevertheless TMF also identified the first topic (just on the basis of its linguistic context) with precision of 45.4%. Below an overview of TMF success rate on US presidents profiles. Full results are available for download on TMF website[15].

Table 1: Success rate (%) of the TellMeFirst classification process on the Us Presidents profiles

	1st topic	**Within the first 2 topics**	**Within the first 7 topics**
Full text of the Presidents profiles	95.4%	100%	100%
President profiles without name and surname	45.4%	61.3%	90.9%

Furthermore, the results obtained classifying White House speech transcripts demonstrate that TMF is far more suitable to make clear the subject of a political speech compared with a simpler bag-of-words based text analysis tool. The example[16] in Figure 2 shows how TMF identifies as the main topic the unambigous concept "Patient Protection and Affordable Care Act"[17] while a popular tag cloud tool[18] gives as result a set of often redundant or inconsistent strings.

Figure 2: Results obtained with TMF (on the left) and with TagCrowd (on the right)

Results

3173 videos in English were available on the White House website on the 24th of November 2013. These videos are part of the political communication of the White House and are categorized according to a taxonomy not related to the subject of the speeches. These categories are instead

[14] For the profile "Abraham Lincoln" available at http://www.whitehouse.gov/about/presidents/abrahamlincoln, the first result provided by TMF should be http://dbpedia.org/resource/Abraham_Lincoln.
[15] See note 6.
[16] "President Obama Speaks on the Affordable Care Act": http://www.whitehouse.gov/photos-and-video/video/2013/09/26/president-obama-speaks-affordable-care-act#transcript.
[17] http://dbpedia.org/resource/Patient_Protection_and_Affordable_Care_Act.
[18] http://tagcrowd.com/.

related to the place of the event ("Press Briefings", "West Wing Week"), and to the person who delivered the speech ("The First Lady", "The Vice President").

TMF tries to add a semantic layer that point out the content of the speeches, so that questions such as "what is the First Lady talking about?" could be automatically answered (see Section 5.2) and/or people interested in specific issues could easily find related videos.

This section reports the results obtained extracting the topics of speech transcripts published on the White House website. Table 2 shows the top 20 topics on the total number of occurrences and the value in percentage of each topic at the overall level. Furthermore, Table 2 reports the values in percentage of each topic, considering each year from 2009 to 2013. The values highlighted in red indicate a number of occurrences greater than 1% while the values highlighted in green indicate a number of occurrences greater than 0.5% (and lower than 1%). An interesting result with a high number of occurrences (141) is New Deal, probably used as a metaphor within the political speeches of President Obama[19]. Apart from these results, that give an overall view of the topics treated by the White House, there are some outliers that provide cases that can be further investigated.

The entity "Libya" (in the 61st place for number of occurrences) has a value corresponding to 1.00% in 2011, while is less than 0.2% in 2012 and in 2013, and it is not available for 2010 and 2009. This result can be related to the full-scale revolt beginning on 17 February 2011 in Libya and concluded on 23 October 2011.

A similar behaviour occurs with the entity "Deepwater Horizon oil spill". In 2010 it reaches the 1.05% of the occurrences, while it does not occur in 2013 and in 2012. This result is probably related to the marine oil spill which took place in the Gulf of Mexico that began on 20 april 2010 and concluded on 15 July 2010.

Table 2: Amount and percentage of topic occurrences extracted with TellMeFirst

Topic	**Occ.**	**% overall**	**% 2013**	**% 2012**	**% 2011**	**% 2010**	**% 2009**
Barack Obama	607	4.88%	5.68%	4.52%	5.51%	4.45%	3.88%
White House	381	3.06%	2.75%	2.91%	3.32%	2.94%	3.38%
Patient Protection and Affordable Care Act	286	2.30%	3.06%	1.35%	1.91%	2.47%	2.71%
American Recovery and Reinvestment Act of 2009	278	2.23%	1.09%	1.82%	2.88%	2.84%	1.88%
Social Security	272	2.19%	2.58%	1.77%	3.54%	1.61%	0.78%
Medicare	183	1.47%	2.10%	0.52%	1.19%	1.58%	1.99%
New Deal	141	1.13%	1.00%	1.25%	1.79%	0.90%	0.44%
Health insurance	131	1.05%	1.62%	0.31%	0.47%	1.14%	1.99%

[19] Obamacare vs. The New Deal Historical Comparison, New Republic, 24 October 2013 http://www.newrepublic.com/article/115326/obamacare-vs-new-deal-historical-comparison.

Economic growth	127	1.02%	0.96%	0.73%	1.00%	1.08%	1.33%
George W. Bush	116	0.93%	1.18%	0.83%	0.60%	1.21%	0.83%
Renewable energy	114	0.92%	0.52%	0.99%	1.00%	1.08%	0.89%
Unemployment	113	0.91%	0.61%	0.83%	0.94%	1.08%	1.00%
Iraq War	106	0.85%	0.57%	1.09%	0.97%	0.56%	1.27%
Bush tax cuts	98	0.79%	0.52%	1.19%	1.25%	0.68%	0.06%
United States Congress	98	0.79%	1.22%	1.09%	1.19%	0.31%	0.06%
Income tax	97	0.78%	0.17%	1.56%	1.00%	0.93%	0.06%
Robert Gibbs	88	0.71%	#N/D	#N/D	0.38%	1.67%	1.22%
Sales tax	87	0.70%	0.09%	1.30%	1.00%	0.83%	0.06%
Economic development	85	0.68%	0.66%	0.57%	0.69%	0.71%	0.78%

Correlations Among Topics in the Political Speeches

As explained in Section 4.1, the TMF text categorization process extracts the seven most relevant topics of a text. Exploiting this feature it is possible to quantify the correlation among the topics addressed in a political speech.

In Figure 3, for example, we noticed that the "War" is often associated to topics such as "Veteran", "United States Department of Veterans Affairs", "Veterans of Foreign Wars", "Vietnam veteran", likely very sensitive issues for the US electorate. Among other topics there are "Al-Qaeda" "September 11", "Terrorism", "Osama Bin Laden", a sign that probably this concept is often linked to the war on terrorism.

Focus on the First Lady Speeches

The Wikipedia page "First Lady of the United States"[20] represents the shared consensus among wikipedians (and a good proxy of the consensus amongst Internet users) about the role of the US First Lady. According to this view, the First Lady is "first and foremost, the hostess of the White House", she "often plays a role in social activism" and "organizes and attends official ceremonies and functions of state". Moreover, "[o]ver the course of the 20th century it became increasingly common for first ladies to select specific causes to promote, usually ones that are not politically divisive."

[20] http://en.wikipedia.org/wiki/First_Lady_of_the_United_States.

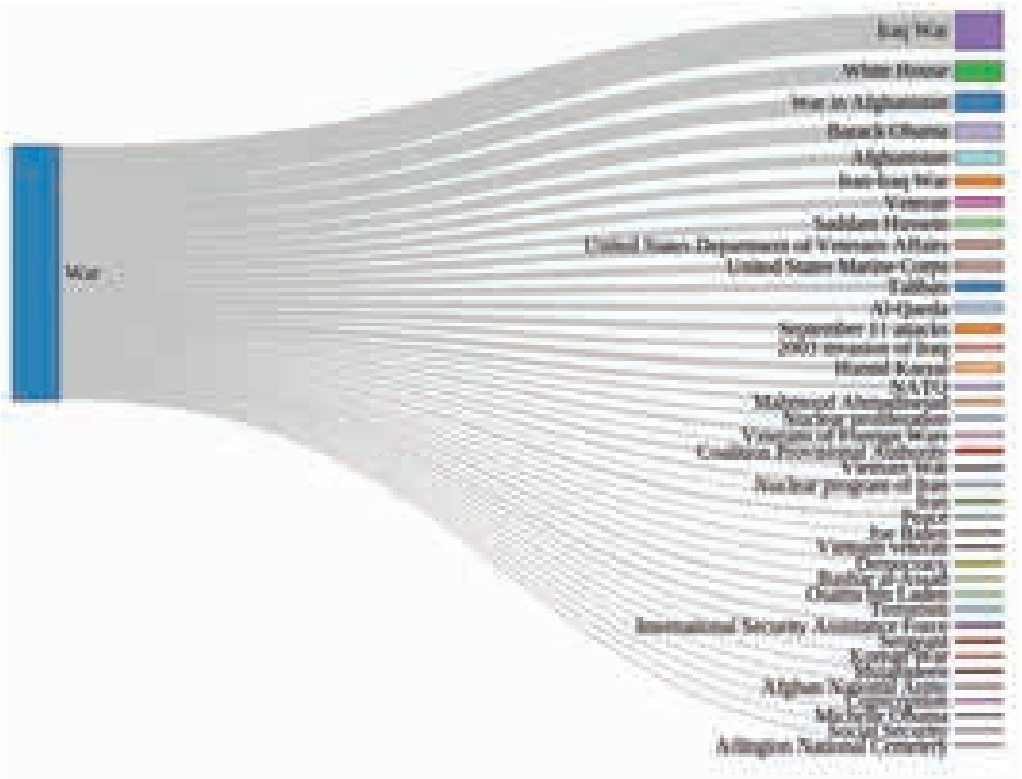

Figure 3: The most mentioned topics related to "War", sorted by decreasing number of occurrences.

According to Michelle Obama's page on the White House website, in her case these causes are in particular[21]: "supporting military families, helping working women balance career and family, encouraging national service, promoting the arts and arts education, and fostering healthy eating and healthy living for children and families across the country."

We tested whether TMF confirms or not these impressions and claims, manually selecting nine Wikipedia categories which seemed to be related to the aforementioned issues[22]. We then interrogated the SPARQL end-point of DBpedia with a query to collect all the topics of these categories and of their sub-categories until the third level. This is the kind of query we used:

```
select distinct ?member where {
    { ?member dc:subject Category:NAME-OF-CATEGORY .
    } union { ?member dc:subject [ skos:broader Category:NAME-OF-CATEGORY ] .
    } union { ?member dc:subject [ skos:broader [ skos:broader Category:NAME-OF-CATEGORY ] ] .
    } union { ?member dc:subject [ skos:broader [ skos:broader [ skos:broader Category:NAME-OF-CATEGORY ] ] ] . }}
```

[21] http://www.whitehouse.gov/about/first-ladies/michelleobama.

[22] We are perfectly aware of the fact that different categories could have been selected, leading to significantly different results. Here we just want to highlight a promising path, which has to be followed starting from the definition of a sound (e.g., statistically or otherwise empirically grounded) methodology.

We then associated each topic to one or more of the nine high-level categories (notice that one topic may fit in two or more categories and that some categories may even be sub-categories of another one, e.g., Gender equality is a second level sub-category of Social issues).

Table 3 shows that these nine categories encompassed almost 75% of the topics.

We then routinely tested the use of less categories, showing that four categories selected to maximize coverage still encompass more than 60% of the topics. (Because of the significant overlaps between, e.g., Education and Nutrition or Government of the United States and Barack Obama, we did not simply eliminate the smallest categories: for instance, Arts included much less topics than Nutrition, however it did not overlap significantly with other categories and it was therefore kept amongst the final four categories with the highest coverage.)

Table 3: Wikipedia categories addressed in the White House speeches with a focus on the First Lady

Wikipedia Category	**First Lady sp. 9 categories**	**First Lady sp. 4 categories**	**All speeches 9 categories**
Government of the United States	26.68%	26.68%	32.68%
Education	21.64%	21.64%	5.40%
Nutrition	19.96%	excluded	1.61%
Social issues	14.71%	14.71%	28.38%
Barack Obama	13.66%	excluded	14.00%
Health care	11.34%	excluded	7.57%
Arts	8.61%	8.61%	1.11%
Military personnel	3.99%	excluded	3.16%
Gender equality	2.73%	excluded	0.84%
Others (unclassified topics)	25.63%	37.61%	38.34%

Conclusions and Future Works

This paper shows the effectiveness of a DBpedia/Wikipedia-based approach for document classification in the e-government field, showing as use case the analysis of speech transcripts of the White House political members.

The ability for citizens to easily retrieve the content of political speeches and decisions is a crucial factor in e-participation. This is not guaranteed by a traditional keywords search, as in most of the public administration websites. The White House online portal, for example, offers a textual-search interface and minimal categories, which only allow users to find keywords in the video's title. By typing the word "education", for instance, users get as result only videos that have the word education in their title. But all the terms that belong to the semantic area of education (such as "university", "school", "students", "teachers", "curriculum", etc.) are omitted. When documents

are semantically classified through DBpedia URIs, instead, all synonyms, hypernyms and hyponyms of lemmas are traced to the same concept (in this example, all the listed words are gathered under the entity http://dbpedia.org/resource/Education), making user search more effective. Besides, leveraging Wikipedia categories would allow to go even a step further, taking advantage of the links between concepts as designed by the Wikipedia community.

The main future development of our project is therefore to build around the scraping / classification module a software layer of semantic search and navigation of the contents. There are many advantages of using a knowledge base to increase the "intelligence" of a document search engine: semantic indexing, faceted browsing, graphical conceptual navigation, search recommendation, related concepts, integration with other Linked Open Data repositories on the Web. This kind of user experience certainly increases the citizens' awareness to the issues discussed by politicians in their country.

The entire TellMeFirst code, including the algorithm which computes document similarity for assigning a classification, is open source. In future developments, one or more online communities can customize and improve the default classification algorithm according to their goals of political participation.

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About the Authors

Giuseppe Futia

Giuseppe Futia is a Research Fellow and the Communication Manager at the Nexa Center for Internet & Society at Politecnico di Torino, since February 2011. He holds a Master Degree in Media Engineering from Politecnico di Torino. Giuseppe has expertise in data analysis and data visualization, useful to both sustain the outreach of some of the Nexa projects, and to support research in the field of Open Data.

Federico Cairo

Federico Cairo, Ph.D., is a project manager at Expert System SpA and a fellow at the Nexa Center for Internet & Society. His main research interests are Linked Data technologies and natural language processing. He is the technical lead of TellMeFirst, an open-source software for classifying and enriching textual documents via Linked Open Data.

Federico Morando

Federico Morando is an economist, with interdisciplinary research interests at the intersection between law, economics and technology. He holds a Ph.D. in Institutions, Economics and Law from the Univ. of Turin and Ghent. He is the Director of Research and Policy of the Nexa Center for Internet & Society. From Dec. 2012, he leads the Creative Commons Italy project.

Luca Leschiutta

Luca Leschiutta is the IT manager of the Nexa Center for Internet & Society and of the Human Genetics Foundation of Torino. He has an MSE in Electronic and a Ph.D. in Information Technology pursued at the Internet Media Group of the Politecnico di Torino. He also taught programming courses at the a.m. Politecnico. In the past he worked as a reliability engineer at Alenia Spazio in the ISS project.

Rethinking Information Visualization for the People

Isotype Visualizations as a Chance for Participation & Civic Education

Eva Mayr*, Günther Schreder**

*Danube University Krems, Dr. Karl Dorrek Str. 30, 3500 Krems, Austria, eva.mayr@donau-uni.ac.at,
**Danube University Krems, Dr. Karl Dorrek Str. 30, 3500 Krems, Austria guenther.schreder@donau-uni.ac.at

Abstract: *In the 1920s, Otto Neurath proposed a method for pictorial statistics called "Isotype". This method is reviewed with respect to its relevance and potential for information visualisation nowadays. The Isotype pictorial statistics were intended to educate the broad public and enable them to participate in society. Though some aspects are out-dated, the basic approach still has potential for information visualization. Possible new media applications are presented and their impact for civic education and participation is discussed.*

Keywords: *Isotype, Neurath, information design, information visualization, mass communication*

Introduction

Information visualizations make "use of computer-supported interactive visual representations of abstract data to amplify cognition" and to enable their users to gain insights (Card, MacKinlay, & Shneiderman, 1999, p. 637). In civic education, we can even go one step further: information visualizations should not only inform people, but also motivate them to take action.

This idea is not new. To enable all citizens to participate in society and politics was a central aim of Otto Neurath. In the 1920s, he proposed the use of pictorial statistics ("Isotype") to communicate facts on demographic development, environmental issues and economics to the broad public – independent of their level of education. He was convinced that only civic education would allow citizens to really participate in society.

In this paper we discuss Otto Neurath's Isotype method and evaluate its relevance for information visualization: What are its special features? Where is it still used and where not? What are its potentials for interactive information visualization? And most important, can they still assist civic education and participation?

Otto Neurath – Visionary Thinker & All-Round Scientist

Otto Neurath (1882-1945)[1] was a member of the Vienna Circle and engaged in many different fields of study, arguing for a logical positivist perspective and the unity of science. But he did not live in an ivory tower of scientific discourse; rather, he strived to make data accessible for the broad public. In times, where most people only received basic education, he installed exhibitions (e.g., in the Vienna city hall) on social and economic topics. His affiliation with socialist politics colored his work as the head of the Austrian Museum for Social and Economic Affairs (Österreichisches Gesellschafts- und Wirtschaftsmuseum), as well as his interpretation of statistics as a tool for educational purposes: „Statistics is a tool of proletarian battle, statistics is a necessary element of the socialist system, statistics is a delight for the international proletariat struggling with the ruling classes"[2] (O. Neurath, 1927/1994, p. 297).

Among his closest collaborators, his third wife Marie Neurath (1898-1986) and graphic artist Gerd Arntz (1900-1988) played a very important role in the conceptualization of the so-called "Vienna Method of pictorial statistics" which became known as the Isotype system. Originally, their concept was not only intended as a method to illustrate information. Rather, Otto Neurath and his team followed a utopian vision of a pictorial international language analogous to artificial languages of the time, like Esperanto (O. Neurath, 1936). Still, nearly all pictures they produced rely partially on written language for titles and precise definition of the meaning of certain icons.

Isotype

The acronym Isotype stands for International System Of TYpographic Picture Education: The method was described as a culture-free[3], systematic approch, in which typographic pictures are used to teach relevant statistical facts about social, economic and political topics. The word Isotype is derived from Greek and hints at one of the main characteristics, that is, using always the same symbol to display the same element (M. Neurath, 1974, p. 127).

The main idea was to communicate statistical data from science to the broad public in an intuitive pictorial way. A set of rules exist for a consistent design of pictorial statistics (Hartmann, 2006): Icons should be (1) consistently used for the same concept, (2) of the same size, and (3) should bear a high resemblance to the object they represent ("speaking symbols", O. Neurath, 1926/2006). Like in a verbal language, the icons can be combined with attributes (e.g. fabrique worker vs. worker in figure 1, right). In a picture the icons are repeated according to their frequency from left to right according to reading direction (Neurath, 1936). The icons are countable and each stands for a concrete number of this concepts. Icons can be compared across years or countries on a vertical axis (cp. figure 1, left). Additionally, correlations can be shown by combining two different symbols (cp. figure 1, right).

[1] Details on O. Neurath´s biography and his scientific worldview can be found in P. Neurath & Nemeth (1994) or Hartmann (2006).

[2] Translated by the authors: „Statistik ist Werkzeug des proletarischen Kampfes, Statistik ist wesentlicher Bestandteil der sozialistischen Ordnung, Statistik ist Freude für das mit den herrschenden Klassen hart ringende internationale Proletariat"

[3] Though in later years, Marie Neurath (1974) critized their own method for being influenced by Western culture.

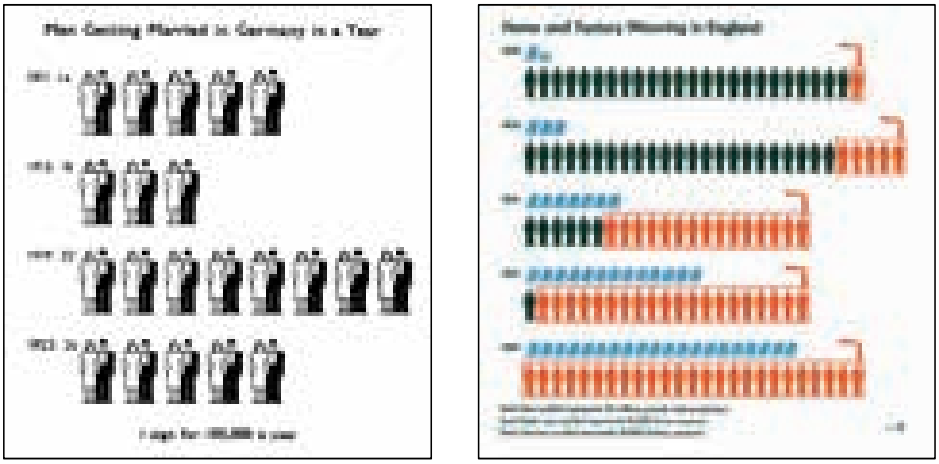

Figure 1: An early (left, O. Neurath, 1936, p. 77) and later (right, O. Neurath, 1939, p. 53) example of Isotype pictorial statistics

The use of different colors was intended to support the differentiation between identical symbols with different attributes (e.g. country of origin). Preference was given to strong, pure colors, but the rules on the choice of colors for specific meanings are neither strict nor consistent. In some examples given by Otto Neurath (1936), they seem to be assigned in a rather arbitrary way (e.g., there is no apparent reason to associate the clothing industry with blue as in figure 1).

Isotype icons can also be combined with other types of graphics, like maps, to correlate frequency data with information on location, history, duration, density, and so on (O. Neurath, 1936, figure 2).

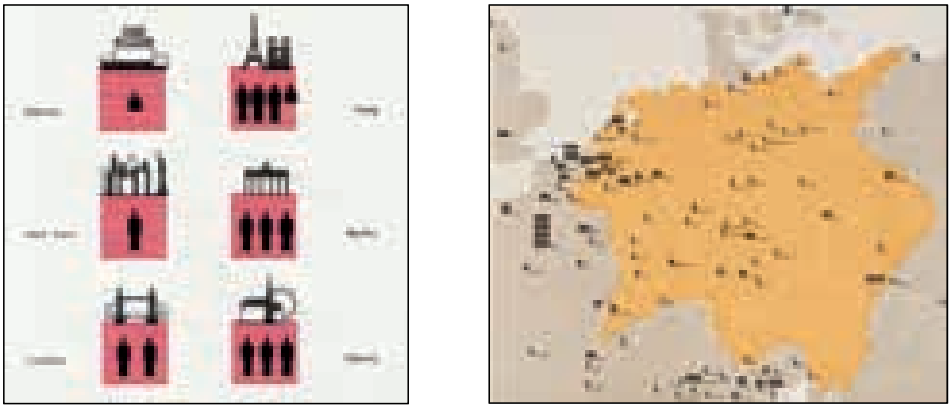

Figure 2: Examples of pictorial statistics displaying density (left, O. Neurath, 1936, p. 89) and geographical distribution (right, O. Neurath, 1930, p. 15)

The most important fact from an Isotype picture should be perceived at first sight. Some more details can be seen at the second and third sight, but no further details should be contained in a good Isotype picture (O. Neurath, 1936). Otto Neurath argued that the numbers should not be

given in detail, as he was convinced that it is better to forget the detailled numbers, but to remember the whole picture instead.

Though the resulting pictures seem to be very simple, constructing them is not necessarily trivial. At the time of its invention, designing an Isotype picture required close cooperation in a team of scientists and designers. A special role was given to the "transformer", who has to translate the selected statistics in a way suitable to communicate the intended message and acoording to the developed set of rules (M. Neurath & Kinross, 2009).

The use of hand-made paper silhouettes had an important impact on the aesthetics and possibilities of Isotype. Due to the chosen technique, pictorial details are vastly reduced, which facilitated reproduction, but also influenced the question of how to make each icon unique and easy to recognize. It is not surprising that the resulting pictures draw on clichès and archetypes of the time, concerning social roles, ethnicities, and so on (see figure 3). At the same time, the simplicity later influenced the development of pictogram design.

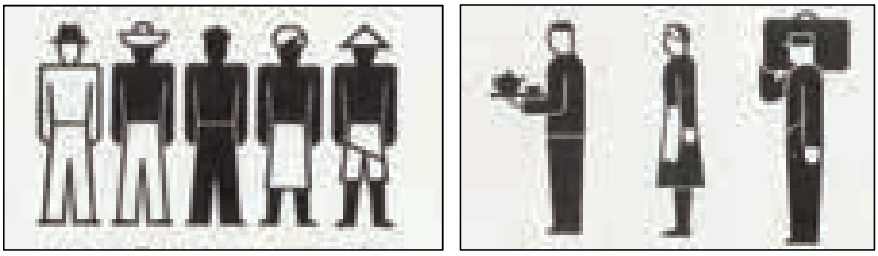

Figure 3: Icons representing different ethnic groups (left, O. Neurath, 1936, p. 47) and different types of servants (right, O. Neurath, 1936, p. 34)

Isotype Then and Now

An important principle in the Isotype method was to use the same icons consistently; a collection of more than 2000 symbols was generated (Hartmann, 2006). However, a frequent critique of Isotype is that many of the symbols are old fashioned and outdated (Holmes, 2001; Medosch, 2006; Rehkämper, 2011). As Otto Neurath stated himself (1936, p. 40): "We are not able to take over the old signs as they are. Adjustments have to be made in relation to the forms of today and tomorrow."

Over the years, the Isotype method was influential in the fields of information design (e.g., the Olympia pictograms by Otl Aicher, see figure 4a) and information visualization (Holmes, 2001). Nowadays, pictograms inspired by Otto Neurath's and Gerd Arntz's efforts are widely spread (Mijksenaar, 1997). Most of us are familiar with many of the "graphical symbols for use on public information signs" (ISO 7001, see figure 4b). Pictograms also became a part of popular culture, they are used both for their intended purpose and for entertainment (as in the case of newly created superhero-icons, fanart, etc., see figure 4c). Initiatives like the Noun Project offer large databases of icons by different artists and designers that users can access to create their own graphics for different means, like information graphics or graphical user interfaces (see figure 4d).

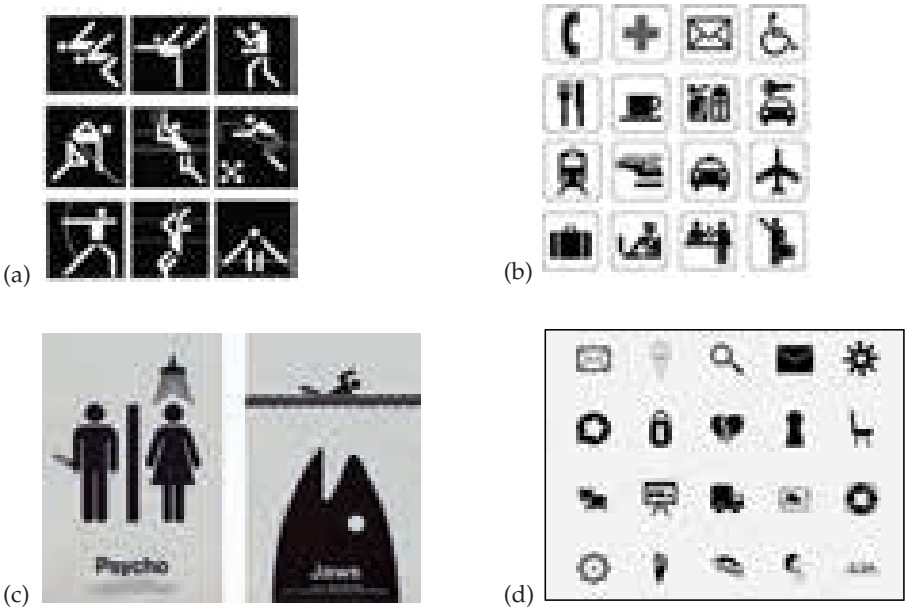

Figure 4: Information design influenced by Isotype: (a) Olympia 1972 pictograms by Otl Aicher, (b) ISO 7001 pictograms, (c) Film posters by Viktor Hertz, and (d) Examples from the Noun Project[4]

Information graphics in contemporary mass media sometimes still show rudimentary similarities to the Isotype system (Jansen, 2009). In many cases, their use is either restricted to comparisons of quantities, or transformed into a means to demonstrate the fact that large numbers of a certain class of objects are involved (see figure 5). Both variants do not build on the more complex rules of Isotype, they only make use of pictorial icons. In spite of their aesthetic parallels, these graphics cannot be regarded as modern examples of Isotype pictorial statistics.

Figure 5: Examples of Isotype-like graphics for mass media[5]

[4] Otl Aicher: http://design20.eu/design20-blog/2012/08/design-olympia-72-otl-aicher
ISO 7001: http://wayfindinguk.wordpress.com/page/3/
Film Posters: http://www.onelargeprawn.co.za/2011/05/20/pictogram-movie-posters/
Noun Project: http://www.thenounproject.com/

[5] left: http://www.theguardian.com/world/datablog/interactive/2013/apr/09/north-korea-south-korea-interactive

Evaluating the Isotype Approach

What constitutes a good visualization of statistical data is a matter of ongoing debate. Depending on the evaluator's point of view, different answers to this question are possible:

From a *communication* view, Stikeleather (2013, April) names three elements that make a data visualization successful: (1) It understands its audience, (2) it sets up a clear framework, and (3) it tells a story. (1) Otto Neurath and his colleagues claimed that the icons used were often evaluated during the development of their method to ensure that they could be understood easily and that they communicated the intended message (M. Neurath, 1974; O. Neurath, 1936). Unfortunately, results of these evaluations were not reported and are consequently lost. Otto Neurath was concerned with the audience of the generated pictures from the very beginning; the popularity of his exhibitions in the Vienna city hall indicate that he indeed managed to reach his audience. (2) The framework of the Isotype method is clearly defined. Most elements can be understood intuitively without further prior knowledge. And the transformer has to make sure that the picture adheres to the framework. (3) Isotype pictures are constructed with the aim of transporting a certain message. The icons can easily be perceived as active agents of the development shown in the picture, for example, over time. This narrative character also influences cognitive processing, as a narrative mode of thought is, for example, also associated with better comprehension and better retention of the content (Glaser, Garsoffsky, & Schwan, 2009). Storytelling is also a new trend in information visualization to offer guidance for interpreting data (Kosara & Mackinlay, 2013). Interfaces with narrative elements that structure the interaction process and guide the user through it, also reduce barriers for users (Schreder et al., 2011).

From the view of *cognitive processing*, Cleveland (1994) compared different forms of statistical graphs and argues „a graphical method is successful only if the decoding process is effective. Informed decisions about how to encode data can be achieved only through an understanding of the visual decoding process, which is called *graphical perception*" (p. 20). Although Cleveland did not include Isotype in his studies, an important argument in favor of Isotype is how humans perceive (and consequently cognitively process) pictorial icons. According to Otto Neurath (1936), „reading a picture language is like making observations with the eye in everyday experience: […] the man has two legs; the picture-sign has two legs; but the word-sign 'man' has not two legs" (p. 20). If the picture matches an existing mental representation, cognitive load for processing this picture is low (Rehkämper, 2011, p. 1). Despite being easy to process, Isotype is said to activate deeper *levels of processing*[6]: Recipients are more motivated to engage in active reception and free opinion formation (Hartmann, 2006). Therefore, it can be argued that Isotype is especially valueable for civic education, as it supports reflective thinking, reasoning, and discussion, rather than only communicating facts (Coy, 2006). However, to our knowledge the positive effect on depth of processing was not tested empirically until now.

In spite of these advantages, Isotype played no prominent role in information visualization during the last decades. There are some possible explanations why this might have been the case:

(1) Results from cognitive psychology could be a cause for the decline of Isotype (Jansen, 2009): In the 1980s, William S. Cleveland conducted seminal experiments on the comprehensibility of

right: http://arcadenw.org/article/journalistic-visualization-a-year-in-iraq

[6] see e.g., Tversky & Kahneman (1983) for further information on depth of processing

different graph types. His results support some rules of the Isotype method (encoding of colours, partially pattern recognition), but not all. These results might have given preference to other forms of data presentation. However, a newer experimental study shows that an Isotype-like graph is superior to Venn diagrams in laypersons' comprehension of Bayesian statistics (Brase, 2008[7]).

(2) Another explanation are political and historical reasons: While pictograms were very successful and often replaced written information in public space, Otto Neurath's educational impetus and his utopian views on emancipation of the working class through education lost their importance. Due to Otto Neurath's association with the Soviet-regime (he worked in Moscow and in the Munich Soviet Republic) the Isotype method was maybe refused during the Cold War (Jansen, 2009). On the other hand, Otto Neurath's student Rudolph Modley successfully built upon his teacher's method when he founded his companies Glyph Inc. and Pictorial Statistics Inc. which were employed by the US government (Ihara, 2009). Nevertheless, according to Yann and Loic (2010) pictorials statistics based on Neurath and Modley were abandoned by social scientists in the USA as they were used in the propaganda machinery of the Roosevelt administration.

(3) To a contemporary viewer, Isotype graphics might look crowded and outdated due to aesthetic paradigms of design from the second half of the 20th century. For example, Tufte (1983) argued that the data:ink ratio should be high for graphs of high quality, but it is very low with Isotype. „What is needed nowadays is an adequate transformation from data to pictorial statistics with a maximum data: ink ratio" (Jansen, 2009, p. 237). However, in their review on graph comprehension, Friel, Curcio, and Bright (2001, p. 134) criticize Tufte's data:ink rule as not empirically valid. In contrast, additional ink was found helpful, if it eases perception.

(4) Otto Neurath himself was convinced that people who received a higher education are more verbally oriented than people who completed only basic levels of education; therefore, Isotype is better suited for people with low levels of education (O. Neurath, 1933/1994). If this assumption is correct, policy makers and researchers might feel drawn to styles of information design that reflect their preferences for a more verbally oriented approach.

(5) Excel did not implement Isotype-like graphs (Rehkämper, 2011). Abstract graphs are independent from their content and can easily be generated automatically. The absence of pictograms from common software not only leads to researchers' and designers' familiarity with other types of graphs, but might lead them to assume that frequently used types of graphs are easier to process, more relevant in society, and therefore of higher importance. It remains a challenge to place Isotype within existing visualization taxonomies (like Chi, 2000, or Tory & Möller, 2004) or extend it to other forms of information visualization.

(6) Isotype has to be learned: Though parts of the Isotype language can be intuitively understood (highly pictorial icons), others have to be learnt (visual grammar). Otto Neurath argued that this visual literacy should be acquired already in schools and, therefore, he invested efforts into implementing Isotype in the school system (cp. M. Neurath & Kinross, 2009). Due to the likeness of the objects with the depicted symbols and their intuitive arrangement (according to reading direction or in analogy to well-known graphs like maps), it is relatively easy to learn how to "read" Isotype, but it is more difficult to learn how to generate such pictures. The documentations of Otto and Marie Neurath (M. Neurath, 1974; M. Neurath & Kinross, 2009; O. Neurath, 1936) provide insight into the Isotype method, but the central process of transforming,

[7] It is interesting to note, that this work (and all articles which built on this publication) do not refer to Isotype as source for these graphs.

that is, "analysing, selecting, ordering, and then making visual some information, data, ideas, implications" (M. Neurath & Kinross, 2009, p. 6), is not made very clear in those publications. Rather, it seems to be a very intuitive process, which was more like tacit knowledge to Otto and Marie Neurath (M. Neurath & Kinross, 2009). It remains a challenge to extract this process knowledge from the examples described in more detail and read between the lines and pictures.

(7) Müller and Reautschnig (2011) note another possible reason for the decline of Isotype: A lot of contemporary survey or panel items have no adequate representation in Isotype. As examples they mention social capital, trust in institutions, values, expectations, life satisfaction, or similar constructs. The Isotype system focused on materialistic aspects of history and society and thus on countable entities – demographics, agricultural commodities, manufacturing, trade, and transport were the primary fields of interest of the Museum of society and economy in Vienna.

Outlook - Isotype 2.0

In the context of participation and civic education, some possible characteristics of information visualization are especially desirable: Easy access for a broad public, no (or little) requirements concerning educational level or prior knowledge, and a motivation for active reception; that is, not only perceiving the information, but reflecting it and making use of it. The Vienna Method and Isotype already include these principles, so we can conclude that „the Isotype-way of representing statistical facts heads in the right direction and that we should rediscover its basic ideas" (Rehkämper, 2011, p. 3). Nevertheless, the problems addressed on the previous pages need to be considered as well as the possibilities available thanks to modern technology.

First, the rules implicit to Isotype have to be extracted from the material available. Though some rules were described in Otto and Marie Neurath's publications, the more implicit knowledge of transforming data into Isotype pictures (M. Neurath & Kinross, 2009) has to be made explicit.

In a second step, these rules should be evaluated empirically. As discussed earlier, experimental results from cognitive psychology confirm only some of the rules defined in the Isotype system. However, no systematic evaluation of Isotype's underlying set of rules was undertaken until now. The newer studies on Bayesian statistics (following on Brase, 2008) strengthen the potential of Isotype in communicating scientific data to the public. Therefore, a series of experiments should be undertaken to better understand which forms of Isotype pictures work best in generating insights. In addition, the assumed cognitive processes (e.g., deeper processing, fully understanding a picture with three glances) have to be empirically tested – with a sample representative for the broad public.

In a third step, modern visual analogies of Isotype icons and pictures should be generated. New pictorial statistics based on Isotype should no longer leave the viewer with an outdated or embarrassing feeling. Figure 6 provides an example of an Isotype picture on the use of different means of transport (left) and a modern, highly aesthetic information visualization of a similar type (right). We believe that due to the current developments in electronic communication like smartphones and tablets, "reading" and understanding pictograms – especially if they are pictorial – is no longer a task that has to be learned. In addition, "neutral" icons (like dots) are needed to display more abstract concepts (as criticized by Müller & Reautschnig, 2011). A remaining question is whether the visual grammar of pictorial statistics can be understood intuitively or has to be learned. This is especially relevant for people with lower levels of education.

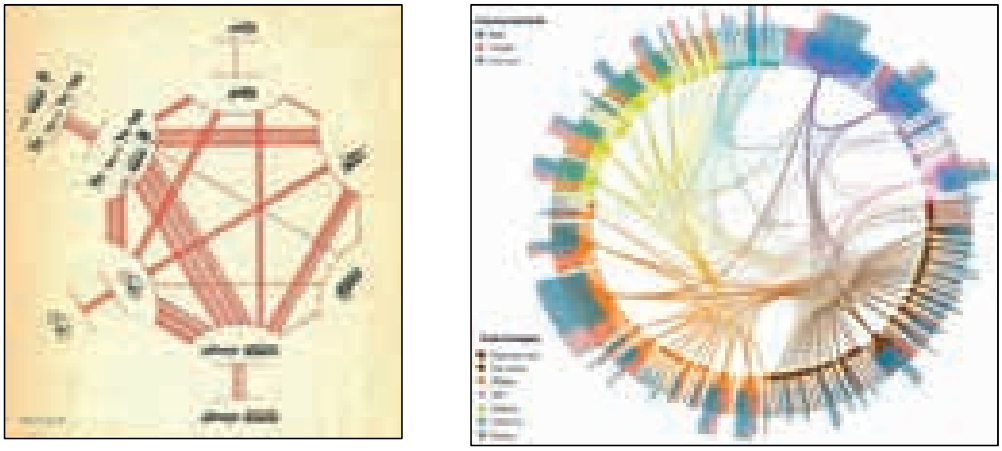

Figure 6: Isotype visualization (Centraal bureau voor de statistiek, 1947) and a modern analogy (Allsallakh, 2009)

In a fourth step, we can develop new media applications based on Isotype: "The internet provides an unprecedented opportunity to bring these pictorial statistics, possibly in animated form, within everyone's reach. In this way, the 'E' (for education) in Isotype could regain its former status" (Jansen, 2009, p. 239). Due to the repeated use of the same symbols, Isotype saves memory and bandwidth resources (Medosch, 2006) and are, therefore, well suited for web applications. Three different levels of Isotype pictures for the web can be differentiated (Zambrano & Engelhardt, 2008) - presenting, interacting, and generating Isotype:

In *data journalism*, Isotype pictures can be used to tell stories by using different forms of narrative guidance (Segel & Heer, 2010). On the web (in contrast to print versions) the pictures can be frequently updated with fresh data (Medosch, 2006). *Interactive information visualizations* like Gapminder[8] present statistical information to the broad public and enable exploration of these data (Zambrano & Engelhardt, 2008). The Gapminder project and Isotype share a common vision to animate and inspire people to actively engage in processing and interpreting the collected statistical data and to draw their own conclusions. "While probably neither Neurath nor Rosling have much expertise regarding the cognitive aspects of diagram use" (Zambrano & Engelhardt, 2008, p. 287), they chose a visual way of presenting the data – and were both successful with this approach. While Isotype pictures where designed for reception of the data only (due to the time they come from), in the Gapminder project users can select the data and the display themselves, interact with it, and view developments over time. Such an interactive application allows users, whose interest was raised by a pictorial statistics to dig deeper into the data and satisfy their interest.

A next step from interacting with the data would be to enable users to generate visualizations themselves and present them for others (Zambrano & Engelhardt, 2008). Such an "*Isotype 2.0*" web application would include templates for frequent pictorial statistics like correlations, comparisons, or temporal developments. The users could select icons to resemble the concepts in their data,

[8] Gapminder is an interactive web tool from Rosling, in which the WHO data can be explored by the user: http://www.gapminder.org/world/

visualization (and maybe also interaction) templates and thereby could generate an Isotype-based picture with a view clicks. An open question is, whether the acts of transforming can be identified in sufficient detail to automate these processes (e.g., M. Neurath & Kinross, 2009). A more realistic possibility is that different visualizations are generated and the user selects and adapts the most appropriate one.

A first field to implement such an Isotype 2.0 application could be data journalism: Data journalists search for relevant data, analyze it, visualize it, and use them to tell stories (Baack, 2013). Big newspapers like New York Times or The Guardian started to offer interactive information visualizations for important topics. But such visualizations exist mostly for topics of enduring interest, as developing them requires a lot of effort and programming time. An Isotype 2.0 application which allows developing such interactive information visualizations in shorter time frames but still results in attractive interactive pictorial statistics would be of high value to data journalists.

Such an Isotype 2.0 approach empowers the public threefold: (1) It informs people on relevant social, environmental, or political topics. (2) Information enables them to actively participate in society and politics. (3) They can use such a web tool again to inform others and help them to become active citizens themselves. Such a development is at the core of Otto Neurath's genuine conception of Isotype. We propose to re-discover his ideas, to use his method within a modern framework and to let Isotype pictures captivate the public again.

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About the Authors

Eva Mayr

Eva Mayr graduated in Psychology at Vienna University, Austria in 2004 and completed her doctorate in Applied Cognitive and Media Psychology at the University of Tuebingen, Germany in 2009. From 2002 to 2005 she worked at the Institute of Psychology in Vienna. Since 2008, she has been a research assistant in the Department of Knowledge and Communication Management at Danube University Krems (Austria). Her research interests focus on how new media technologies can support cognitive processing and informal learning.

Günther Schreder

Günther Schreder graduated in Psychology in 2006 at Vienna University, Austria. He worked as a freelance scientist for the Austrian Road Safety Board (2003-2007) and the Danube University Krems (2008-2011). He was a teaching assistant at the Institute of Psychology, Vienna (2005-2007). Since 2011 he is a research associate in the Department of Knowledge and Communication Management at Danube University Krems. His research interests and teaching activities include HCI, participatory information design and narrative design.

The Arts of the Possible Information Visualization in the Field of Politics

Florian Windhager, Michael Smuc

Department for Knowledge and Communication Management, Danube University Krems, Dr.-Karl-Dorrek-Str. 30, A-3500 Krems, Austria, florian.windhager@donau-uni.ac.at michael.smuc@donau-uni.ac.at

Abstract: *Information visualization offers multiple methods to make sense of complex data by graphic representations. Complementing verbal representations, they show rich potential to support cognition and communication in numerous areas of application, including the field of political communication and education. Yet - despite a strong increase in options with regard to accessibility of data, tools, and methods - no conceptual framework exists which would allow to train future citizens with regard to visual vocabularies and their complex recombinations up to now. Against this background, we want to discuss the layout principles of existing visualization methods and align them within a coherent framework to allow for a multimodal navigation of modern news and information spaces. Finally, we consider ways and means to overcome well-known comprehension and usability barriers of visual communication in the political data realm.*

Keywords: *Information visualization, politics, public communication, methods, visual literacy*

Introduction

As genuinely collaborative endeavors, modern societies are thriving through sharing and trading their distributed problem solving skills and operations – as long as they can keep collaboration from turning into combat and commotion. While ensuring conflict management by the enforcement of laws, the means to develop these rules are assigned to the field of *politics*. To control associated risks of abuse, democracies expect their members to frequently evaluate and restaff their political institutions – and to do so at least vaguely informed about their aims and operations. As for this knowledge transfer, whole professions – from teachers and journalists to spokespersons and lobbyists – are working between the field of politics and 'the people', constantly challenged by both: a non-trivial subject matter on the one side – and a unknown diversity of interests, prior knowledge, attention and motivations on the other side. Considering such a scenario to call for the distinct development and constant refinement of existing communication methods, we want to contribute to this traditional topic from a rather recent point of view.

As opposed to the traditional means of language-based communication, *information visualization* (InfoVis) plays an increasing role in media, science and education. Accompanying its rising relevance is the consolidation of its fields of practice by academic reflections. From there, it defines

itself as the "study of how to effectively present information visually" (↗Usability first), or more practically focused on modern media: "The use of computer-supported, interactive, visual representations of abstract data to amplify cognition" (Card, Mackinlay, & Shneiderman, 1999, p.8). Thus promising "to help us speed our understanding and action in a world of increasing information volumes" (Card 2008, p.542), it aims to provide insights into complex subject matters for experts, as well as "for the people" (Danziger, 2008).

Now especially this "standard rationale" of the developing field (van Wijk, 2005) – contending that most of its emerging methods show advanced potential for a broad range of real-world applications – makes it an interesting one when it comes to the subject matter of politics, which has been considered as a topic concerning "all of us", ever since reflection on the interdependencies of private and public life emerged in ancient times. As a "visual language" it already supports the numerous communication efforts of individual mediators (like teachers, researchers, or journalists) and institutions (governments, parties, interest groups, news media, etc.). But like all traditional, language-based approaches to communication, information visualization requires its own attention and training as a cultural technique. As such it enables the skillful encoding and decoding of basic facts on the sender and receiver side, and allows for the deeper elaboration of visual representations in the numerous specialized fields of societal practice.

The following pages are motivated by the fact, that despite increasing amounts of images, *visual literacy,* as a prerequisite for qualified production and interpretation (cf. Felten, 2008), remains a rare form of conscious knowledge, predominantly resulting from individual efforts of reflection or further education only. This holds true on a general level, but even more so for selected application areas like the visual display of political knowledge and information. While various methods are frequently used to illustrate various political facts and figures, broader reflections on their theoretical implications and practical optimization are missing. Neither do existing political textbooks reflect on their visual vocabularies, nor do they leverage possible synergies within larger visual analytical frameworks. As such, representations of politics will continue to encode their lion's share of information as plain text or scientific prose, necessitating their readers to deal with heightened amounts of cognitive load.[1]

Far from claiming to be a systematic elaboration, the following pages are proposing a first scaffold to organize the discussion and practice of political information visualization. To do so, chapter 2 outlines a generic setup, within which any visual communication has to take place. Chapter 3 introduces basic methods of political information visualization – and arranges them in a coherent didactical framework. While this section aims on overcoming visual communication barriers by discussing essential layouts and their conceptual interconnections, chapter 4 discusses further strategies to tackle common obstacles between senders and "the people", reframed as an audience of non-experts, predominantly receiving information in casual contexts.

[1] Against this background the question seems legitimate, to which extent the much-worried phenomenon of *political apathy* might have been co-produced by the equally worrisome phenomenon of poor information design. I.e. not only by the lack of interest on the receiver side, but also by the lack of graphical representations, which would allow to enrich and unfold the essential concepts and discussions of political talking and writing heads on the canvas of a second (perceptual and cognitve) modality.

A Visual Communication Model

As with the use of language in general: communication by visual means has to be located and conceptually analyzed as some(thing) happening between at least two cognizing agents. Despite the potential of communication models to spark far-reaching conceptual discussions (cf. Risku, Mayr, Windhager, & Smuc, 2011) we want to make use of such an extended model to reconstruct the focal points of existing discussions (see Fig. 1). With regard to the common sender-(message)-receiver-axis we call anyone giving form to data "information designer" (A) and put "the public" (B) as heterogeneous group of recipients on the other side. This axis has to be accompanied with the components of a *subject matter*, providing the topic of communication; corresponding *data* to be brought into shape; *visualization methods* to do so in a standardized way, aiming for a specific public (B) with specific *goals*. To succesfully pass this chain (providing B with insights into the subject matter), various barriers have to be dealt with – especially with regard to an intended non-expert audience. Together with strategies to overcome them, they will be discussed further down.

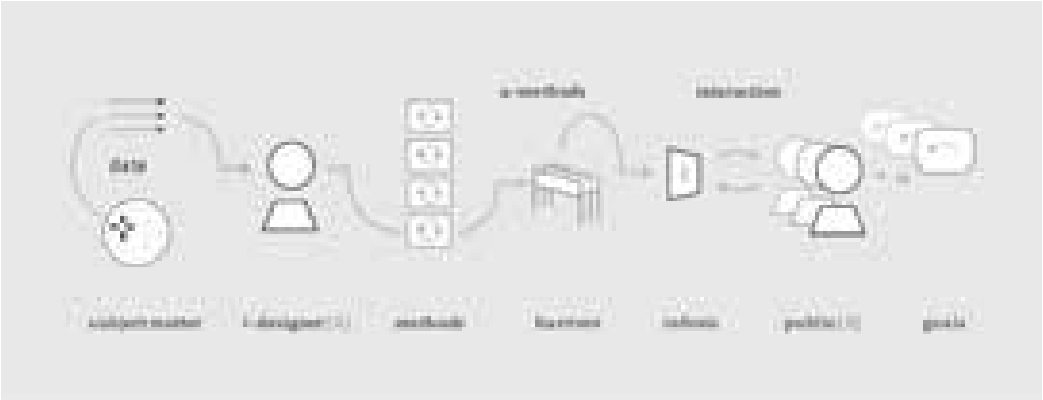

Figure 1: Visual communication model

Against this multi-focus background, the following section elaborates on a quite basic challenge: Given the field of political topics and data – which methods of visualization can communicators (A) make use of – and should receivers (B) be able to make sense of? Albeit being in the middle of the communication model, visualization methods literally determine which shapes are given to a subject matter, thus co-producing the original object by predefining the looks of its image. From the communicator's point of view, substantial design decisions have to be taken here, which again require certain literacy on the receiver's side, to be viably interpreted and recontextualized. While information visualization as a research field focuses on advancing this arsenal of visualization methods (optimizing existing and developing new ones), the application in public communication (e.g. in journalism or education, where methods have to be applied or taught) is more concerned with challenges of readability, accessibility and the comprehension of basic operating principles. In such a context, amongst the first things to know is: What does the InfoVis methods toolkit offer – and how does it work? What are the potentials and limits of different types of imaging procedures? And how do the multiple results, produced by single methods as mosaic pieces of "the Political" relate to each other? Can we relocate them within a

coherent didactical framework, so that they do not only illuminate various bits and pieces, but also start to unfold visual synergies and shed light on each other?

Political Information Visualization Methods

With regard to the communication model (cf. Fig. 1) the traditional way for any information designer to choose a suitable visualization method is to look at the left (subject matter and data), and to the right (receiver and their tasks) and select one or more of the available methods for implementation. But what if a field has no consolidated toolbox yet, but rather borrows its methods from neighboring fields? In such a case, the conceptual exploration and documentation of available methods has to serve as a starting point for discussion. The subsequent sections will do so by rethinking, which methods could fill the space between colored maps and charts of data visualization, which readers of political coverage are used to encounter. For each method the question of how it works and which insights it offers will be tackled. But not least, we will touch upon the question of how the different methods conceptually connect and translate into each other, so that the (re-)combination of their results could technically build up the whole theatre of politics in an extended, global scenery. As an overview, Figure 2 assembles the methods of physical maps, political maps, cartograms, bubble charts, networks, word clouds, statistical data visualization, dynamic visualization methods, and political infographics, which will be elaborated further down.

Figure 2: Overview of visualization methods for the political data realm

Physical and Political Maps

Since ancient times, *physical maps* serve as a venerable visualization method to support the cognition of political agents in the large. The method's operating *layout principle* rephrases as: "Draw a selected environment from above!". The *result* is a more user-friendly, down-scaled representation, showing the ground on which groups of individuals (from hordes to federations) are struggling for life, liberty, and the pursuit of happiness, including challenges which ask for some sort of social coordination (Figure 3, left). The *benefit* comes with seeing where resources,

risks, threats, chances for expansion, etc. are localized in relation to oneself, hence enabling navigation (planning, calculating, controlling, documenting, etc.) on not-yet-known ground. As such, a multitude of *examples* stretch from ancient times (Bagrov & Skelton, 2009) to the zoomable satellite eyes of present days (↗GoogleMaps).

Political maps go one step further with inscribing the (alleged) borderlines of political entities – from small cities (gr. *polis*) to empires – into the physical environment, and commonly use color or shading for further thematic differentiation (Figure 3, center). The *result* shows the shapes of political territories as sovereign segments of the sociosphere, enriched by additional information on selected variables of political relevance. The *benefits* of such chloropleth maps are possible insight into distributions of values, like spread of ressources, population densities, defense budgets, etc. *Examples* range from Le Monde diplomatique (2012) to ↗WorldFactbookDashboard.

Figure 3: Physical maps (left), political maps (center) and cartograms (right).

Cartograms

While physical and political maps preserve the shapes and relative sizes of territories, the *layout principle* of cartograms is the adaptation or distortion of areas according to a selected variable. In case of non-contiguous cartograms, the *results* roughly maintain the locations of political entities, but resolve their neat arrangement. One specifically interesting layout is provieded by Dorling Cartograms (Dorling, 2011), where territories are uniformly represented as circular areas, with their diameter depending on a selected variable (Figure 3, right). *Benefits*: By standardizing their shapes, cartograms allow a comparatistically enhanced view on political entities (e.g. every complex unit being a circle in Dorling cartograms) yet saliently show relevant differences with varying sizes. *Examples* by ↗NYTimes; ↗LATimes; ↗Mappingworlds.

Bubble Charts

With cartograms keeping political entities near their geographic coordinates, bubble charts (and later networks) lift them up, and re-arrange them according to new spatial layout principles, driven by selected data (thus crossing the border from scientific to information visualization). The *layout principle* of bubble charts hence rephrases as : "Erase the geographic grid and substitute it by a cartesic plane, where an entities' position on the x- and y-axis, as well as its size is provided by three of its intrinsic attributes!". Exemplarily, the x-axis could show income per person, the y-axis life expectancy, and the size number of citizens (cf. Figure 4, left hand side). *Benefits*: Similar to

scatter plots, bubble charts allow to visually analyze global distributions, to identify clusters, and to gain insights from single positions. *Examples*: ↗Gapminder, ↗WorldbankDataVisualizer.

Network Graphs

As opposed to bubble charts, network graphs (or node-link diagrams) arrange political entities according to selected empirical data about their interrelations. If a type of relation is chosen (from aggregated data on communication or conflict, to flows of trade, traffic or immigration), the *layout principle* is often provided by spring embedder algorithms, following the instructions of "Draw together nodes with strong relations, while putting less connected nodes apart!" *Benefits* of the resulting graphs are the appearance of data-driven topologies and relational clusters, and the possibility to localize single entities within. The newly emerging proximities and distances of various entities provide insights into the structure of the *social space*, created by economic or diplomatic relations of collaboration or conflict, i.e. by the flows of capital, information, emotions, people, or goods through transport and media systems. Figure 4 (center) illustrates this imaging procedure with international trade data (adapted from ↗Krempel&Plümper). Beneath the level of nations, network diagrams can visualize politically relevant constellations between institutions or organizations, down to the micro-level of the basic social tissue, woven of interpersonal relations. Aside from spring-embedder layouts, numerous alternate layouts methods can govern the arrangement of nodes and links. As such, organizational charts are focusing on the display of hierarchical relations or cause-effect-diagrams on the causal dynamics within political systems (cf. Figure 6). *Examples*: ↗Visualcomplexity, ↗Relationbrowser.

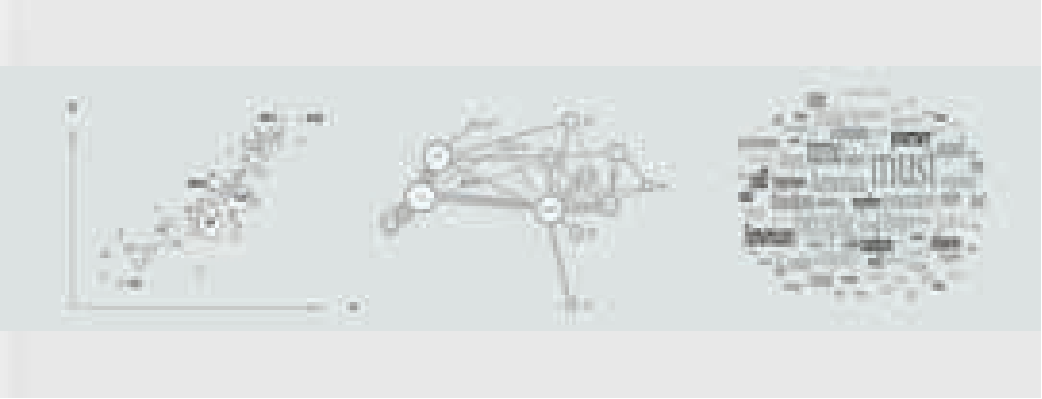

Figure 4: Bubble chart (left), network of international relations (center) and word cloud (right).

Furthermore, all different fields of a society could be considered as networks with specific functions (cf. Figure 5) and governments are nothing else but the attempt to build a managing network of networks as a sensible, cultural construct, operating between science and art.

Word Clouds

Networks graphs are commonly not paying attention to the *contents* flowing through their links; even while being aware that the very existence of social ties essentially depends on the

composition of these invisible streams of messages, like the verbal sequences of diplomatic letters, discussions, and political speeches. One method to visually analyze complex contents in a rather basic way is provided by *word clouds* (also tag cloud or weighted lists). Their *layout principle* reads: "Take the most important (key)words of any text or message and display their frequency of use by the size of font!" *Benefits*: Word clouds offer quick visual analyses of central themes, key issues, or foci of discussion (see Fig. 4, right). Furthermore, they are an accessible method bridging from the InfoVis realm – oftentimes depending on quantifiable (meta)data – to the pervasive realm of verbal representations, with their complex loads of semantics and intricate rhetorics, on which politics are usually depending on exclusively. *Examples*: ↗InauguralSpeeches, ↗Wordle.

Statistic Data Visualization Methods

Except for political maps, the most widespread visualization methods in the field of political communication are graphs to visualize statistical data. Adressed as a whole family, no singular *layout principle* can be condensed, yet the levels of visual literacy and documentation (how to interpret bar, pie or line charts, etc.) are amongst the highest (e.g. Few, 2004). *Benefits:* As a comprehensive toolkit, they help to visually analyze most diverse sorts of quantitative data, which are gathered or accumulated in any administrative apparatus. With modern political systems processing all their decisions (between directions, options, scenarios and the composition of their governing bodies) by the formation of majorities, it comes as no surprise, that diagrams to show distributions (pie or ring charts) or to precisely compare quantities (bar charts) are amongst the most widely spread when it comes to the coverage of public opinions and elections. Aside these usual suspects, a range of advanced methods (cf. radar chart, Fig. 5) is frequently used to gain insights into the complexities of socio-economic population data, to prepare, support and evaluate political decision making. *Examples*: ↗Visualizing, ↗UNdata, ↗GooglePublicData.

Figure 5: Radar charts, visualizing the OECD Better Life Index (↗Visualizing, left), different methods to display change over time (center), and a close up on a 2.5D-layout for time-oriented data (right).

Dynamic Visualization Methods

A challenge to all kinds of visualization methods so far is posed by time-oriented data about any short or long term dynamics of depicted constellations. Common solutions (see Figure 5, center) to

upgrade any given method to visualize temporal developments on static data carriers like paper are the *juxtaposition* of temporal snapshots, the *superimposition* of temporal layers (with different colors denoting time or traces denoting change), or the stacking of layers by *2.5-layouts* (Windhager, 2013). With switching from paper to screens – *animation* allows to display temporal change by the factual change of an image, and with making users part of the imaging procedure, *interactive information visualizations* foster the targeted comparison of differents points in time.

Political Infographics

As a sort of assembling meta-method, infographics allow for the synthesis of any visual and verbal representation to illustrate a selected subject matter. Their *layout principle* is just asking to "Draw things together!", thus creating mashups of images, diagrams, and texts. Exemplarily, they can shed light on the conceptual architectures of political entities like nation states (see Fig. 6). Due to their multi-layered complexity of activity areas (Fig. 6, left), these are necessitating their governing agencies and bodies of law to differentiate correspondingly and branch into multiple ministries and volumes. If populations are masses of actors, interwoven by different functional types of networks (like economy, science, transport, etc.), governments have to be visualized as networks of networks, which are collecting and re-assigning resources (taxes) as individual support or public problem solving procedures to all the networks and matters of concern (cf. ↗Death & Taxes).2 Being an open genre, the *benefits* of infographics arise from their ability to selectively combine all other visualization methods in a hand-tailored didactic framework for any selected topic – and to enrich them with explanatory texts.

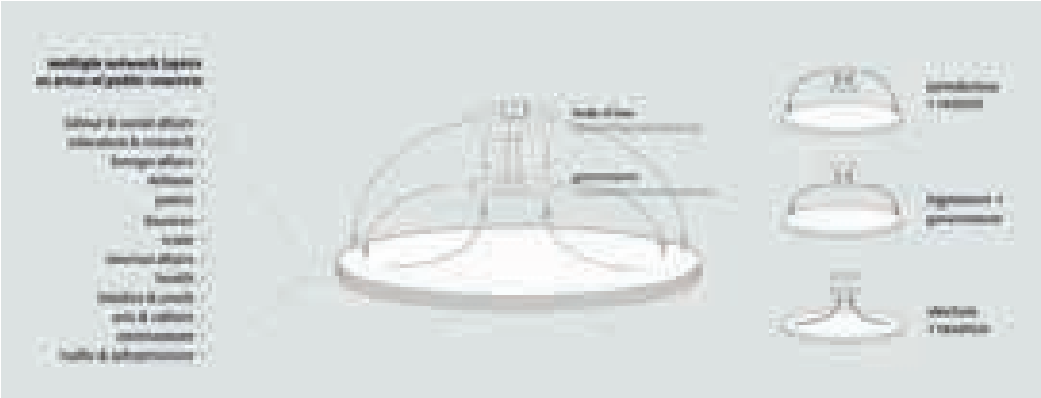

Figure 6: Infographics, illustrated by a conceptual sketch about the structure of governments as regulating and managing 'network of networks', with relations to all specific areas of peoples' interaction.

[2] With Figures 5 and 6 delivering different insights into the white circles of Figures 3 and 4, an integrated political InfoVis system becomes imaginable. As an interactive visualization (e.g. enabling transitions from overview maps to the internal structures of specific political entities) it could disclose the visual modality for political education and communication beyond the usual suspects of colored maps and bar charts.

On the Interoperability of Visualization Methods

All methods above already find use by political communicators. Yet the outlined transitions between them provide an indication that images can shed light onto each other if they are not only treated as isolated illustrations, but recognized in their potential to interoperate. When referring to each other as "hyper-images", they can blend from coherent overviews to analytical filters and detailed views on mosaic pieces, and with doing so – unfold more of their syntactic potential (Engelhardt, 2006).[3] So beyond using visualization methods – and making their operating principles transparent to users – we consider their orchestrated, syntactic use as one of the main tasks for the field, to offer coherent and connectable insights to the people. Yet challenges do not only appear with regard to methods literacy, but have to be tackled in particular towards the right hand end of the topic-receiver axis (cf. Figure 1).

Dealing with Barriers to Understanding

Empirical research into human-computer interaction and the use of visual analytical tools (e.g. BELIV, 2012) is emphasizing the fact, that in any visual communication setup, it is finally the receiver or user who decides, whether there will be insights – or not. Not only due to their levels of methods literacy, but also due to their specific motivations, goals, and technical skills, including their ability to effectively operate InfoVis interfaces and tools. If these issues are ignored, ironically users use to be the barriers, against which an intended information transfer runs aground. As such, the basic tenet of usability design methods, rephrases as: "Know your audience!", and in particular with regard to a broader public, this seems a challenge worth systematic investigation. Yet in the field of political InfoVis, barriers to understanding – as well as corresponding counter-strategies – seem to be rather understudied, leaving information designers without empirical results. In a first step, we therefore want to assemble suitable findings from the broader research field to extrapolate a picture of expected users. Among these, the knowledge about differences between experts and non-expert users, together with consequences for designing InfoVis interfaces for "casual use" (Pousman & Stasko, 2007) are ranging high.

As the prototypical InfoVis users, *experts* want to actively explore data to make sense of it. With data exploration being their job, they are sharing an intrinsic motivation to explore data, hunting for insights nobody had before. They are proven specialists, and usually dispose of a broad domain knowledge to justify interpretation of the results. Professional visual data analysts also have high skills in reading and interpreting graphs, have knowledge about the data source, data collection and the pitfalls for correctly interpreting results. *Non-experts*, on the other hand, often show a contrasting profile, based on their typical goals and motivations for exploration, their prior knowledge about the data and their proficiency in tool use. In the following section, we want to discuss these aspects in more detail and derive some possible design strategies to support their success in the world of visual data analysis.

[3] As a challenge for any extended visual-syntactical framework, the transitions from information visualization methods to the visualization methods of *photography* and *film* are requesting further consideration. This also accounts for the borderline between scientific or documentary imaging methods (claiming not only empirical validity but also methods' transparency, cf. Dörk, Feng, Collins, & Carpendale, 2013) and corresponding procedures in the realms of *political spin* and *propaganda*, as well as in the *fine arts*, where motifs for graphical representation are not knowledge or data-driven alone.

Non-Expert's Motivations and Goals in Casual Contexts

In their study of InfoVis use in *casual contexts* (i.e. mostly non-professional use in non-work settings), Sprague and Tory (2012) report about the *specific motivations* of their non-expert participants, which are mainly driven by personal relevance: Their intrinsic factors are to learn something new or to get a deeper understanding. Also utilitarian motives – to learn something practical – nurtured the use of visualizations. But not least, casual users of visualizations also simply want to get entertained - either by the content or by the aesthetics of the representation itself. Among the extrinsic factors influencing the use of visualizations, procrastination – the avoidance of boredom – or social pressures, i.e. the demand to be or get informed played crucial roles. Nevertheless, also laypeople like their observations to add up and make some sense. Sprague and Tory (2012) call this behaviour "productive relaxation".

Further differences regard the *types of insights*: While analytical insights are the main goal for experts ("the large or small eureka moments where the body of data comes into focus", Pousman et al., 2007, p. 1150), things look different for casual InfoVis. Laypeople are interested in gaining awareness insights, since they - although lacking a reasoning process with a clear conclusion – can also disclose basic patterns or give a feeling for the data. Another preference are insights about social life and social situations, but also the experience of social interaction and collaboration itself around user generated content (Viegas, Wattenberg, McKeon, Van Ham, & Kriss, 2008), which might be a particularly relevant aspect for Open Society and Open Data projects. But also reflective insights are worth gaining – as insights about oneself, the world, and one's place in it.

Experts and laypeople also differ in *how they gain insights*: While expert users are hunting actively for insights, driven by hypotheses, user studies showed that laymen often gather insights in a more passive way by collecting salient pieces of information (Smuc, Mayr & Risku, 2010).

The Role of Entertainment and Aesthetic Design

Traditional strategies to rise the accessibilty of InfoVis interfaces include the design according to *design guidelines*, as well as learning from *best practices*. Many best practices have been published in recent years for data visualizations made for research (Tufte, 1983; Few, 2004). Many of them are characterized by *functional aesthetics*, advocating a clear and simplistic design, where parsimonious use of ink is one of the guiding principles, whereas decorative illustrations (called chart junk) are said to inhibit a clear look at the data. While this might hold true for visualizations within a scientific discourse, the mantra of functional design is in question for casual InfoVis. Bateman et al. (2010), showed that junked charts could facilitate memorization and that an appropriate balance between utility and *aesthetic appeal* seems necessary. Danziger (2008) proposes that *users' entertainment* but also *narration* are worth considering to provide context effectively, thus facilitating usage of the interface, but also learning of domain knowledge. *Affective cues* can further help to enhance involvement, which is the key to make InfoVis appear personally useful.

The Role of Usability Design and Interaction Methods

As with software development in general, a *user-centered design approach* (Gould & Lewis, 1985) to overcome barriers on the receiver side can also be beneficial when developing and implementing InfoVis for the public sphere. Probably the most influential strategy for successful development is

to know your audience, so the *early and continual focus on users* during development, keeping in mind their goals, motivations, and tasks is essential. However, when developing for the people, the heterogeneous structure of the audience could be one of the most challenging issues to tackle. The generalizability and applicability of results from user studies with experts still offers many open questions and could therefore provide a rich field for future research (Grammel, 2010). A permanent feature in the user-centered design process is the *empirical measurement* of the efficency of InfoVis tools and interfaces. Modern methods to test and accompany development of information visualizations are often multi-method-mixes or try to overcome some limitations of traditional laboratory usability tests: For example, ethnographic methods (Shneiderman & Plaisant, 2006; Sprague et al., 2012) where users are accompanied by evaluation during everyday usage of the tool, should benefit from real world settings and its embeddedness in the usage context. Another decisive factor in design is an *iterative, cyclic development*. Aside from the procedural view, where working with sketches or mock-ups, early prototyping, and repeated redesign phases have become nearly industry standard nowadays, the development of InfoVis for the people could also benefit from the ongoing user participation. For example having a comment function is a simple asset, where social exchange could not only raise visual literacy but also influence the redesign of the tool.

Next to a user-centered design process, *interaction* is a potent strategy to relieve visual representations from an overdose of visual clutter and complexity, yet making details visible on demand. With regard to the intended field, interaction components have to be selected with special care for non-expert and novices. Grammel et al. (2010) suggest a tight integration of interaction methods into the InfoVis creation process, naming the provision of further semantics, searching and filtering. Case based representation (Freyne & Smith, 2010), the preservation of the user's mental map (Friedrich & Eades, 2002), and the provision of specific metaphors are some further well known techniques to support especially novices and first time users of InfoVis interfaces.

Summary

In this article, we examined the current role and future potential of InfoVis methods in the field of political education and communication. Starting from a generic communication model, we conducted an inquiry into the working principles and possible synergies of selected visualization methods. Subsequently, we focused on questions of how to overcome well-known barriers of visual communication when addressing non-expert audiences. We hope this review helps to systematically think on further developments and interconnections of political InfoVis endeavors. As such, increasingly network-compatible (i.e. hyper-visual-textual) communication methods will offer new ways to recompose common matters of concern (cf. ↗AIME) and support multimodal cognition and action within modern news and information spaces.

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About the Authors

Michael Smuc

Michael Smuc, MSc., studied psychology at the University of Vienna with an emphasis on methodology, empirical research and cognitive science. In 2007, he joined the Danube-University Krems, Austria, as a

research associate, managing and working in (inter-)national projects focusing on the development of usability methods for (interactive) visualizations, dynamic Social Network Analysis, cognitive aspects of information design and human computer interaction. Since 2013 he is head of the Center KIM, in charge of coordinating the research group.

Florian Windhager

Florian Windhager, MA, studied philosophy, at the University of Vienna, in combination with psychology and sociology, and accompanying trainings in the fields of science communication and cultural philosophy at the Academy of Fine Arts, Vienna. Since 2007, he is a research associate at the Danube-University Krems, Austria, focusing on concept and methods development within the areas of network and information visualization.

An Overview of Parliamentary Information Visualization (PIV) Initiatives: Assessing their Completeness and Contribution to Parliamentary Openness

Aspasia Papaloi*, Dimitris Gouscos**

*PhD Candidate, Laboratory of New Technologies in Communication, Education and the Mass Media, Faculty of Communication and Media Studies, University of Athens, Greece, apapaloi@media.uoa.gr
**Assistant Professor, Laboratory of New Technologies in Communication, Education and the Mass Media, Faculty of Communication and Media Studies, University of Athens, Greece, gouscos@media.uoa.gr

Abstract: *The need for provision of parliamentary information in a simple, systematic and organized way as a corollary of the constant appeal for parliamentary openness by the civil society have paved the way for Parliamentary Information Visualization. Independent organizations and researchers, volunteers, not-for-profit initiatives have deployed Information Visualization methods to visually represent the activity and votes of parliamentarians, particular legislative proposals or legislative texts. These initiatives are quite interesting and at the same time challenging, taking into account the various technical and design requirements, the distinct nature of parliamentary procedure, the availability of parliamentary information, as well as the explanation of parliamentary information and possible engagement of users. This empirical study examines in depth these initiatives, sheds light on several aspects regarding their completeness and evaluates them in terms of their contribution to Parliamentary Openness and subsequent legislative transparency.*

Keywords: *Parliamentary Information Visualization (PIV), Parliamentary Openness, legislative transparency, PIV completeness, engagement*

Introduction

Visualizing or mapping data has become a new and popular trend for independent designers and researchers, companies, not-for-profit organizations as well as governmental bodies. Visualizations enable the visual depiction of data, information or events in a compact, simple and comprehensible way, using a wide choice of methods.

Card, Mackinlay & Shneiderman (1999) describe Information Visualization (IV) as "the use of computer-supported, interactive, visual representations of abstract data to amplify cognition" (p. 7). Additionally, Meadows (2003) distinguishes among three forms of interactivity, namely the "acquiring of information, discovering additional information, and facilitating the distribution of that information among multiple people" (p. 121). Schrage (2013) goes a step further into interaction; he draws the attention to viewing visualizations "as interfaces to human interactions

that create new opportunities for new value creation" and not just "as a medium that substitutes pictures for words" (para.10).

These definitions are quite interesting when the discussion involves the visual representation of parliamentary information (Parliamentary Information Visualization-PIV). The large amount of information concerning Parliamentary Informatics (PI), i.e. text of legislation, information on individual legislators, specific legislative proposals, votes thereon (Wikipedia, n.d.), needs to be transmitted to the public in such a manner so that viewers can gain knowledge and be provided with the ability to interact through distribution and exchange of information. What is more, empowering them to use this information for action both inside and outside a digital context is a potential that paves the way for legislative transparency and accountability.

The Declaration on Parliamentary Openness and, in our opinion a breakthrough of the IPU Guidelines for Parliamentary Websites (2009)[1] intends to increase openness and transparency in terms of legislative bodies and enhance citizen engagement in parliamentary work. It encompasses all the possible aspects for the achievement of Parliamentary Openness ranging from the provision, access and usability of information related to parliamentary work, to e-services, ICT tools and all the involved stakeholders such as Members of Parliament, parliamentary personnel and administration, media and civil society. Additionally, accessibility and usability characteristics related to the technical, cognitive and social requirements of IV seem to be convergent to those of the Declaration.

The present study aims to examine 19 PIV initiatives that visually represent information regarding several areas of concern on PI. Due to the extensive sample of our research the present study presents both a quantitative and qualitative analysis of the findings. The first part of the research focuses on the presentation of findings based on the characteristics of the PIV initiatives (Section 2). The second part proposes a framework that will be further used to assess the completeness of the PIV initiatives (Section 3). The last section discusses the overall findings in order to assess the completeness of PIV initiatives. Finally, a number of PIV initiatives are distinguished as best practices due to their completeness.

PIV Initiatives at the service of Parliamentary Informatics

Methodology

The study on 19 PIV initiatives has been undertaken during July and August 2013. 22 initiatives have been examined in total. However, 3 of them are not encompassed in our study; 2 of them refer to the judicial branch or elections and the third one actually does not visualize information in a graphical way deploying the existing visualization methods. The research involved three different phases. As far as the methodology is concerned the analysis of the aggregated data for each PIV initiative was based on checklists for all the stages of the research. The rating system for estimating the completeness of the examined PIV initiatives stems from a number of criteria set by Dörk, Feng, Collins & Carpendale (2013) and how these are encompassed by the PIV initiatives.

[1]IPU Guidelines on Parliamentary Websites is a recommendation guide for the facilitation of parliamentary website designers and developers. Accessible: http://www.ipu.org/PDF/publications/web-e.pdf

This evaluation is based on our personal point of view as users and also recognizes the limitations of language in understanding, interpreting and further exploring some information and metadata contained in the visualizations.

The first phase of the research involved the gathering of the PIV initiatives. The documentation covered facets such as the enabler's status (NGOs, governmental, individual enablers), country they refer to, project scale and type of parliament (regional, national, federal, European) where applicable, methods of visualization, deployment characteristics and scope. A tabular overview of the aggregated PIV initiatives and the most significant aspects of this classification are presented in Annex I in order to provide readers with a better understanding.

The second phase of data elaboration included the compilation of a checklist in order to record for each examined PIV initiative all the kinds of visualization methods that correspond to each area of PI. Scope of this classification is: (i) to locate the frequency of the used methods for informing the audience in general, and (ii) to discover the most commonly used visualization methods for each area of PI.

The third and final stage of the research goes a step further attempting to evaluate the completeness of the examined PIV initiatives based on the existing literature and setting a number of criteria as proposed in the theoretical framework. A checklist has been compiled for this purpose in order to ascertain, which of the five features (connection, disclosure, plurality, contingency and empowerment) and their characteristics correspond to the PIV initiatives.

An Overview of PIV Initiatives and Initial Findings on Visualization Methods

The examined initiatives were created either by independent and not-for-profit organizations or private companies and individual researchers.

As far as the PI is concerned, there has been an adaptation to the four principle areas of concern encompassing: (i) additional aspects such as Senators, MEPs, political groups and Member States (MS) as well as dimensions of the activity, behaviour and performance of individuals or political groups ('individual legislators' area); (ii) the general legislative procedure and means of parliamentary control indicating the actions of MPs/MEPs etc., the number of different legislative documents or actions used for the legislative procedure as well as the status of a legislative document during the legislative procedure as far as the particular legislative proposals are concerned; (iii) different types of voting (voice vote, roll-call votes), as well as other aspects related to voting (missed votes percentage, vote distribution etc.) addressed to MPs/MEPs, Senators, political groups, MS countries; and (iv) the change of a legislative text (already as an enacted law) over time by giving details such as additions, removals, modifications regarding an article or a sentence. This area of concern ('text of legislation') also covers the words that have been mentioned or used by legislators or political groups focusing on several aspects (frequency, popularity etc.).

The adapted classification of PI areas of concern indicates not only the complexity of the parliamentary function but also highlights the possibilities in terms of PIV initiatives regarding data combination and visual representation using a variety of visualization methods. In particular, the majority of PIV initiatives focus on the visual representation of characteristics, personal data, attendance, activity, behaviour and performance of MPs, MEPs, political groups or member-state countries. On the other hand, only a small percentage of PIV initiatives (5 out of 19 initiatives)

focuses on the visual representation of particular legislative proposals or actions of MPs, MEPs etc. based on the means of parliamentary control.

With regard to the visualization methods that have been observed in general, bar charts, pie charts, line charts, timelines, tables, scatterplots, data maps, word clouds and tree maps are the most common.

The 'individual legislators' area of concern uses bar charts; tables and pie charts as the preferred methods to visually represent information related to characteristics of this grouping. A noteworthy feature is the use of timeline with other visualization methods such as area chart, histogram, line chart, scatterplot. Despite the small scale use of these methods, this is an interesting dimension for this area of PI. Tables is the method used by the majority of 'particular legislative proposals, while bar charts, pie charts and area charts is the most common visualization method for 'votes'. Finally, wordcloud appears to be the most common practice for the visual representation regarding 'text of legislation'.

Moreover, the variety and number of visualization methods deployed for each PIV initiative, the focus on many areas of concern regarding Parliamentary Informatics or the visualization of as much as possible information, do not necessarily render a PIV initiative successful. Reinforcing this argument, Kosara (2013) mentions characteristically that, for instance, "the seemingly simple choice between a bar and a line chart has implications on how we perceive the data" (para.10); moreover, "findings and distinctions in visualization can be subtle, but they can have a profound impact on how well we can read the information and how we interpret it" (ibid.para.12). This is also the case of the timelines in conjunction with other visualization methods. Different methods as well as the selection of different time variables such as 'time points vs. time intervals', 'linear, cyclic or branching structure of time', 'static vs. dynamic representations' (Aigner, Miksch, Müller, Schumann, Tominski, 2007) and others can provide different interpretations and results to the viewers. Wordclouds are another interesting visualization method when enablers try to visually represent text. These are the cases of 'Nupubliek', 'Nos Députés', 'Nos Sénateurs', 'Congressspeaks' and 'Folketsting' that depict "statistical and semantic attributes such as the frequency and context of individual words and the combinations of words into topics or themes" (Wise, Thomas, Pennock, Lantrip, Pottier, Schur, Crow, 1995, p. 52). On the contrary, there is an exception to this rule with the 'Capitolwords' initiative deploying a timeline method in conjunction with parallel coordinates to combine words into topics or themes.

Setting Criteria for PIV Completeness

The previous discussion showed that there is a variety of visualization methods implemented by each PIV initiative and each area of concern on PI. For this reason, the current study furthermore attempts to assess the completeness of PIV initiatives based on a critical approach of Information Visualization proposed by Dörk, Feng, Collins & Carpendale (2013) for the examined PIV initiatives. This theoretical framework encompasses four principles such as disclosure, plurality, contingency and empowerment (ibid., para.16). Dörk et al. (2013) also claim that "the main aim of engaging visualizations is to make a connection between the viewer and an issue" (ibid., para. 39). For this reason, the present study encompasses connection as an additional principle. The selection of this classification, although not an authoritative one, "but rather a starting point for exploring issues of power in visualization" (ibid., para.16), suits the present study because it enables a

holistic approach of the aspects related to a PIV initiative: (i) user engagement and empowerment, (ii) enabler aspirations, and (iii) aspects related to the visualization method.

- *Connection* is the most crucial principle for a visualization, linking the issue with the viewer (Dörk et al.). If an issue is not engaging to the viewer, then the viewer will not proceed to understand and explore the visualization. This principle encompasses the following techniques for the needs of our study: "high-level view and a broad perspective of the visualization(s)"; "provision of a map for the connection with the viewer's world"; "invitation for shaping the visualization"; "personal connection via biographical information" (ibid., para. 41, 42, 44) particularly about MPs;
- *Disclosure* encompasses the designers' aspirations on the potential effects of the visualization. These effects invite "the viewer into exchanges with the designer, reflections about the visualization, and engagement with an issue" (Dörk et al., para.17). In particular, "description of designers'/creators' aspirations for the potential effects of the visualization"; "invitation of the viewer for the exchange of views with the designers as well as reflections about the visualization"; "information about the goal of the exploration"; "accompanying articles and background information for the intent behind the project" as well as "the ability of the viewer to comprehend the reasons of the generated issues" are the techniques used for the evaluation of the examined PIV initiatives as adapted for the needs of the current study;
- *Plurality* implies not only the exposure of the multiple aspects regarding visualizations but also the variety of the interpretations (Dörk et al., para.18). This principle includes techniques such as the "perspectives that are emphasized or hidden"; the provision of facets for the exploration of statistical and personal information "allowing the viewer to approach the information at different levels". Dörk et al. (2013) explain in the case of emphasized or hidden perspectives that "it is feasible to expose marginal, unconventional, and challenging angles of an issue to help the viewer to reflect their own assumptions. There may be situations in which the visualization designer deliberatively chooses to advocate a specific standpoint instead of offering a nuanced set of perspectives" (para. 18);
- *Contingency* implies the technical and operational provision of "flexible visualizations" that do not lead to "pre-determined conclusions" but rather engage viewers more deeply with a given issue and relate it to their life", enable them "for more unique and profound experiences and insights" (Dörk et al., para.19). Contingency indicates the element of the unexpected and the uncertainty in the visualization. The question that has to be answered in our study is if "it is possible to design a visualization that acknowledges the situation of the viewer in relation to the phenomenon being represented"(ibid., para. 19);
- *Empowerment* is the end result and scope of a successful visualization, i.e. it enables "visualization creators to let their voice be heard and perspective be seen"; permits "viewers to question visual representations, utilize them to tell their own story, and shift from awareness to action"; "help people interact with one another, and make linkages across different backgrounds and connect visualizations with actual civic engagement" (Dörk et al., para.20). At the same time, the designer has to take into account impediments in terms of the viewers, such as their different background, literacy issues or access to technology, "perceptual abilities, gender, and other forms of oppression" (ibid., para.20). For the needs of this study, the empowering character of the PIV initiatives is evaluated

based on the following: ability to add comments and links; ability of subscription for following up specific areas of the platform; possibility to print and forward by e-mail the provided information; sharing in social media; access of data programmatically; references to other links which are related to the main theme; creation of links and visualizations by the user.

Findings on PIV Completeness

The abovementioned framework serves as a good guide for the completeness assessment regarding the documented PIV initiatives. Having in mind: (i) our intention to focus impartially on the completeness of the PIV initiatives, (ii) the fact that our point of view as users may be subjective in some cases regarding the perception and further exploration of the visualizations' context, and (iii) from the limitations in encompassing all the aspects of each examined visualization, the following conclusions have been extracted:

The techniques encompassed in the connection principle prove that the majority of PIV initiatives offer a high-level view and broad perspective of the visualizations via their home page. The use of maps in these initiatives in order to connect with the viewers' world is encountered in 7 of them. This fact relies on the enablers' disposition on how they want to attract the viewer (in the cases of the 'Nos Députés' and 'Nos Sénateurs') but also in the case of the initiatives that are addressed to countries with a federal system (U.S.A., Germany). With regard to personal connection by providing MPs' personal information, most of the cases focus directly on the visualization based on the respective PI areas of concern. Furthermore, only a few initiatives provide a personal connection to biographical information of MPs through a link redirecting either to their websites or to their social media profiles. Similarly, only a few of them invite users to shape the visualization.

The disclosure principle provides satisfactory results for all of the five characteristics. The enablers have developed the part of providing information on their aspirations and provide communication channels to contact with the users. However, only 1 of the examined initiatives explains in detail the use of the selected visualization methods and their scope. Accompanying articles and background information are provided by almost all the initiatives. Similarly, the majority of initiatives allow viewers to comprehend the reasons for the views generated except for one that redirects to an external link.

As regards plurality, the majority of the PIV initiatives enable users to see perspectives that are emphasized or hidden, such as characteristic words spoken in debates, performance since the beginning of the parliamentary term, loyalty or rebellion from a political party. In the same manner, the provision of facets for the exploration of statistical and personal information is ensured. A characteristic example is that of the U.S. Congress Members (GovTrack.us). In particular, the enablers via the contribution of scatterplots focus on emphasizing angles of Members of Congress behaviour in order to show the frequency of cosponsorship in bills (leadership score) (Govtrack.us, 2013, para.1), as well as cosponsorhip of similar sets of bills among them (ideology score) (Govtrack.us, 2013, para.2).

In terms of the visualizations' contingency, several methods are deployed, while results may vary. For example, the use of tables – which is the most common visualization method for the majority of PIV initiatives – is not always applicable, effective and comprehensible to the user. In

some cases tables provide useful insights, whereas in others toggling between several variables without further explanation on their use may be confusing to the user and impede further exploration and use. Similarly, in the case of scatterplots the results are diverse. In one case, useful insights are offered to the viewer via background documents and redirection to relevant scientific articles not only on the use of scatterplots but also on the further exploration of the information regarding MPs' behaviour or performance. Yet, other initiatives do not provide sufficient information on this method. This results in depriving the user from fully understanding and exploring the given data.

The empowerment principle is of utmost importance because it proves the completeness of the initiative connecting it with other contexts, digital or physical. Following results have been derived on this aspect: (i) only 9 out of 19 PIV initiatives provide commenting or embedding links; (ii) 13 initiatives deploy social media in their platforms. However, most of them are related to the enablers' profiles and not the actual sharing of data or information; (iii) only 2 initiatives provide the possibility to share information of MP votes or user votes compared to those of an MEP on social media; (iv) only 8 initiatives offer subscription for following up specific areas of the platform, only 7 of them offer the print or e-mail possibility of information, whereas 13 of them enable access to data programmatically; (v) only 4 initiatives enable users to create links or visualizations usually by providing free software or embedding links to one's website.

Discussion

The examined PIV initiatives reveal significant aspects not only in terms of the visualization methods but also as regards the extent of their completeness and their contribution to parliamentary openness and subsequent legislative transparency. Each initiative shows its originality by visually representing different areas of concern on PI, deploying different visualization methods without any concrete criteria on this selection and achieving different results.

- Connection seems to rely on the disposal of each enabler regarding the choice of method to connect or further engage the viewer (map, shaping of visualization, redirection to personal information of MPs etc.). A map is a technique that immediately attracts viewer interest to be further engaged with the initiative and is recommended on a project scale, which involves countries with a federal system or if the enablers want to focus on constituencies. Connection and engagement are even more effective when users are asked to shape the visualization according to their ideas or preferences. For example, when users are called to use their own preferences or variables to shape the visualization or to compare their votes with those of MPs or MEPs, this self-exploration creates the feeling that much more interesting insights are in store for the given visualization. With regard to personal connection via biographical information of MPs, the intention and focus of PIV initiatives seems to be the visual representation of data and information regarding MPs' activity and performance,
- Disclosure plays a crucial role for further engagement of the viewers and their subsequent empowerment. The findings have led us to the following observations: (i) whereas a simple visualization method (e.g. pie chart) does not necessitate further explanation, other methods encompassing several variables (e.g. tables, scatterplots, wordclouds, combination

of timeline with another visualization method) require sufficient reasoning on the choice of method, based on the aspirations of the enablers and clarifications via background documents for the function of the chosen method(s); (ii) a well-designed visualization that provides its message with simplicity and immediacy does not always require a detailed explanation. However, it does not always provide further insights or engagement; (iii) a data set containing too much information requires a detailed analysis; (iv) lack of background information on the function of a more complicated visualization method can lead to disengagement at the stage of exploration and failure in empowering the viewer for further action either online or offline,

- Plurality determines whether there is a variety of interpretations behind the sole visual representation of information and provides the enablers with the ability to focus on several angles of the issue. This is a challenging case in terms of European projects due to the complexity of parliamentary work and procedures, the absence of viewer knowledge on EU or European Commission (EC) document terminology or abbreviations and the additional habituation with the provided visualization method. In other words, instead of letting viewers search among different information or provide them only a variety of different information, it would be preferable to focus on some aspects of an issue. In this case, the provision of supportive material regarding the use of the specific visualization method and the expected outcomes by the enablers can be helpful to non-expert viewers. This is an issue of utmost importance that will be further discussed,
- Contingency seems to be dependent on several aspects ranging from user perception to enabler choice: (i) to design according to the needs of their audience; (ii) to their ability to faithfully present data; and (iii) to deeply engage their audience with the visualized information. There seems to be a connection between contingency and disclosure as far as the provision of background or supportive information is concerned on the use of the selected visualization methods and the expected outcomes. This fact justifies our previous observations as regard the disclosure principle, as well the findings mentioned above on visualization methods (wordclouds, tables, timelines in combination with other visualization methods). In our opinion, enabler weakness in some cases to focus on a user-centric design and perception, deprives them of the possibility to fully exploiting the benefits of PI visualization,
- The empowerment principle is crucial not only in terms of the completeness of a PIV initiative but also in terms of enabling viewers to participate both in digital or physical context. The more options for information and participation that a PIV initiative encompasses – both traditional and contemporary - the more inclusive it is. These data signify that the percentage of traditional means of communication is relatively low compared to the means of accessing data programmatically. This percentage is inversely proportional to the number of novice versus qualified users indicating that these initiatives are possibly addressed to a qualified public rather than citizens who intend to get informed on the actual parliamentary work. This argument is also reinforced by the fact that a small percentage of the initiatives focus primary on the technical part with data provision via Application Programming Interfaces (APIs), addressing solely a group of people acquainted with them. The detailed data provided by two initiatives with regard to the user registration and engagement in the platform proves that the number of users commenting on several parliamentary issues is quite low relatively compared to the

number of subscribers. This fact determines that most users visit the platform to get informed and are not actually engaged in an issue. Yet, this remains a point of further research regarding the evaluation of PIV effectiveness by the provided initiatives.

In our opinion, the following cases are characterized as best practices due to their completeness: (i) both initiatives addressed to the National Assembly of France and the French Senate ('Nos Députés', 'Nos Sénateurs'); (ii) the initiative addressed to the Italian Chamber ('Open Parlamento'); and (iii) the one focusing on the European Parliament ('Votewatch Europe'). All of them seem to engage their users either online or offline. Nevertheless, further research is needed in order to evaluate their effectiveness.

Concluding Remarks

This study on the PIV initiatives has proved their usefulness and their role as mediators between all the interested parties (public, civil society, NGOs, media) and parliaments. Undoubtedly, PIV initiatives can contribute to Parliamentary Openness and pave the way for legislative transparency and accountability to some extent. In particular, by providing information as complete as possible and stating the limitations (e.g. not 100% verified results in votes' extraction due to absence of voting records in parliamentary websites; not knowing all the aspects on MPs' absence such as justified absence due to sickness; lack of the appropriate supportive technological tools in terms of the parliaments for the extraction of data); stating the time of data updating (every few hours, daily etc.); the manner of data updating (e.g. scraping of the data through parliamentary websites etc.); providing information on MPs assets, votes etc. or trying to assess their performance indicate the efforts on this direction.

For the time being, visualizations fulfil the informative part and in some cases encourage exploration as regards the visualization of several PI areas of concern. This study has revealed that engagement even with the aid of visualizations is a hard to reach task requiring an in depth and constant commitment in terms of the enablers with: the recruitment of teams acquainted with the legislative procedure; the ability to focus on user-centric design of visualizations; the disposal on guiding their audience and explaining the use and the expected outcomes of the deployed visualizations; the provision of both traditional and contemporary means of information sharing; the disposal in motivating viewers and users to be further engaged both online and offline.

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About the Authors

Aspasia Papaloi

Aspasia Papaloi has been a public servant at the Hellenic Parliament since 2002 with extensive experience in European and International issues and is currently working in the IT and New Technologies Directorate. She holds a B.A. in German Literature and Language and an MA in ICT Management. She is a research fellow of the Laboratory of New Technologies in Communication, Education and the Mass Media (University of Athens) and her PhD research involves e-parliaments with a special focus on the use of visualizations for the achievement of transparency.

Dimitris Gouscos

Dimitris Gouscos is Assistant Professor with the Faculty of Communication and Media Studies of the University of Athens and a research fellow of the Laboratory of New Technologies in Communication, Education and the Mass Media, where he contributes to the co-ordination of two research groups on Digital Media for Learning and Digital Media for Participation. His research interests include applications of digital communication in open governance, participatory media, interactive storytelling and playful learning. More details available at: http://www.media.uoa.gr/~gouscos.

Annex I. Parliamentary Information Visualization (PIV) Initiatives

Country/ Region	PIV initiative/Website	Project scale	Visualization methods
1. USA	Open States http://openstates.org/	Federal	Pie chart

Country/ Region	PIV initiative/Website	Project scale	Visualization methods
2. USA	GovTrack.us http://www.govtrack.us	Federal	Scatterplot, bar chart, line chart
3. USA	CongressSpeaks http://www.congressspeaks.com/	Federal	Bar chart, area chart, wordcloud
4. USA	CapitolWords http://capitolwords.org	Federal	Bar chart, pie chart, timeline and parallel coordinates
5. EUROPE	VoteWatch Europe http://www.votewatch.eu/	European	Bar chart, area chart, pie chart, timeline, timeline and histogram, wordcloud, table
6. EUROPE	ParlTrack http://parltrack.euwiki.org/	European	Table, treemap, bar chart
7. EUROPE	It's Your Parliament.eu http://www.itsyourparliament.eu/	European	Bar chart, area chart
8. GERMANY	Namentliche Abstimmungen http://www.bundestag.de/bundestag/plenum/abstimmung/index.jsp	Federal	Area chart
9. GERMANY	Additional Incomes of Parliamentarians (Nebeneinkünfte) http://vis4.net/labs/nebeneinkuenfte/	Federal, Regional	Data map
10. GERMANY	The Making of a Law (Parteiengesetz) http://visualisiert.net/parteiengesetz/index.en.html	Federal	Timeline
11. FRANCE	Nos Députés http://www.Nos Députés.fr/	National	Bar chart, area chart, pie chart, table, wordcloud, timeline and area chart

Country/ Region	PIV initiative/Website	Project scale	Visualization methods
12. FRANCE	Nos Sénateurs http://www.Nos Sénateurs.fr/	National	Bar chart, pie chart, timeline and area chart, wordcloud
13. CZECH REPUBLIC-SLOVAKIA	Kohovolit http://en.kohovolit.eu/about	Regional, national, European	Table, timeline and scatterplot
14. SLOVAKIA	Dotankoch http://dotankoch.sk/	National	Histogram, pie chart, line chart
15. DENMARK	Folkets Ting http://folketsting.dk/	National	Pie chart, wordcloud
16. ITALY	OpenParlamento http://parlamento16.openpolis.it/	National	Bar chart, pie chart, wordcloud, timeline, table
17. LITHUANIA	Seime.lt http://seime.lt/	National	Bar chart, area chart, pie chart, histogram
18. NETHERLANDS	Nupubliek http://www.nupubliek.nl/	National	Timeline, table, wordcloud
19. SPAIN-BASQUE	Parlio http://parlio.org/	Regional	Timeline and line chart

Freedom and Ethics in Digital Societies

A Layered Architecture to Model Digital Citizenship Rights and Opportunities

Fiorella De Cindio, Andrea Trentini

Dipartimento di Informatica - Università degli Studi di Milano
Via Comelico 39 - 20135 MILANO (Italy), (fiorella.decindio—andrea.trentini)@unimi.it

Abstract: *We live in a society shaped by information and communication technologies, a continuous interplay between what happens in the physical world and online. This fact asks the "homo digitalis" (the "digital person") to reconsider and reshape her/his citizenship and sovereignty to face with this "augmented" context, where rights and obligations have to be properly declined to meet technology opportunities. These opportunities, however, challenge the very idea of citizenship and the exercise of underlying rights. The authors propose the "rainbow of digital citizenship rights" to slice aspects of digital citizenship in conceptual levels. The framework consists of abstraction layers spanning from basic network access up to the highest "right to active involvement in policy-making." This article describes the framework and its application to analyze the "Public consultation on the fundamental principles of the Internet" promoted by the italian Ministry of Education, work performed with the authors' "Digital Citizenship and Technocivism" course students.*

Keywords: *Digital Citizenship, E-Democracy, E-Participation, Open Government, Open Data*

Introduction

Since the fundamental role of ICTs in shaping the society in all its aspects - economy, society and culture - was recognized (Castells, 1996), their influence in reshaping the public sphere as well as the fundamental pillars of democracy also emerged (De Cindio, 2000), (Sunstein, 2001), (Coleman and Blumler, 2009). These are intertwined concepts and the debate between people focusing on the risks (of technology) and the ones focusing on the opportunities continues. "Are citizens more able than they were in pre-digital times, to question, comment upon, challenge and influence those who govern them?" (Coleman and Blumler, 2009), while recognizing that "Citizenship is a fluid and widely contested concept" (ibidem). Stefano Rodotà, first President of the Italian Authority for the Protection of Personal data and chair (1998-2002) of the Coordination Group of Trustees for the right to privacy of the European Union, in his recent book "The Right to Have Rights" (Rodotà, 2013) points out that "In the global space, rights expand as well as disappear (p.3) [and] citizenship changes its nature (p.4)." These authors, sort of champions in the field of digital democracy and citizenship, substantially agree, with different words, in assigning a role to people's engagement in the struggle between risks and opportunities. "Rather than subscribing to either of these brands of hyperbole, we prefer to think of the Internet as an empty space of power which is both vulnerable to state-centric (and corporate) strategies and open to occupation by citizens who have few other spaces available for them to express themselves in

constructive democratic ways." say (Coleman and Blumler, 2009), and, recalling Morris's, point out the importance to "better educate ourselves". Rodotà (2013, p.10) goes beyond and claims: "Rights … speak us of a commitment. Who holds them, has to be also aware of the duty to enforce them." This model should help, an easy-to-understand "framework" to discuss digital citizenship, to combine the view of those who live in this digital world and must be aware of risks and opportunities and that of those who are "professionals", developing solutions shaping, for better or worse, society itself (it's no coincidence that we usually name it "Information Society"), bearing great responsibility. "Software design is like architecture [...] Software is not just a device with which the user interacts; it is also the generator of a space in which the user lives." (Winograd, 1996). Choices made when building digital solutions shape the augmented (Aurigi and De Cindio, 2008) world where people live and so provide or restrict possibilities to those who use (or live in/with) them, affecting people's digital citizenship rights. This is particularly true in public administrations (PA) contexts. Who else can point out to a mayor or a councilor who wants to "communicate" with citizens via Facebook – a frequent practice, cf. the section "Social media and e-participation" in (Wimmer et al., 2013) - that (s)he is expropriating the administration and the citizens of the collected knowledge: content is owned by the social network site and fed information can't be openly/easily retrieved back. We developed this framework mainly to: 1) provide a systematization of concepts presented in the authors' course in "Digital Citizenship and *Technocivism*" taught since 2011 in the Master's Degree in Computer Science; 2) "tidy up" the (confused and confusing) answers coming from PA to respond to citizens' demands. An example of confusion is provided by the municipality of Venice which calls "digital citizenship" (even in the domain "cittadinanzadigitale.it") the provision of free wifi connection to residents, as if free wifi access could guarantee full "digital citizenship", maybe not being aware of the humorous meme extension to the the famous Maslow's pyramid (Maslow, 1943) modified by adding the "wifi" need at the lowest level (e.g., www.bbc.co.uk/news/magazine-23902918). Digital citizenship is often identified with online public services, that reduce citizens to consumers.

The Digital Citizenship Rights Rainbow

The ladder (Arnstein, 1969) metaphor was suggested to bring order in the path leading to a more or less complete (even not digital) citizenship, it evokes an "uphill" path involving, on the part of those who undertake it, a progressively greater commitment, but also a more complete realization of their citizenship and sovereignty rights. It models quite correctly the experience of many people who find they have to work to become citizens in the information society. However, for the purpose of communication effectiveness, and to provide a more positive vision, we do prefer to adopt and adapt the one proposed in (Clement and Shade, 2000) suggesting the idea of a "rainbow" (Figure 1), refining the levels, starting from level 0, which is dedicated to "The Net", indicating the importance of a free, open and neutral network constituting the indispensable infrastructure. Characteristics which unfortunately cannot be taken for granted. Our levels are:

- **LEVEL 0** - right to access the network infrastructure (the net);
- **LEVEL 1** - right to access the universal service (access);
- **LEVEL 2** - right to education and awareness (education);
- **LEVEL 3** - right to use online services, public and private (e-services);
- **LEVEL 4** - right to transparency (to be informed – transparency);

- **LEVEL 5** - right to inform one another (information gathering);
- **LEVEL 6** - right to be heard and consulted (consultation);
- **LEVEL 7** - right to active involvement in public choices and policy making.

The idea, and the number of layers resembles the OSI (Open Systems Interconnection) model for network architectures. We compare to the OSI model because if any level N is not granted, the citizenship rights upward N are based on precarious foundations. However it is worth saying that we cannot wait for a complete fulfillment of any level N to consider upward levels.

Figure 1: The digital citizenship rainbow.

Level 0: The network

The network, where packets travel carrying information, allowing us to always and immediately reach anybody and anything wherever they/we are... But is it really true? In simple terms: in a TCP/IP network data packets have a sender, a recipient and a content. Each of these three attributes is very important and affects the truthfulness of the above statement, in addition, these attributes are not even always independent of one another and are under the control of entities more or less known: the connectivity provider is the most obvious, but also some institutions (legislatively) affect the status of the network traffic, and content producers can respond unevenly to identical requests from different senders, etc... In fact, we can think about the concept of "network relativity" as a metaphor of Einstein's relativity: each user of the network is an "observer" of a changing universe, but the network overall state is not identically knowable by all observers, because information propagation is not instantaneous. Moreover, information is not always faithfully transmitted, either due to non-recoverable errors (despite the error-correcting protocols), either caused by intentional changes (for legal and illegal goals) on the data itself. We may now ask (and answer) some questions: 1) Can anyone access all services of any node? **No**. In Italy, unauthorized online gambling sites are not "reachable", they do not exist for the Italian observers. In China, the "great firewall of China" obscures most of the external network. 2) ... at the same speed? **No.** Providers may selectively limit connections speed (capped by the technology in use, e.g. ADSL, fiber, etc.) by means of QoS – Quality of Service – tweaking abilities as a function of subscription rates. Or they may make users pay to exceed traffic limits. These techniques create "artificial scarcity" to justify higher prices. A more subtle way to use QoS is data discrimination based on content/type-of-traffic. At least one case (Comcast - www.lacba.org/files/lal/vol34no3/2809.pdf) is documented: the automatic lowering of connection speed when using peer-to-peer protocols. 3) does anyone see any node the same way? **No**. It is common for a webserver to provide dynamical content based on source, on browser (e.g.

mobile vs. full desktop), etc. Last but not least, content may be only accessible through specific software unavailable on all platforms, cutting off a portion of users (e.g., the SilverLight player).

Unfortunately, many techniques/technologies invented for a smooth and efficient (i.e. adaptation of routing and content) network traffic are also used today in a distorted way to create, at best, artificial scarcity of resources (bandwidth and content) to "extract additional profit" from a market otherwise relatively saturated. Moreover, the relatively new outsourcing technologies under the collective name of "managed services", while offering new capabilities and less costs to firms and citizens, contribute to the erosion of control over the network. The "net neutrality" movement tries to boycott bad use (technically and legally) of all the technologies mentioned above in an attempt to bring the network to its original purpose: to carry information in the most efficient manner possible, without discrimination. Many organizations (Free Software Foundation, Electronic Frontier Foundation, Agorà Digitale, etc..) try to push governments to legislate in favor of neutrality, unfortunately multimedia lobbies are powerful and can counteract the interests of end-users.

Level 1: Access

What are the "minimum services" for digital citizenship? The real world analogy would be water, electricity, gas, transport, health, etc. At first glance, one could simply answer "Network Access", understood as "availability of any kind of Internet connection", but it's not enough. At the beginning of the Internet, the minimum level was the possibility of an e-mail (Anderson et al., 1997), then it became access to the web. But today is no longer enough "one hour a day of free wifi in some areas of downtown" (Comune di Milano free wifi), we need fast networks (fiber), well spread, affordable for all population segments. Every digital citizen should be reachable/contactable at a network address, be it an official email address, just as every citizen has a physical residence address, but even better would be the assignment of an official cloudspace (~GoogleDocs) where to file and receive PA documents. We'd like to mention here, even if not strictly bound to any level in particular, the so-called "digital divide" (on netindex.com a graph of net speeds throughout the world) which is usually defined as the inequality (often resulting from voluntary discrimination) in access and use of ICT, and can thus be seen as the negation of the (or a) right to digital citizenship. We should also argue about the "right to hardware", should citizens receive for free from the PA a PC/Laptop/Tablet/Etc. to access e-services? The "public street" metaphor can be applied: streets are built by the government but citizens must still buy cars by themselves. "Public transport" can be represented by public places where a connected PC is available for anyone use.

Level 2: E-ducation

Technologies are more difficult to use than tap water. Not only the use is complex, the knowledge also, above all the implications and ramifications, is far from trivial. Much attention has been paid to software/web usability (Nielsen, 2000), (Norman, 2002) but little effort has been made in spreading awareness about the digital traces we leave behind. The Locard principle ("Every contact leaves a trace") can also be applied to the digital world... for the worse since our digital life extends far beyond our physical body, in time and in space: tax information and online shopping, facebook tagging, GPS tracks from mobile phones, traffic video cams, etc... the list is endless and

the average user often does not have clues about it. Moreover, there are many government-originated attacks to network freedom and neutrality such as the various ACTA (Anti-Counterfeiting Trade Agreement), SOPA (Stop Online Piracy Act), PIPA (Protect IP Act), HADOPI (Haute Autorité pour la Diffusion des oeuvres et la protection des droits sur l'Internet) or technological attempts to channel users in well-controlled tracks such as DRM (Digital Rights Management adversely code-named Digital *Restrictions* Management) and UEFI (Unified Extensible Firmware Interface). These "attacks" are almost ignored by the daily news and the battle is often silently fought by techno-political movements: Free Software Foundation, Electronic Frountier Fundation, etc. Level 2 can be "simply" implemented by educating people, spreading culture and scientific/technological awareness. From this point of view, initiatives such as the ECDL (European Computer Driving License) and ECDL e-Citizen (www.aicanet.it) are certainly useful, but still insufficient as they cover only the "usage" aspects.

Level 3: E-services

The availability of online services mirroring physical services can have significant impacts on citizenship rights, above all for PA services since there is no "exit option": to pay taxes or to ask for a license there is no choice but to go through the competent administration office. Doing it "digital" means interacting with document formats, web platforms, etc. We won't expand this section since this subject is a well developed research and application field concerning the development of efficient and effective, reliable and usable online services, especially in the PA. The way online services are provided must meet usability standards not to require special skills/knowledge (cf. Level 2) and must ensure privacy of citizens (protected by laws in several national legislations) and transparency of the administration. The impact of an inadequate design is represented by President Obama's health reform web site failure (Shear, 2013) even if the goals were high and the system needed to integrate big and heterogeneous databases (Buchanan, 2013).

Level 4: Transparency

The gate to actual digital citizenship. We begin modelling levels of interaction between government and citizens as more or less active subjects/partners (Caddy and Vergez, 2001). "Transparency" refers to the top-down process where government makes "internal" (e.g. about administrative processes) data available to citizens, consistently with privacy protection. Contracts, receipts, audio/video meeting recordings, budgets, procurement documents, etc are pieces of information that, if public, let citizens know PA efficiency and how public funds are used. The importance of transparency as a precondition for real democracy was supposedly pointed out by Louis Brandeis (U.S. Supreme Court, 1916), one of the greatest defender of freedom of speech and the right to privacy: "Publicity is justly commended as a remedy for social and industrial diseases. Sunlight is said to be the best of disinfectants; electric light the most efficient policeman" (www.law.louisville.edu/library/collections/brandeis/node/196). Today, Brandeis's claim places transparency as a basis for civic accountability, which sees citizens actively participate in the evaluation of PA effectiveness in accordance with common practice in the administrative culture of the English-speaking world (Regonini, 2009). The phrase was recently revived by Cass Sunstein, of President Obama's staff, who managed the open government initiative, he emphasized that transparency is essential to renew democracy (Sunstein, 2010). The obligation to

administrative action transparency has been stated by several national laws, including the Italian one. Unfortunately, Law nr. 241 (08/07/1990) met the resistance of many PAs. To counterbalance resistance the worldwide OpenData movement crawls its way pushing PAs towards full disclosure, using Tim Berners-Lee opendata guidelines (www.w3.org/DesignIssues/LinkedData.html): 1 star: just online data in whatever format, with an open licence, to be Open Data; 2 stars: machine-readable structured (e.g. excel instead of image scan); 3 stars: as #2 + non-proprietary format (e.g. CSV instead of excel); 4 stars: all the above + the use of open standards from W3C (RDF and SPARQL); 5 stars: all the above + link data to other people's data to provide context. Data availability allows authorities and citizens cross-verification from multiple sources, thus improving the accountability process. Some governments have adopted laws to publish high quality open data: e.g. United Kingdom (data.gov.uk) and U.S.A. (data.gov). The Italian landscape is rather bleak, it rarely exceeds a single star, and the legislative front is not encouraging (cf. this Italian map of laws on open data: goo.gl/maps/DDDU), but we have some promising trailblazer: dati.senato.it, dati.gov.it.

Level 5: Citizens as Content Providers

Level 4 is the top-down "right to be informed" while Level 5 is its complement, the bottom-up "right to inform". The Web 2.0 (O'Reilly, 2007) has been characterized by the "user generated content" slogan, and governments frequently label their initiatives as "2.0" often just to earn some reputation rather than for taking profit from citizens' *civic intelligence* (Schuler, 2001), a form of "collective intelligence" (Lévy, 1994) and an extension of the Putnam's notion of "social capital" (Putnam, 2001). Civic intelligence, says Schuler, introduces "an orientation towards action in addiction to one of observation and study." This is what occurs when citizens collect materials and documents for supporting protests - some case studies are presented in (De Cindio and Schuler, 2012) - or for questioning public policies (as one of the authors did by an extensive study presented on arcipelagoareac.it). Citizen information gathering promotes a "cultural inversion": citizens become active actors and partners of the PA in the construction of the public sphere, to contribute to common good in the so called "big society" (Kisby, 2010). A good, albeit minor, Italian example is appuntamentimetropolitani.milano.it, it lets citizens spread the voice about events s/he is aware of or has contributed to organize, on a par with events reported by local institutions. More popular are the so-called "social reporting" environments allowing communities to gather reports and feedback, and collectively evaluate the quality of a good/service, movies (e.g., imdb.com), restaurants/hotels (e.g. tripadvisor.com). Social reporting has been applied to collectively assess (De Cindio, Peraboni, 2010):

- the state of *public spaces*: FixMyStreet.com (and several similar initiatives worldwide) allows citizens to geomap problems for local government to fix;
- the quality of *public services*: e.g. PatientOpinion.org, an independent uk-based website, allowing patients to comment, review, and rate healthcare services;
- the activity of *public officials*: RateMyCop.com and RateMyTeachers.com give citizens a place to voice their opinion on public officials who affected their lives;
- *other citizens'* behavior: public shame on "bad citizens" to raise problems awareness. E.g., Caughtya.org, the "Hall of Shame" of illegally parked cars.

These civic accountability initiatives call on citizens to provide their knowledge on public issues so that institutions can gather information that would otherwise be dispersed or difficult to access

and collect. However, they might also encourage passive attitudes towards problems, since it is someone else – the PA - that has to take care of the problems. I.e., "Fixing the problem in my street is your problem."

Level 6: Be Heard and Consulted

Level 5 is concerned with information gathering from citizens. It enriches the public sphere, often without commitment to apply the "civic intelligence" in public policies/decisions. A step further is considering people' voice even if decisions remain in charge of the PA.

Citizens petitions websites can reach large sets of signatures increasing the strength of the petition. They can be managed by independent bodies or directly by the PA. Public consultation is a quite well established process in the Commonwealth countries, and more, in general, in the anglo-saxon world. Several governments (among the others, UK, Canada, US, Australia, New Zeland), as well the European Commission, deployed web sites (e.g., ec.europa.eu/yourvoice/consultations) to support public consultations with online facilities covering part of the process. Consultations have been recently introduced by the Italian government in 2012 (Monti) and 2013 (Letta), experimenting with different software: a traditional survey, or a form to be filled, or the gathering of ideas from citizens to enrich the first version of a policy document, performed by using IdeaScale. A relevant difference among these technologies is the public visibility of the other's ideas and suggestions: only IdeaScale allowed citizens to submit their own ideas, to comment others' ideas and rate them. It is worth recalling the guidelines coming from the critical analysis of the first consultation about the legal value of the degree made by (Regonini, 2012). If we want a public consultation to be of any value, it needs to be based on a "social contract" that explicitly declares problems, objectives and alternatives and clearly states process workflow and expected outcomes: citizens have the right to know what/when they will get in return. None of the consultations promoted by Monti's government returned anything to citizens, while the online consultation launched in 2013 by the Ministry for Institutional Reforms of the Letta's government (Lanfrey, Solda, Della Pietra, 2013) did. Carefully designed to provide a methodology to be adopted, reached a good result: 135,634 citizens casted the (short) questionnaire (consisting of 8 questions), of which 131,676 were validated. 71,563 of them (the 55.4%) also filled a more detailed questionnaire. This consultation allowed proposals gathering, implemented by the proprietary system "Civici". 595 proposals and 1763 comments were collected (there is no data about the number of contributors). Unfortunately the impact of the consultation on the Institutional Reforms was null. Finally, it is worth mentioning a different case which can be allocated in this level. It is the peertopatent.org (Noveck, 2009) initiative of the U.S. Patent Office, that asks for citizens cooperation in evaluating patent applications. Citizens' inputs may impact on the patent granting decision, which is anyhow in charge of the public office.

Level 7: Active involvement in Public Choices and Policy Making

The Internet has opened new perspectives, reducing time/space barriers, empowering people, extending access to knowledge, enabling, through social media, new forms of communication. Social movements all over the world already exploited the "Internet culture, made up of bloggers, social networks and cyberactivism" (Castells, 2012) to mobilize and shape the society they live in. This is the scenario where the "Recommendation Rec(2001)19 of the Committee of Ministers to

member states on the participation of citizens in local public life" issued in 2001 should be implemented. It suggests to "Adopt a comprehensive approach to the issue of citizens' participation, having regard both to the machinery of representative democracy and to the forms of direct participation in the decision-making process and the management of local affairs." Participation to the decision-making process cannot be limited to "be heard and consulted" (Level 6), as far as decisions are finally taken by untrusted governments. "Rather than seeking to restore trust in government, democratic activists are concerned about the efficacy of citizens, whose experiences and expertise often seem to be diminished or marginalised. They do not look back to an age of deferential representation, but argue that strong democracy requires energetic and autonomous civic activity, beyond the management of the state and capable of shaping the outcomes of governance." (Coleman and Blumler, 2009).

Citizenship concerns people' sovereignty rights, the top level of citizenship in the digital era concerns (e-)democracy. At the World Forum for Democracy organized by the Council of Europe in November 2013 in Strasbourg, Mary Kaldor (professor, London School of Economics) claimed that we should not ask ourselves if and how digital technologies can enhance democracy, but how to rethink democracy in the digital era. We should not simply support existing practices and institutions (e.g., petitions, referenda) with ICT but also experiment new forms of "Democracia Real Ya!" (as the grassroots Spanish citizens' movement called itself). This search for new forms of participation should exploit the online/offline dimensions interplay to let a larger majority of people influence public policies and decisions. We need strong roots in the democratic theory, and a multidisciplinary approach: social/political scientists should work with computer scientists to develop and validate models of online deliberation, cf. International Conference on Online Deliberation (www.od2010.di.unimi.it/index.php?pgid=8). We should take inspiration from well-established and structured participatory processes such as Agenda 21 and Participatory Budgeting. Agenda 21 is a structured process of civic participation in land government decisions inspired to the principles of sustainable development (Evans and Theobald, 2003). Participatory Budgeting is a practice of public deliberation on budget issues introduced in Porto Alegre in 1989, and now spread in thousand of cities worldwide (Shah, 2007). In both cases, the processes began by promoting offline practices – public forums, citizens assemblies – and then increasingly adopt online solutions both to guarantee transparency of the process and to extend participation to citizens who cannot attend physically. Here web-based software platforms for generating and gathering ideas, and rating and selecting them in a collaborative way, via structured deliberative process, become relevant. Without ambition of completeness, examples are: **IdeaScale.com** and **UserVoice.com**, proprietary platforms for users' idea gathering, especially in the business sector, have been used by PAs. UserVoice was used at innovazioneudine.uservoice.com; **LiquidFeedback.org**, opensource, embeds a deliberative process where proposals are voted, supported, debated and written in a collaborative way; alternative options are voted with the Schultze algorithm. LiquidFeedback was born to support democratic deliberation within political movements (e.g., German Pirate Party) and experimented to gather ideas from citizens' (De Cindio and Stortone, 2013); LiquidFeedback was forked, e.g., **Airesis.it** and **Parlamento Elettronico Online** (parlamento5stelle.com) - both developed by young activists within the Italian Five Star Movement (De Rosa, 2013). **Adhocracy.de** is a tool with similar functionalities; **Loomio.org**, a recent proprietary platform, brings out decisions to be taken from a free debate, easing otherwise complex and structured participatory processes; **OpenDCN.org** (Open Deliberative Community Networks), opensource platform originally developed to support Local Agenda 21 (De Cindio and

Peraboni, 2009), gave birth to community and deliberative tools, including one for gathering, argumenting (pro and cons) and rating problems and proposals, and a brainstorming tool; **BiPart** is a platform for participatory budgeting, applied in Italy (e.g., canegratepartecipa.org).

These software tools, as well as many others, enable initiatives with a wide spectrum of citizens' involvement. PAs can regard citizens as idea providers in public policy definition, and consider these ideas, usually the most popular ones according to some rating procedure embedded in the software, as input in their own activities (level 5). When the PAs commits to provide feedback to selected ideas, it's a kind of public consultation (level 6). Only when there is a strong commitment to implement the decision(s) resulting from the structured participatory process, an actual involvement of citizens in public choices and policy making (level 7) occurs. As far as we know, participatory budgeting is the closest process to this goal.

Field Test

We first tested the "rainbow" in our "Digital Citizenship and *Technocivism*" course where we discuss and analyze the reciprocal influences, positive and negative, between technology and citizens, to raise computer science students' awareness to ethical, social and policy aspects of ICT (Brennan, 2004). With the "rainbow" to organize lectures and materials, students no longer confuse issues pertaining to different levels. We also presented the "rainbow" at informative events, either open to citizenry or in more professional contexts, e.g. the Annual Congress of the Italian Association of Computer Professionals (AICA), the framework was always welcomed. A more systematic validation came with the "Public consultation on the fundamental principles of the Internet" set up by the Ministry of Education, University and Research during Monti's government before the Italian participation to the VII Internet Governance Forum (Baku, Azerbaijan, 6–9 November 2012). Two students (Cuculo and Rasente, 2013) studied the consultation and applied the framework as a test.

The MIUR Consultation on the Fundamental Principles if the Internet

A policy document stating the Italian government position about the Internet governance was prepared and published on discussionepubblica.ideascale.com. The document is organized as follows: a) general principles, which define the main infrastructure characteristics; b) citizenship in the network; c) consumers and users of the network, i.e. issues about skills, digital identity, privacy and personal information management; d) content production and circulation; e) network security. It was open for 45 days, from 18/09/2012 to 01/11/2012. It gathered 159 proposals, 423 comments and 2361 rates/votes, from a pool of 746 users. The "social contract" was transparent but without a strong commitment: "This consultation aims to collect contributions from the public on the issue of Internet governance in order to enrich and improve the document that summarizes the Italian position on the fundamental principles of the Internet for the next Internet governance Forum (IGF)." [...] "the data and proposals will be collected and analyzed in order to identify the emerging themes and significant indications. These will be used to supplement official documents published." The short time between consultation closing and the IGF meeting in Baku (Nov.6th) was a bad symptom on the actual use of the submitted ideas. I.e., none.

Rainbow Framework Field Test

Our purpose was twofold: 1) to systematize the thoughts of a - albeit small - sample of Italians about Internet principles; 2) to test the rainbow framework. Here we can only summarize the process, described in (Trentini and DeCindio, 2013). Every proposal was assigned tagged to a rainbow level (*L<n>* when applicable, *NA* if not). The resulting uneven distribution shown in Figure 2 shows people' greater attention on the lower levels of the rainbow, and reveals a considerable underestimation for the higher ones, those relating to participation. This might picture either pure neglect, a lack of demand - then a cause; or lack of trust in the PA, a lack of openness in their offer - thus an effect; or both. It is anyhow not surprising, since attention on higher levels has to be built on lower ones. We must now focus on remaining proposals, which are the following: ID17 = "Free Software"; ID47 = "Digital Citizen"; ID82 = "unified password"; ID96 = "Reform of intellectual property"; ID97 = "Notice and take down: arbitrary censorship?"; ID99 = "The digitalization". They fall into two areas: contractual aspects (ID: 17, 96, 97, 99) and digital identity management (ID: 47, 82). "**Contractual aspects**" - copyright, software/hardware/data licensing, open standards, etc. - can be applied at multiple levels. We could apply copyright and licenses toeducational content (L2); online deliberation (L7) software must be verifiable thus should be available under some "Free software" license; OpenData (L4) should be "open" licensed, etc. We believe that freedom of software ("free/libre/opensource" licenses) and of data (e.g. Creative Commons) should be at Level 0 as a basic feature of the socio-technical infrastructure, precondition for actual digital citizenship. "**Digital identity management**" is at Level 1 as it should apply when providing "minimum services for digital citizenship".

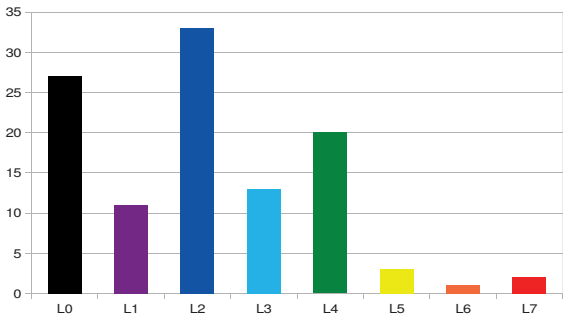

Figure 2: Proposal distribution.

Conclusions

This paper illustrates the "rainbow of digital citizenship rights" model aimed at slicing digital citizenship in conceptual levels. The rainbow categorizes a number of communication "channels" between citizens and the PAs (from local to global ones), similarly to the ISO-OSI network model. The positive feedback we get proposing the "rainbow" in an university course as well as in several informative events, encouraged us towards a more systematic test: the analysis of the proposals submitted in a public consultation on the fundamental principles of the Internet. Only a few of the proposals fell out of the model: these out-of-model items suggested a couple of improvements to

the original characterization of Level 0 and Level 1, to take into account "contractual aspects" and "digital identity management". The framework is now more complete and satisfactory even though still worth of further validations.

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About the Authors

Fiorella De Cindio

Fiorella De Cindio is Associate Professor at the Computer Science Department of the University of Milano, where she teaches courses on Programming Languages, Distributed Systems Design and Online Communities. In 1994, she promoted the Civic Informatics Laboratory (LIC) whose main research focus are the design and implementation in social interactive systems in real life settings and the development of e-

participation technologies. She set up the Milano Community Network (RCM), which is now a Participatory Foundation. Because of her activity in the community, in 2001 the Milan Municipality presented Fiorella de Cindio with the Ambrogino d'Oro, the municipality's highest award.

Andrea Trentini

Andrea Trentini is Assistant Professor at the Department of Computer Science - Università degli Studi di Milano. Courses: “Programming” (OO/Java), “Operating Systems” (GNU/Linux) and “Digital Citizenship and Technocivism”. Head of the “Free Software” Laboratory and founder of the special interest group on Arduino and embedded platforms named “ArduinoAfternoon”.

Nothing to Hide and to Lose? Being Free on the Internet

Philipp Rössl*, Judith Schossböck**

** Danube University Krems, Centre for Ethics in Medicine, philipp.roessl@donau-uni.ac.at*
*** Danube University Krems, Centre for E-Government, judith.schossboeck@donau-uni.ac.at*

Abstract: *Internet freedom has become an often cited term during the last years, due to the omnipresence of the internet as an infrastructure and in the context of freedom of expression. This paper offers a philosophical perspective on the term internet freedom – in particular a Kant perspective – by applying the meaning of freedom and other relevant terms to our activities online. Relating those concepts to recent developments of online or net politics, it is shown that the structure of the internet affects our freedom in a significant way and, as we recognise a restriction of our freedom to act online, we act to (re)claim it through tools, activism and online strategies.*

Keywords: *internet freedom, Kant, determinism, internet governance, responsibility*

Introduction

With the growing use of the internet as an infrastructure, there is a strong debate around its use as a free means of communication. While a free and accessible internet has often been proclaimed as ideal, it seems to be difficult to live up to the concept of internet freedom, not only due to recent developments that undermine principles and standards of freedom of expression, focusing on the surveillance of citizens. Additionally, the term internet freedom seems to be lacking a common definition. Our understanding of the term often does not seem to be based on acknowledged scientific concepts, but on discussions in the realm of net politics and recent happenings. This paper thus seeks to offer a more nuanced perspective on the term internet freedom by applying the philosophical meaning of freedom and other relevant terms (fatalism, determinism, indeterminism, freedom of will etc.) to the context of our activities online. What form of internet freedom do we mean when we discuss the subject? What are we free to do online? Could an examination of the philosophical concept be beneficial for the discussion of internet freedom? Under which circumstances could we (re)claim our freedom of action online?

Freedom and the Internet

Freedom in philosophy is based on a long tradition of theories. The concept of being free to act or the freedom of action is grounded in the field of ethics. For answering the question "What we are free to do within the infrastructure of the internet and from what we are free within this infrastructure?" we refer to Immanuel Kant, as his understanding of the term freedom covers both

aspects of determinism and indeterminism as well as aspects of positive or negative freedom. After a working definition on our subject, the internet, and its relevant characteristics, we introduce the concepts of freedom with view to Kant, Jaspers, Sartre and other relevant thinkers and seek to deduct conclusions for the understanding of internet freedom and the question what we are free to do online. The article concludes with a couple of practical cases of how we try to (re)claim our freedom of action on the internet on the assumption that the structure of the internet as a medium or infrastructure affects that freedom in a significant way.

What is the Internet?

With view to our epistemological interest, we define the internet as an infrastructure that can be used for a variety of purposes and activities, like communication, information, education or entertainment. The terms Internet and World Wide Web are often used in everyday speech and it is common to speak of "going online" when using a web browser to view web pages. However, the internet is more than just one service, but a global computer network and infrastructure. The structure of those networks and infrastructures is one factor that may define the degree of freedom we have to act online.

What comprises the internet is a difficult question and the answer tends to change over time. While in 1996 definitions of the internet easily included that this network is "conspicuously without regulation" *(Segal, 1996)* and without any authority that policies regulations, not too many people would subscribe to this thesis in the 21st century, when computer and network surveillance are more widespread than ever and almost all internet traffic is or could potentially be monitored for clues to illegal activity. Shaping the programmes that shape the evolution and use of the internet (internet governance) is an emerging field of research that is comprised of three layers: the physical infrastructure layer (through which information travels), the code (that controls the infrastructure) and the content layer (information signalling through the network) *(Benkler, 2000)*. It is within these three layers that our freedom to act on the internet can be influenced by governance policies and activities. It is necessary to not only talk about freedom related to an infrastructure, but also about freedom of human beings *(Müller, 2008)*. Our norms and principles have a huge influence on the technical solutions and programmes that shape the evolution of the internet and vice versa.

As the internet has evolved, books have been written about its key moments of transition *(Ammori, 2013)*. While we talked about the internet as cyberspace in the 1990's (a different space to visit), it is now a universal infrastructure in our real world.

Classical books, like Larry Lessig's *Code* (2006), discussed the transition that took place around 1995 from a hobbyist internet to today's commercial one. Others discussed a transition around 2000 to 2005, from an internet accessed over dial-up phone lines to one accessed over always-on, high-speed cable lines. Later one, one discussed the transition starting around 2007 from home connections and downloadable software to mobile connections and locked-down devices as well as software on the cloud *(Ammori, 2013)*. Others explored the emerging economics of open source technologies and the sharing economy. Many of these books warned of a potential dark future with less user control and increasing restrictions on freedom of speech. They all emphasise that what is at stake is internet freedom as an "infrastructure for us to exercise our freedom to speak, read, and connect with others" *(Ammori, 2013)* and as a basic for individuals to "control their own

lives and reach their full potential". This is a concept also found in philosophy in the context of freedom of action and self-realisation, as will be addressed below.

What is Freedom?

The term freedom comprises the ability to move, act or determine autonomously and without external influences *(cf. Sturma, 2002, p. 400).* A clear distinction must be made between negative and positive freedom, as developed by Immanuel Kant in *"Groudworks for the Metaphysics of Morals"*: *"The will is a kind of causality belonging to living beings in so far as they are rational, and freedom would be this property of such causality that it can be efficient, independently of foreign causes determining it; just as physical necessity is the property that the causality of all irrational beings has of being determined to activity by the influence of foreign causes. The preceding definition of freedom is negative and therefore unfruitful for the discovery of its essence, but it leads to a positive conception which is so much the more full and fruitful. […] Physical necessity is a heteronomy of the efficient causes, for every effect is possible only according to this law, that something else determines the efficient cause to exert its causality. What else then can freedom of the will be but autonomy, that is, the property of the will to be a law to itself?" (Kant, GMS, 2001, p. 81).*

For our purpose, we can summarise this thesis by referring to Dieter Sturmas, who posits that negative freedom is largely identical to the term freedom of action: one is free to act when one can act without external constraints, barriers or obstacles. Positive freedom, by contrast, is based on the assumption that the agent or actor is both free to choose and free in their will. "The actor is thus the last resort (authority) in decision-making and determination and can, in accordance with personal, social or cultural goals, determine over him/herself." (Sturma, 2002, p. 400b).

In its political form, positive freedom has often been thought of as achieved through a collectivity, and individual freedom is achieved through participation in the process. Individual applications of the concept of positive freedom could mean that a government should aim to actively create the conditions necessary for individuals to achieve self-realisation. However, the negative concept of freedom is more typical for liberal-democratic societies and assumed in defences of the constitutional liberties such as freedom of speech or freedom of movement, and thus in arguments against state intervention (Stanford Encyclopedia of Philosophy 2012). Theoretical and practical philosophy ask different questions in relation to freedom: While theoretical philosophy is interested in the question of how actions can be possible without external determination on the basis of physical ontology, practical philosophy examines the reasons and motives by which people determine themselves and their actions as well as the legal, political and cultural implications and consequences of personal behaviour (cf. Sturma, 2002, p. 400b). This distinction is based on the assumption of causality and the fact that this is hard to reconcile with the concept of free will (cf. Hügli&Lübcke, 2005, p. 216). This metaphysical problem of free will resulted in different approaches, which will be briefly covered in the following paragraphs.

In **fatalism**, the experience of freedom of decision-making is an illusion. Everything is determine by fate.[1] Fatalism counts an extreme form of deterministic approaches to a problem, assuming that the past and future are no determinable measures. Thus, there can only be one course of the world.

[1] This approach is related to the concept of „logical positivism", postulating that if all statements about the world are true or false from today's perspective, it is also logically determined how our future will look like.

Other forms of **determinism** acknowledge that our own decisions can influence future happenings, as long as they contribute to their cause. However our own decisions are also determined by previous causes of different kinds. *„[…] present and future are clearly determined by the factual conditions given by the past." (Hügli&Lübcke, 2005, p. 216).*

Two deterministic approaches have been derived from there: hard and soft determinism. Hard determinism concludes that human actions are not determined by fate, however, free will is still seen as illusion. Man cannot be held responsible for his actions and moral judgement is inappropriate. In contrast, soft determinism reconciles the experience of acting freely with determinism. An activity is free if its causes lie within the human being itself, while those causes may well be deterministic. With freedom and causality being compatible, there is no theoretical problem regarding the applicability of moral terms. Freedom is not a matter of all or nothing, but there are gradual differences *(cf. Hügli&Lübcke, 2005, p. 216).* Determinism can also be seen as a precondition of free will, as we can only be free in our decisions if they are based on reasons (free decisions on the basis of a determinism through reasons). This is also called the intelligibility argument, which implies that "metaphysical freedom is not compatible with indeterminism. Intelligibility is a characteristic of free will. Decisions and actions are only free, if they are made out of understandable reasons. To decide and act 'intelligible' thus means to act on the basis of understandable reasoning." *(Goller, 2009, p. 191).* Daniel C. Dennet adds to the intelligibility argument in *Freedom evolves*: *"Determinism is the friend, not the foe, of those who dislike inevitability." (Dennet, 2003, p. 60).*

From the perspective of **indeterminism**, fatalism and all other forms of determinism are rejected. From this perspective actions are taking place under certain circumstances, but neither these actions nor their consequences necessarily have to be the effect of the preceeding causes. Our free will is the means enabling us to make free decisions. There are two fundamental problems with this approach: a) It has to be able to explain the relationship between man as part of a deterministic nature and man as a free, indetermined being [there is a monistic and dualistic solution to this problem]; b) it must be able to isolate the free, indeterministic decision from the sheer absence of causes and regularities as in chance or coincidence *(cf. Hügli&Lübcke, 2005, p. 217).*

According to Karl Jaspers, we are conscious of our freedom if we recognise the demands on ourselves, and it is up to us whether we fulfill or avoid them. We can't deny that we make decisions ourselves and thus both decide over ourselves and are responsible *(cf. Jaspers, 1989, p. 50).* For Jaspers, fatalists, determinists and indeterminists are wrong if they see man as an object and only ask whether this object is deterministic in nature *(cf. Hügli&Lübcke, 2005, p. 217).* Man is not just an object, but a freely existing subject, transcending all objectivity.[2]

Apart from this metaphysical, negative concept of freedom (related to the four approaches described above) there is also a normative, positive one, arguing that man is free if he is developing himself or realising his potential *(cf. Sturma, 2002, p. 400 and Hügli&Lübcke, 2005, p. 217).* The normative concept of freedom poses several problems, for instance regarding the question whether the purpose of man should be to become part of a greater whole or to grow individually with view to a certain ideal. Is man allowed to determine his purposes himself or is this predefined? What is the role of human consciousness in free self-realisation and development

[2] The problem of free will and the four approaches presented rely on a sheer metaphysical term of freedom.

(cf. Hügli&Lübcke, 2005, p. 217)? How do fatalism, determinism and indeterminism deal with these problems?

Regarding the fatalistic approach, John Stuart Mill argued in System der deduktiven und induktiven Logik: „A Fatalist believes, or half believes, (for nobody is a consistent Fatalist), not only that whatever is about to happen will be the infallible result of the causes which produce it, (which is the true Necessitarian doctrine), but, moreover, that there is no use in struggling against it; that it will happen however we may strive to prevent it." (Mill, 2001, p. 444)

Self realisation of the fatalist can thus be compared to the acceptance of our own inevitable fate. Fighting against it is, as Mill puts it, a pure waste of energy. The fatalist does not ask questions about the purpose of life and who determines those purposes, as all those are fatefully determined.

In the following, we distinguish between hard and soft determinism. Geert Keil is arguing in relation to the concept of hard determinism in *Willensfreiheit* that freedom is inexistent for determinists *(cf. Keil, 2013, p. 89).* If freedom is found in hard determinism, then as nothing more than subordination of the individual to the greater whole *(cf. Hügli and Lübcke, 2005, p. 218).* By contrast, in soft determinism the individual is seen as the last resort *(cf. Hügli and Lübcke, 2005, p. 218).* This becomes clear in liberalist tradition, where free will is seen as possible *(cf. Keil, 2013, p. 89).* Determinists are in disagreement over the objective validity of a purpose in life.[3] However, they are in agreement about the fact that knowledge about the own situation is a necessity as long as one is striving for a normative definition of freedom *(cf. Hügli and Lübcke, 2005, p. 218).*

For indeterminists, the highest purpose of freedom is the realisation and development of the human being. Similar to determinists, indeterminists can be split into two groups: one assuming an objective purpose of life, the other one postulating that this is not the case.[4] Consequently Jean-Paul Sartre writes in *Das Sein und das Nichts (Being and Nothingness)* "Man cannot be sometimes slave and sometimes free; he is wholly and forever free or he is not free." *(Sartre, 1993, p. 766).* Freedom for Sartre is the origin of human nature. In *Ist der Existentialismus ein Humanismus?* he notes that man is nothing to begin with, before he is eventually "making" himself. Man will not be anything until later, and then he will be what he makes of himself *(cf. Sartre, 2003, p. 14).* While for Sartre the final purpose of life is not objectively existent, Max Scheler argues that man is free in choosing his purposes, although he is determined with its realisation *(cf. Hügli and Lübcke, 2005, p. 218).* Immanuel Kant clarifies this this clear by defining freedom as arbitrariness of a special kind, associating associates freedom itself with the "absolute spontaneity" of arbitrarity *(cf. Kant, Rel., 2001, p. 670).* Consequently, man can use his freedom to choose arbitrarily. However he can only experience true freedom when consciously subordinating himself to moral norms which are determined by reason and rationality.

We can conclude that freedom requires awareness of our own situation. Without the necessary consciousness it is impossible to freely decide something *(cf. Hügli and Lübcke, 2005, p. 218).*

Another interesting aspect in relation to Kant can be found in the field of brain research – where researchers have a tendency to ask the same question. Wolf Singer postulates in his article *Keiner kann anders, als er ist* that one should not talk about freedom anymore[5] *(cf. Singer, 2004)* because a

[3] One example: Mill versus Ayer or utiliarism versus Noncognitivism.

[4] Among those advocating against life with an objective purpose are Jean Paul Satre or Søren Aabye Kierkegaard. An adverse approach is represented partly by Kierkegaard and Max Scheler.

[5] He gives an example of a person that is held fully responsible for an action. By chance, a tumor in structures of the frontal lobe of the brain is discovered. As those structures are needed for social rules and

genetic disposition could complicate access to social rules, anomalous rules could have been learned, or social norms have not been learned in time or not memorised well enough. This list could be extended, but ultimately leads to the conclusion that nobody can act differently than he/she is *(cf. Singer, 2004).*

Singer argues against the attempt of Kant to prove the compatibility of freedom with natural science. Detlef Linke argues similarly in *Die Freiheit und das Gehirn*, where he argues that we should not prejudge refrain from the concept of compatibility *(cf. Linke, 2006, p. 311).* Linke concludes that we cannot judge the freedom of man on the basis of neuronal activities alone, as those also have a semantic meaning and dimension *(cf. Linke, 2006, p. 312).* Although there are hints that our brain works in a deterministic way, we should not proceed to from a strict coding in the deterministic context. Un-coded elements of the brain are not responsible for sheer randomness, but open possibilities of "self-referential coding", by which the brain structures impulses on one's own and is able to determine thought processes and decisions *(cf. Linke, 2006, p. 312).*

Another aspect loosely related to brain research is the question of who is to be held responsible if in the future, due to technical developments, the agency of artefacts ("things doing things") is on the rise. While artefacts and infrastructures have always influenced our behaviour, algorithmic trading, search engine principles and other artefacts increasingly create knowledge and make autonomous decisions. Nowadays, humans are only one type of knowledge agent and various forms of information processing exist. Judith Simon proposes in her speech "Who's responsible if Things do Things. Distributed Agency and the Question of Knowledge" (Simon 2013) at *TedxZürich*, *that this form of distributed agency makes it harder for humans to act responsible as individuals*, which poses challenges for governance and design to support responsible behaviour.

From the perspective of brain research and neurophilosophy, we don't have to worry too much about our freedom – a claim Kant already made before Linke. Kant has already made the concept of freedom immune against biological theories, when proceeding from the following, third, antinomy:[6] *"Causality according to the laws of nature, is not the only causality operating to originate the phenomena of the world. A causality of freedom is also necessary to account fully for these phenomena." (Kant, KrV, 1998, p. 426/A444).* The corresponding antithesis is: *"There is no such thing as freedom, but everything in the world happens solely according to the laws of nature." (Kant, KrV, 1998, p. 427/445).* Kant is solving this antinomy by avoiding the consequence that all things on earth appear free and inevitable at the same time and by referring to his own causality of human reason with its imperatives *(cf. Sala, 2004, p. 218).* This largely means that man is free under the condition that his actions are determined by the material world. However, as an intelligible being and due to the causality of his reason he is not fully subordinated to the determinism of nature, as time is, in Kant's understanding, only a form of sensual perception *(cf. Sala, 2004, p. 221).*

If time and space are just forms of sensual perception, creating a continuous mechanical determinism within the world, the significance of the world is that of an appearance. Consequently, man with his will is free from this form of determinism *(cf. Sala, 2004, p. 221).* This

decision-making, the person was shown mercy in this case. However, the same "malfunction" could have invisible neural reasons.

[6] Kant argues in *Der transzendentalen Dialektik der Kritik der reinen Vern*unft, that there are four antinomys: 1. spatiotemporal dimensions of the world, 2. composition of material substances, 3. development of things and events and finaly 4. the being of things.

claim shall suffice for our interest, even though Kant's take on freedom is far from being completed at this point. For our purpose it is important that the concept of freedom according to Kant seems applicable, as it is immune against biological theories and consequently is not subject to the determinism of nature. According to Linke, Kant did not draw a more nuanced picture of how certain actions could be seen as both determinable by a time series of phenomena and by reason. He even ruled out that this could be made comprehensible. However, by locating time together with time-less phenomena reason can be seen as independent from the causes of nature, while freedom belongs to the realm of rationality. Nature, by contrast, does not know reason, but only causes *(cf. Linke, 2006, p. 312).*

Assuming that – at least in the realm of positive freedom – we are indeed free, we seek to answer the question whether the internet as an infrastructure restricts our negative freedom or not. In this context it is crucial to examine what sort of freedom to act the internet offers, as we can only talk of a loss of freedom in the sense of positive freedom if both the possibility to act as well as the awareness to do so are given. We will refer to this distinction later when describing two different kinds of debate on internet freedom.

The absence of freedom to act with regard to the internet can only affect us if something is taken away from us that has already been sensed before. We assume that in order to become aware of such restrictions, we have to presuppose a conscious understanding of our possibilities to act on the internet. With regards to this article, the question thus is what we are free to do within the infrastructure of the internet (and, to a smaller extent, what we are free from within this infrastructure). In the following we examine the concept of internet freedom with view to contemporary debates, outlining our freedom to act online, often highlighted by those who seek to create awareness for these possibilities. Subsequently, we relate it to several practical cases seeking to create awareness for activities that restrict our negative freedom online (or to prevent them).

The Discussion About Internet Freedom

Definitions of internet freedom in a contemporary context have evolved particularly in the area of internet politics and cover various aspects, like freedom of expression, freedom that is inherent in the design of the infrastructure and freedom of publishing. Other aspects of internet freedom are related to net neutrality (the attempt to make content available on not only certain tiers or certain internet service providers, but on a wide variety of them). This aspect covers the principle that providers and governments should treat data equally and not discriminating. Because the internet generates value from its users rather than centralised gatekeepers, freedom of use and access is to some extent inherent in the design of the internet, and policy frameworks should be designed in a way that enhances competition, innovation, free expression and trust, with minimal government intervention *(Kalathil, 2010)*.

Regarding the design, Lawrence Lessig's phrase „code is law" *(Lessig, 2001)* implies that the design of information technology itself has the deepest influence on user control *(Müller, 2008)*. This is based on the assumption that designers shape the flows of online society indirectly by shaping behaviours through design. According to Friedrich Hayek, the rules that govern society should not be designed to shape behaviour to someone's purpose, but create a secure framework within people can act to pursue their own ends *(Müller, 2008)*, ideally enabling interaction and constrain only in order to protect and preserve the freedom of rights of the actors involved. Rules should enable freedom, but do not necessarily conflict with it. One example given by Müller is the

global adoption of the internet protocol, which provided a powerful demonstration of the simultaneous ordering and liberating effect of universally, but impersonal rules in order to enable compatible data exchange between any of the world's networks. The code of tcp/ip was law in Hayek's sense.

It seems that internet freedom is to oppose all forms of censorship and content regulation, and that users should be free to make their own contributions and judgements online – similar to the basic principles of freedom of expression. It might thus be easier to define internet freedom by what it is not than by what it is (*Kalathil, 2010*), and current examples from around the world show what an attack on internet freedom looks like. Often this is understood in a political context, emphasising human rights and their application to the internet, and the concentration on individual and human rights in the context of internet freedom is claimed (*Müller, 2008*). People ask for internet politics sensible for human rights (*Landler et al. 2013*). Activists and institutions are seeking consensus around the dimension of internet freedom, like the Internet Governance Forum7 that is seeking to apply the Universal Declaration of Human Rights to internet governance, or civil society groups focusing on the concepts of free expression, privacy or monitoring government activities. For activists, internet freedom matters as an enabler and protector of our rights in society, with restrictions on it limiting our freedom of speech online and to debate and propose the laws that govern our lives (*Ammori, 2013*). While internet freedom is constantly at risk, user choice is seen as design principle.

If we seek to measure internet freedom, it is not quite on the rise globally. *Freedom on the Net 2013* is a report in a series of four comprehensive studies of internet freedom around the globe. Covering developments in 60 countries between May 2012 and April 2013 and based on an analysis of laws, practices and accessibility by over 60 researchers based in the countries analysed, findings indicate that internet freedom is in decline for the three consecutive years covered by the reports *(Kelly, 2013)*. Surveillance and new laws controlling web content as well as growing arrests of social-media users are seen as indicators of this decline. However, there are also reports of counter-activities that are becoming more effective at raising awareness and seeking to reclaim internet freedom in various ways. In this context, it has been emphasised that expressions like "freedom recession" have entered the public conversation, and that it would be "deeply symbolic" that the only major speech about internet freedom gien by a senior member of the Obama administration was Hillary Clinton's speech on internet freedom in January 2010 *(Morozov, 2011)*. In order to establish principles for internet policy, the declaration of internet freedom signed by a number of prominent individuals and institutions seeks to, significantly, "defend online freedoms"[8] like non-censorship of the internet and universal access to fast networks.

However, some researchers argue that it is necessary to turn to a new conception of internet freedom "attuned to contemporary conditions" *(Müller, 2008)* as a normative-philosophical and scientific enterprise. Regarding the normative, we should not only talk about security of infrastructures, but also about security of human beings, as freedom, security or privacy are not mere technical concepts. Müller, who is offering a nuanced introduction on the term internet freedom proposes to focus the discussion on the security of human beings as opposed to securitisation. As his approach is fruitful for our interest, it is introduced briefly in the following.

[7] http://www.intgovforum.org/cms/ (January 3, 2014)
[8] http://en.wikipedia.org/wiki/Declaration_of_Internet_Freedom (January 3, 2014)

As Müller states, the relationships between privacy, security and freedom are double-edged. While privacy and security can enhance and protect freedom of action and thought, both concepts are also invoked in calls for greater regulation of online behaviour. Anonymity can liberate, but also allow one to evade accountability for harms to others (Müller 2008). And while protection of personal data can mean freedom from unwanted forms of attention and abuse, shielding data about oneself from others can deceive them. The same counts for security, which as a complex relationship with freedom and privacy. To lack security in one's person or property is to be unfree, while efforts to safeguard security can create barriers to others' and our own freedom of action. While this dualism may be obvious, it is often neglected in public discourse and policy making. Müller proposes to ground the discussion in a debate about individual rights as a solution. Individuals need to determine when it is admissible to "sacrifice individual security and privacy for the sake of collective security".

While internet activism is related to taking away the mechanisms that could hinder our negative freedom, generally linking individual freedom to responsibility (from a Kant perspective) can be fruitful, and Müller argues that freedom can still be the overriding value in the discussion, with security being a derivate of that *(Müller, 2008)*. Like for Kant, freedom and responsibility are no opposing forces, plus we need to acknowledge that we cannot be free without security. Any concept on internet freedom arguing for a complete absence of security can thus be seen as inadequate.

To Be Free To Act Online

Revisiting the question what we are free from to do online, we conclude that we are not free from active control online, which is to a large extent unavoidable. But to assume a technological determinism is not plausible and, according to Dieter Biernbacher, problematic from a pragmatic-psychological perspective by fueling already existing tendencies to absolve from responsibility. When asking for responsibility of technological developments, we have to ask about the subjects of responsibility and its contents. We can assume that every actor on the internet is responsible for the consequences of his/her activities in the same way as in other areas of life *(Biernbacher, 1985)*. Taking responsibility in this sense and from the perspective of an ethics of technology is related to a progressive technology assessment, for instance regarding the risks and chances of a development. We can only talk of a strong technological determinism if an individual is forced to use or develop a certain technique that would otherwise be related to existential sanctions – if an individual would not have any other option. For most services we use this is not the case, although we can also argue that access to information in the information society and our freedom to do things online is related to personal development and growth like no other infrastructure.

Attempts to (re)claim internet freedom should concentrate on the question what we are free to do online – an assumption in accordance with the claim made by many internet freedom activists that activities should concentrate on the right of the individual. Regarding the question of how we actualise rights, we contrasted two approaches related to whether freedom is embedded in the technical system or the laws and institutions around it *(Lessig, 1999 and Hayek, 1973)*. Observing recent discussions on internet freedom, it becomes visible that the claim that this freedom is largely engineered is outdated: We cannot preserve our internet freedom by fending off all attempts to change it *(Müller, 2008)*.

When claiming internet freedom, we can argue that:

1. It makes sense to prioritise freedom over security.
2. Reclaiming what has already been lost could work best by using new technologies and tools.
3. This process should be guided by clearly-defined principles.
4. This process needs to be made understandable to as many individuals as possible and taken out of the specialist or "nerd" context.

We should seek to ensure that people (re)gain the appropriate levels of autonomy needed "to negotiate any claims to guarantee collective security at the expense of individual rights will only produce new forms of insecurity." *(Müller, 2008)*. Privacy protects human freedom, and as an extension of personal freedom we have the right to withdraw to anonymity. However, as Müller argues, we have to put freedom first if we do not want to let privacy "slip into a paternalistic attempt to comprehensively regulate how information is used." *(Müller, 2008)*.

On the other hand we could argue that we don't have to reclaim the freedom to do things as long as we do not decide freely to use a certain service. As we have shown, man is free in the sense that his actions are "mechanically determined" in relation to the material world, however as intelligible human being and by using causality and reasoning, he can still refrain from using certain infrastructures. Thus, and independent from this positive freedom, we have to constantly question how infrastructures determine our negative freedom or freedom to act. The missing freedom to act will only concern us if we have been taken away something we already had before. This largely means that the individual has to be aware of his/her opportunities for actions. If not, he or she will see no point in reclaiming his or her freedom to act online. This is visible when looking at special interest topics of internet freedom: only a few members of society will understand what is meant by "internet neutrality", and thus fight for regaining the opportunities for actions in that context.

Knowledge about our own situation is a necessary motivator, as is the conscious subordination to norms, for instance norms on internet governance. Norms like openness will only be advocated on the basis of that knowledge, and only when we consciously subordinate to these social norms we will truly experience freedom from a Kant perspective. Knowledge about internet structures, like algorithms and artefacts, is enhancing our freedom to act online, and critical usage, design and governance *(Simon, 2013)* could help us to re-claim agency in this regard. A term proposed by Judith Simon to support our understanding of critical usage is "epistemic hacking" *(Simon, 2013)*. She argues that we need a new hermeneutics, a new way of sense making, this allows us to trace how algorithms can be read at the technical level. The competences on this technical level should not only be achieved by a minority of users, but the majority of society, and Simon claims that we need more tools and systems that enhance transparency and support epistemic hacking. That would enable us to watch the watchers and tackle the privileged status of some individuals or artefacts. The problem in this regard might be that sometimes we want to give away freedom and agency – and we also have to make that decision about what to delegate.

Only if we were aware of our freedom to act beforehand, we can re-claim it in the sense of agency. Possibilities and examples of re-claiming our freedom online are vast. One example are the efforts of Wikipedia to encrypt communications from its users to prevent spying in the context of American censorship: *"as a result of the revelations about surveillance, the collaborative online encyclopaedia will begin encrypting communications with its users all over the world so that people cannot*

be spied on as they access information." (Berners-Lee 2006). Another example for the attempt to reclaim an already existing freedom is the concept of net neutrality and related activism. As Berners-Lee (2006) points out, *"there have been suggestions that we do not need legislation on net neutrality because we have not had it."* For him, such suggestions are nonsense as we have had net neutrality in the past and *"it is only recently that real explicit threats have occurred" (Berners-Lee 2006)*. Another example is the establishment of tools as technological attempts to fight back against perceived threats to internet freedom, e.g. the *FreedomBox*, the *Tor* software etc., which are designed to prevent governments that are monitoring internet connection from learning which sites one visits, or various cryptography programmes providing secure and private chat software. Other newer tools include *Trackmenot* or *Ghostery*. And activism in relation to regaining internet freedom has been very successful on a global level, for instance regarding the controversial SOPA (Stop Online Privacy Act) and PIPA copyright bills.

If we are no strong determinists, we will have an interest in self-realisation and thus in knowing how aspects of internet freedom are constantly negotiated between different actors. In addressing these issues thoroughly, one is led to higher levels of abstraction and to political philosophy *(Müller, 2008).* Regarding these negotiations, we also have to address the cultural contradictions of internet freedom *(Morozov, 2011.)* The problem at the moment is that there is no reason why some companies like Facebook should bother with defending freedom of expression in a country that is not an appealing market to advertisers. In February 2010, Facebook was criticised for removing the pages of a group with 84,298 members that had been formed to oppose the pro-establishment and pro-Bejing party, a ban being triggered by opponents flagging the group as "abusive" on Facebook. And Twitter has been accused of silencing online tribute to the 2008 Gaza War *(Morozov, 2011)*. However, it would be false to assume that the world's largest technology companies were aiming at restricting as much as possible of our freedom of expression. It seems to be difficult to handle content consistently; however we can expect large technology companies to remove any ambiguity from their censorship process *(Morozov, 2011)*. Morozov concludes that the *"relatively short-lived quest for internet freedom has already been corroupted by* […] *the tight embrace between policymakers and the industry"*. In accordance with Sartre, he concludes that you "can't be 'a little bit free'" on the internet": it should be possible to distinguish between weak forms of internet freedom promoted by the Obama administration and foreign policy liberals and its strong form, which is embrace by those who *"favour a more assertive, neoconservative foreign policy" (Morozov, 2011)*, so there are two kinds of internet freedom. Whereas the weak form implies an almost exclusive focus on defending online freedom of expression (freedom of the internet), the strong version would seek to promote freedom via the internet and envisions the internet as enabler of a kind of bottom-up revolt. To relate this back to the philosophical concept of negative freedom: While the weaker form of internet freedom mostly promotes negative freedom as freedom from something (e.g. government surveillance, censorship, DDoS attacks), the strong from is more concerned with advancing the causes of negative freedom as the freedom to do something (e.g. mobilise, organise or protest). The strong version operates with the rhetoric of "regime change", whereas the weak version aspires, according to Morozov, "for little else but the preservation of the internet as it is today", ultimately rooted in the freedom of expression. For him, those in the "weak agenda camp" are walking into the trap of an aggressive use of the internet to overthrow authoritarian regimes as a "conceptual monster" (visible in terms like "the Twitter revolution").

It is useful to relate philosophical theories to the concept of internet freedom when defining that term and thinking about the moral implications. Looking at deterministic tendencies, we are often

comfortable with the notion that everything is subject to top-down policy *(Müller, 2008)*. However, and as Müller argues: *"while it is clear that we cannot place our hopes for internet-freedom in some top-down design, it is just as clear that we cannot just sit back and allow evolution to take its course." (Müller, 2008).*

Summary and Conclusion

So, what does internet freedom finally mean? We have noted that the internet is an "infrastructure for us to exercise our freedom to speak, read, and connect with others" *(Ammori, 2013)* and as a basic for individuals to "control their own lives and reach their full potential". Consequently, according to Kant and the common differentiation of human freedom, it is all about negative freedom. Internet freedom is negative freedom; it is the freedom of action (and consequently, freedom of expression via this infrastructure, which is also referring to the political form of positive freedom). Regarding our positive freedom, from Kant's point of view, we are free to decide whether we want to use the internet and its related services, or not. This is an important realisation, as it makes us responsible for our decisions and actions as users.

For our purpose it is essential that the concept of freedom according to Kant can be applicable, as it is resistant against biological theories and consequently does not subject to the described determinism of nature. Freedom is a kind of causality because a free event is a cause that is not an effect. In contrast, determined causality requires events to be both, causes and effects. Summarising, nature does know only causes, no reasons *(cf. Linke, 2006, p. 312)*. Kant uses this distinction to argue for the sort of freedom he thinks we do in fact possess.

Assuming that in the realm of positive freedom we are free (with the exception of authoritarian regulations that hinder the usage of certain tools, and also assuming that the possibilities of realising this freedom differ according to the political climate), we seek to answer the question whether the internet as an infrastructure restricts negative freedom or not. It is crucial to examine what sort of freedom to act the internet offers, as we can only experience a loss of freedom in the sense of negative freedom if possibility and awareness are given. While the internet is quite a unique phenomenon, it is an infrastructure which firstly creates an amount of negative freedom for a part of society. Currently this new freedom is restricted, and it is precisely this ongoing restriction which people recognize. The absence of freedom only affects us if something that has been freely available, possible even taken for granted, is suddenly taken away from us.

However, there are two additional important facts about us as moral agents, as Kant argues: reason is not deterministic, and reason is not determined. Kant's argument for both of these statements is designed to convince us that we still perform our actions freely even though they are caused by reason. Nevertheless, for our purpose it is essential to note that our concept of freedom is also practical. Kant calls everything practical that is possible through freedom, and the pure practical laws, which are never given through sensuous conditions, but held analogously within the universal law of causality are moral laws. Reason can thus give us only the pragmatic laws of free action through the senses, but pure practical laws given by reason a priori dictate what ought to be done *(cf. Kant, KrV, 1998, p. 673/A800)*.

The latter could be within the responsibility of the government since these are questions concerning our whole society. This would mean that independent from supporting activities that

fight state invention[9], the government could also actively aim at creating the conditions necessary for individuals to express themselves freely. By now, as users, we can only use tools that protect our negative freedom as bottom-up inventions (and unless we subscribe to the idea that the purpose of man should be to become part of a greater whole, by giving up our positive freedom in its political form regarding which tools to use, it is likely that we will have an interest in its protection). Theoretically, a government could also actively support the protection of our negative freedom, acknowledging the responsibility of the government to actively create such conditions. At the moment, governance attempts seem to go in the opposite direction, increasing the need for information and education on possibilities to protect our negative freedom, and the right of the individual as claimed by internet freedom activists. On a larger scale, this increases the need for activities to support internet freedom in its strong form related to a regime change *(cf. Morozov, 2011)*. But we should seek to ensure that people (re)gain the appropriate levels of autonomy needed "to negotiate any claims to guarantee collective security at the expense of individual rights will only produce new forms of insecurity." *(Müller, 2008)*. We thus need to consider that every tool, law, etc. which is seemingly made to protect the user, can also reduce our amount of freedom.

One option could be to use the internet itself to start a bigger debate involving governments regarding useful ways to limit the restriction of negative freedom on the internet and regarding the creation of new internet freedoms. However, we can still assume that, concerning our negative freedom according to Kant, the use of the internet primarily generates more freedom for individuals than they had before. We as actors have an interest in the creation of new freedoms, but also in preserving already existing ones or bringing them back – a topic that needs to be brought from a special or tech-savvy audience to the attention of the whole society.

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About the Authors

Philipp Rössl

Is a research fellow at the Centre for Ethics in Medicine at Danube University Krems, Austria. His work is focused on ethical argumentation, epistemology and theory of science.

Judith Schossböck

Is a research fellow at the Centre for E-Governance at Danube University Krems, Austria. She is the managing editor of the open access e-journal JeDEM (jedem.org) and member of the interdisciplinary internet research group of the University Vienna. Her research interests are eDemocracy, eParticipation, online activism and digital utopia.

Design and Co-creation for E-Democracy

The Strategic Value of Design for E-Democracy

Bert Mulder

eSociety Institute of The Hague University of Applied Sciences, The Netherlands, a.w.mulder@hhs.nl

Abstract: *The paper arguments that a design approach will be essential to the future of e-democracy and e-governance. This development is driven at the intersection of three fields: democracy, information technology and design. Developments in these fields will result in a new scale, new complexity and demands for new quality of democracy solutions. Design is essential to answer these new challenges. The article identifies a new generation of design thinking as a distinct new voice in the development of e-democracy and describes some of the consequences for democracy and governance. It argues that, to be able to design new solutions for e-democracy successfully, current approaches may be too narrow and a broader critical reflection is necessary for both designers and other stakeholders in the process.*

Keywords: *e-democracy, Design, Design Thinking, Strategy, e-government*

Introduction

The adoption of a design approach for e-democratic and e-governance solutions has slowly increased during the last decade. This article describes this trend and identifies the opportunities and challenges associated with it. The rather ad hoc selection of examples below shows how design has been associated with democracy.

- 1997: Schneider and Ingram title their book 'Policy design for democracy'
- 1998: the American Institute for Graphic Arts (AIGA) initiates its programme 'design for democracy' 'to increase civic participation by making interactions between the U.S. government and its citizens more understandable'
- 2002: Andrew Reynold publishes 'The architecture of democracy: constitutional design, conflict management, and democracy'
- 2007: AIGA's Design for democracy project does ballot and election design. It results in field guides to support better quality design of ballots and a series of posters and videos that inspired the American public to vote, created election design fellows
- 2010: Andrew Reynold writes 'Designing democracy in a dangerous world'.
- 2014: Josh Lerner 'Making democracy fun: how game design can empower citizens and transform politics'
- 2013: the subheading for 'the Centre for Civic Design' is 'democracy is a design problem'.

The publications and projects above show the challenges of the association of 'design' with democracy and governance – the term is used in diverse ways, denoting different products and different processes. But beyond such ambiguous and diverse use of the term this article indicates that the actual application of a design approach to democracy is also not without problems. That is

why, as a design approach will become more common, the opportunities and challenges of a design approach for e-democratic solutions have to be addressed.

The growing interest to apply a design approach to democracy and governance has three drivers: (1) the challenges democracy faces and the new quality solutions needed and (2) the growing possibilities of information technology developments and (3) the new direction that the field of design has taken. At the intersection of these three developments fundamentally new opportunities and challenges for e-democracy appear. To answer those challenges effectively it is essential to adopt of a design approach to create better and more successful e-democracy solutions, but it is not without its challenges. Below is an overview of the developments in each of the three fields of democracy, IT and design that, although sketchy, indicate the challenges.

Challenges in Democracy and Governance

The development of democracy has seen great transitions in the last decades. Between 1975 and 2000 the number of nations with a democratic regime increased from less than 30% to more than 60% of all nations worldwide. This led to the perceived universality of democratic principles and their assumed compatibility with diverse religious and cultural traditions. But it also resulted in an increasing diversity of democracies that half way the nineties attracted the attention of researchers (Diamond & Plattner, 2001, p. xi xii). The diversity of democratic implementations made it apparent that a gap existed between form (such as free elections) and substance (such as liberal political freedom and deliberative quality) in the different democracies. Diamond concludes that the third wave of democratization is over, with many of the newly democratic states being far from liberal. Riker (1975) and Diamond (1996) note the challenging nature of this situation because when no valid alternative seems to have arisen, 'most constitutional regimes of the third wave appear "condemned to remain democratic", at least in form' (Riker, 1975 quoted in Diamond, 1999, p. 60). In 2008, 30 years later, the situation is worsened as Boisen and Norrman write that "Democracy, under its short, fragile existence seldom has been more threatened"(Boisen & Norrman, 2008, p. 15). In is why many older and newer democracies try to reconnect citizens to their governments through engaging them in the policy processes, through social participation or increased transparency.

As a possible course forward for democracy Diamond envisions a process of consolidation (Diamond, 1999, p. 69) that results in a regime where democratic institutions are 'the only game in town' (Diamond & Plattner, 2001, p. xiii). Such consolidation requires a shift in political culture consisting of a change in norms and beliefs as well as behaviour on three levels of society: the elite, organizations and the mass of the public. When considering a design approach for e-democracy, the designers involved in the development of new solutions should be able to take this larger context into account: in what state in the democracy they design for and what do they aim for?

This dynamic and its challenges are broader than just democratic forms of governance. China and other regimes have similar challenges in governance. Although not seen as democratic in nature they are facad with question of legitimacy (Holbig, 2006), the relation between state and corporations (Liu, 2006) and the role of communities and decentralized self-governance (Bray, 2006; Howell, 1998).

In this situation any new solution for e-democracy does not function in a stable context. Its designers may be asked to create a new experience of democracy in the hope that citizens will

reconnect and be stimulated to actively contribute to a civil society. Solutions that simply extend the current situation will not contribute positively and their designers will need to work from an understanding of the underlying processes that shape civil society and consequently its democracy.

Developments in Information Technology

The fields of e-government and e-democracy originate both when public Internet in the mid-nineties enables citizens to exchange digital information amongst themselves and between themselves and public bodies. One way to outline the development of e-democracy is to relate it to the development of the Internet. The first phase of e-democracy 1.0 is mostly focussed in online communities and informing citizens. With the onset of web 2.0 in 2004 e-democracy development and research focus increasingly on the contributions of social media. These have been looked at for established democracies (John C. Bertot, Jaeger, & Grimes, 2010; John Carlo Bertot, Jaeger, Munson, & Glaisyer, 2010) as well as for newer developments such as those during the Arab spring (Howard & Duffy, 2011).

Although these decades saw a great increase in the quality of e-government solutions, the results in the field of e-democracy have been much less obvious (OECD, 2005). The e-democracy solutions that are developed have an individual character being are project or single issue based. e-Petitions is one of the larger initiatives that, because it acts as a separate process, was relatively easily to implement and could be introduced without interfering with other aspects of the primary process. But generally the effects of these e-democratic developments are still uncertain (Tomkova, 2009) and specific solutions have contributed relatively little to the overall quality of democracy (OECD, 2005; Peña-López, 2011a). It doesn't mean that the information society was without influence, but a greater effect on the quality of democracy has been seen from developments like digital online media and social media in general. Compared to the e-democracy solutions that embrace the new possibilities of technology (websites and social media) remarkably little development has taken place to support the day-to-day issues of existing democratic processes or the structural reporting of financial aspects of political issues (Mulder & Hartog, 2012).

Continuing this trend e-democracy will follow the ongoing development of IT, internet and web technology. The development of web 3.0 and 4.0 solution for e-democracy will create new opportunities but at the same time pose challenges for democracy. The semantic web (web 3.0) will standardize the machine-readable expression of knowledge. By facilitating access to knowledge it may stimulate democratic participation. The increasing transparency of decisions and processes may create a level playing field between those that have knowledge and those that don't and between professionals and laypeople (Vossen, Lytras, & Koudas, 2007).

When web 4.0 will facilitate machine-readable argumentation it may facilitate an easier understanding of the complexities of political issues, a development that may consequently lower the barrier to participation in a civil society and its democratic process. The same holds true for model-driven business solutions that automate processes and decision-making. The availability of big data and open data collections may provide us with new ways to keep an eye on society, but much research is needed to see what we may measure and what the results mean (Peña-López, 2011b). Its possible contribution to democracy may be that it provides citizens with direct information on what is going on and create greater transparency.

Such coming developments not only create new opportunities but are also wrought with ambiguity. They will move e-government and e-democracy solutions beyond the context of administrative services and social media into a next generation of digital complexity. Processes of decision-making may be automated. Knowledge may be integrated in real time where necessary. This creates a possibility of government and democracy being increasingly data and algorithm driven. It creates forms of digital government and democracy as a complex ecology where data, information, artificial intelligence and customized presentation of information together may provide more advanced solutions to citizens and civil servants. This is how the semantic web, big data, open data and model driven business solutions have the possibility to be game changers just as social media is now. It is clear that such solutions are no longer value free and will and that such new complexities will need to be researched carefully, not only in their technical aspects, but certainly also in their political and democratic consequences.

New Directions in Design

As shown in the beginning of this article the field of design has been increasingly associated with e-democracy and e-democratic solutions. The increasing association can be seen to express the more general development of the design field answering the broader and more complex issues in society. After the first generation of graphic and product designers that worked individually to create individual products, from the 1980's the second generation of design goes beyond such functional design in different ways. It starts to apply itself to broader social and cultural challenges of society such as poverty and quality of life where designers find themselves designing solutions to social problems in suburbs, schools, healthcare and public administration. In the following examples teams of designers work together with the stakeholders on problems in a process called participatory design of co-design.

- 2000: Stanford University initiates its Center for Social Innovation
- 2004: During the EU funded Spark! Project design students work on solutions to social problems in neighbourhoods in London, Oslo and Latvia. Such problems would otherwise have been the field of social professionals and welfare workers (Verwijnen, Karkku, & Thackara, 2004)
- 2006: the UK Design Council's RED team outlines how they developed 'transformation design' methods for public services (Burns, Cottam, Vanstone, & Winhall, 2006)
- 2007: Geoff Mulgan writes 'Social innovation – what it is, why it matters and how it can be accelerated' for the Oxford Said Business School (Mulgan, Tucker, Ali, & Sanders, 2007)
- 2009: Tim Brown introduces the concept of 'design thinking' in his book "Change by design' (Brown & Katz, 2009)

Richard Grefé, the chairman of AIGA (the American Institute of Graphic Arts) explains the long term development of the design field as one that moves from design with a focus on form to design with a focus on both form and content, and finally to a focus on form, content and context (Design Thinking documentary, at 1:10:05).

Characteristic of this development of the design field is the shift from the material to the immaterial. Krippendorf refers to this as 'the semantic turn' (Krippendorff, 2005), a paradigmatic shift in design where the emphasis is on semantics – the meaning of the artefact designed for those

that use it. Krippendorf distinguishes science from design where science is attuned to measuring past events and theorizing those occurrences that stay the same. Design, on the other hand, creates artefacts, practices and narratives that must then be realized in a network of stakeholders. Design, in his terms, to the extent it is innovative, may well break with past theories, overcome popular convictions, and challenge stubborn beliefs in a history-determined future. Fundamentally, past observations can never prove the validity of truly innovative designs. The challenge is how this relates to the experienced and required quality of existing or new democracy. Are the designers of e-democracy solutions able to formulate those 'new solutions' and 'design requirements' for democracy?

Another characteristic in the development of the design field is the move from the simple to the complex. Tim Brown introduces the concept 'design thinking' (Brown & Katz, 2009) to stand for a more collaborative, human-centred approach that can be used to solve a broader range of challenges in care, government, poverty and ecology. Design thinking distinguishes itself not by its phases (define, research, ideation, prototyping, choosing, implementing and learning) but by its application to complex challenges. Its interdisciplinary teams open-mindedly start with re-defining the initial design question. Brown's concept of design thinking becomes quite meaningful to other fields but less so in the design field itself despite a long history of academic development and debate (Johansson-Sköldberg, Woodilla, & Ãtinkaya, 2013). In his book 'The design of business: why design thinking is the next competitive advantage' Roger Martin (Martin, 2009) describes design thinking as creating a balance between analytical and intuitive thinking. Where analytical thinking optimizes financial indicators, design thinking follows the constantly developing user needs. The question is whether solutions for e-democracy, forming part of an complex social, cultural and political contexts, would benefit from 'design thinking'. AIGA's Grefé illustrates design thinking when he explains what they did when asked to redesign the ballot:

> *"For democacy to work well there has to be trust between the government and the citizen. And trust is established by understanding and communication. And almost all of the communication between a government and a citizen is based on asking for information or giving information. Which means that democracy depends on information design. When the government came to us and asked us to redesign the ballot we said we wouldn't redesign the ballot. But what we would do is redesign the election experience, because it's not the ballot that is critical. It's the experience from a time a citizen discovers that there will be an election to the point at which they understand the issues and go through the process of actually getting to a voting place, marking a ballot, and then leaving the space confident that is was marked properly and it was counted. And that's the whole election experience. Now there's a case where instead of designing a ballot we redefined and designed an entire experience."*
>
> *(Design Thinking documentary at 00:46:30)*

These developments in the design field show that the increasing adoption of a design approach to e-democracy isn't an isolated event but part of a much broader trend where design and designers actively develop new practices.

To be able to reflect on design and the challenges may create it is necessary to have a clear notion of design. In trying to develop a formal definition of design Ralph and Wand (Ralph & Wand, 2009) analyse more than 30 different definitions. It doesn't seem possible to define the concept 'design' in a single general and precise way and the many diverse definitions are specific to the contexts in which the practice is being applied. Consistency appears only at the most general level:

> *"Design involves two different environments: the environment of the design object, and the environment of the design agent." and: "the design process, or activity also occurs within some environment".*

In the different definitions of design the term may refer to an artefact (the thing to be designed), a process (the design process itself) or a system (the totality of the design approach and its process and results) and the result of which may be an artefact, a solution or a plan. Design projects adopt a design worldview – 'a way of looking onto the world' – and instantiates a design approach and strategy - 'a set of beliefs about how design (and related activities) should be done'.

Figure 1: Elements of design

The products of design may be as diverse as physical artefacts, processes, symbolic systems, symbolic scripts, laws, rules and policies or human activity systems. The elements of the process of design are object, agent, goals, object environment, requirements, primitives and constraints. Adding to these different aspects of design Cross (Cross, 2001) introduces the term 'designerly way of knowing' to distinguish it as being separate from other 'ways of knowing' such as the scientific and the artistic. And when we apply design thinking to democracy it is this way of thinking that creates a difference.

Design Approach Essential for E-democracy

Three reasons determine why a design approach will be increasingly essential in developing solutions for democracy and governance: scale, complexity and quality.

The ongoing adoption of ICT in general will stimulate the creation of an increasing number of e-democracy solutions. The current individual and isolated systems will be joined by e-democracy services built into the day-to-day processes of e-democracy. The increasing number of individual e-democracy solutions and as well as their interactions create an e-democracy 'ecology' that will require a design approach to maintain quality.

The complexity of e-democracy increases when, next to informing citizens and engaging them, new solutions address will create automated digital systems for knowledge management, data, argumentation and decision making. These directly influence the quality of the primary process of democracy and will require design that is able to take the democratic and political consequences into account.

Quality refers to the better quality needed when e-democracy solutions become more effective and users become more educated and demanding. Here design brings its experience of usability, design thinking, co-design and participatory design to involve users and create systems that closely match their requirements.

Designing Democracy: Challenges

Embracing a design approach for e-democracy is necessary to address the new scale, complexity and quality of solutions and yet it is not without its fundamental challenges. What worldview will drive the process? Does its functional and innovation driven design approach relate favourably to the political context? In the design environment, for what democracy are we designing? What does it take to think in terms of design products? Below four areas of challenge are indicated with an initial direction for solutions.

The Design Worldview: New Contextual Thinking for Designers

Any design, like any activity, departs from a worldview, implicitly or explicitly. Does design and do designers have a worldview that is comprehensive enough to support design for democracy? Pouredhnad (Pourdehnad, Wilson, & Wexler, 2011) argues that although design may bring it own viewpoint, it actually lacks an integrated worldview. To compensate for the lack the authors propose to integrate design thinking with systems thinking and suggest that this might create the third generation of design.

> *"Systems thinking replaces reductionism (the belief that everything can be reduced to individual parts), cause and effect (environment free theory of explanation), and determinism (fatalism) with expansionism (the system can always be a sub-system of some larger system), producer-product (environment-full theory of explanation) and indeterminism (probabilistic thinking). Additionally, it replaces analysis (gain knowledge the system by understanding its parts) with synthesis (explaining the role of the system in the larger system of which it is a part). Analysis is useful for revealing how a system works but synthesis reveals why a system works the way it does? (Pourdehnad, Wilson, & Wexler, 2011, p. 3)*

Expressed in this way systems thinking adds a fundamentally different quality to the design process and might be one of the requirements when designing for democracy. Another criticism to design thinking was that, regarding the complexity of the problems it undertook, it wasn't going far enough. Paul Pangaro (Pangaro, 2010) suggests, reasoning from a cybernetic point of view, that designers should be concerned at a higher level and engage in four different conversations that are interlocked through iteration and evaluation:

- Conversation to agree on goals
- Conversation to create new language
- Conversation to design the designing
- Conversation to agree on means

The level of reflection these questions introduce might be what is needed to prevent solutions that are too simplistic when striving for truly sustainable solutions for e-democracy.

Both these criticisms point out that with the development of the design field towards design thinking comes the need for a deepening reflection. With regard to the design of democracy the question is whether such quality of reflection is not a prerequisite. Answering Pangaro's four questions would lead to new thinking for democracy as well as for design and is not something done lightly by most. This is in line with the more general criticism to design thinking that only few are able to do so. While researching new design directions in The Netherlands, an audience of 100 designers estimated that about 5-10% of all designers may be able to tackle the new complexity

of social design challenges (Krabbendam, 2007). What designers should design for democracy and which of those are able to do so?

Without such a deepening reflection on design, its role, process and outcome there is the possibility that the design for democracy generates products and services 'by popular design', based on the simplest of notions, not placed in a larger context and not resulting in sustainable solutions.

The Design Approach: Functionality versus Democracy

Design aims to create value, but in the context of democracy such 'value' goes beyond simply a better quality of solutions. When design thinking is sometimes described as being strategically important for business (Martin, 2009), could it play a similar role for governance and democracy? In fact, Farrel and Goodman report so explicitly (Farrell & Goodman, 2013, p. 1):

> *'…what works today is a more disciplined, systematic approach to solving public-sector management problems—in short, government by design. Government by design calls on public-sector leaders to favour the rational and the analytical over the purely ideological, and to be willing to abandon tools and techniques that no longer work. Four principles are at its core: the use of better evidence for decision making, greater engagement and empowerment of citizens, thoughtful investments in expertise and skill building, and closer collaboration with the private and social sectors. Each of these principles is central to creating more effective yet affordable government.'(Farrell & Goodman, 2013, p. 1).*

They see the design approach compensating for the less constructive dynamics of politics with great possible value:

> *'The value at stake is staggering: prior McKinsey research suggests that improvements in government performance could amount to as much as $1 trillion in increased productivity and cost savings by 2016 in the G8 countries alone.3 Through government by design, public-sector leaders can move beyond partisan debates and politicized headlines, and make true progress on society's most pressing problems.' (Farrell & Goodman, 2013)*

Here we see a normative aspect in the application of design: it strives to create better solutions, taking the different viewpoint of users into account. But as Farrell et al. state, this 'better' is a different better than the choices that are made in the political context of democracy. The fact that solutions for democracy are decidedly 'political' and that 'government by design' is decidely 'functional' may show to be a fundamental issue and should stimulate us to invest in research and reflection. Farrel and Goodman identify the possible positive effects of design for government, but what are the possible perverse effects? The fundamental ambiguity of functionality in relation to democracy is illustrated by a remark from the director of the Second Chamber of the Dutch parliament:

> *"The reason for the existence of parliament is the prevention of war through facilitating dialogue. Efficiency is not a measure for that activity."*[1]

A functional design approach to create and implement government solutions may irk citizens and their reaction may be be quiecker and more forceful than an approach of research and reflection. Recently the Behavioural Insights Team of the UK government started to use the

[1] Personal communication, 1996

insights of behavioural psychology to stimulate citizens to adopt policy such as healthy ways of living. They attracted unfavourable attention and were described in the media as 'the sinister nudge unit' (Gill, 2014). This is a possible reaction to the more explicit and public use of effective and functional design methods in matters of government policy.

The Design Environment: What Democracy to Design for

Democracy is not a singular concept, and designing for democracy requires sensitivity to its range of possible expressions. There is criticism that many e-democracy solutions are in fact addressing a limited field. Carl diSalvo argues that a lot of design for democracy is implicitly focussed on creating consensus while neglecting other possible dynamics of what he calls agonistic pluralism (DiSalvo, 2010). Agonistic pluralism has a central role for those processes that reveal information and challeng the status quo. In such a view of democracy access to information is not a necessary basic right. His argument is that e-democracy should focus on more than just deliberative liberal regimes. Designers of systems should have the ability to create fiiting solutions in bot cases. This would require them to be able to work on a dimension of possible solutions embracing both consensus based solutions at one end and agonistic pluralist solutions at the other. Any design for democracy would need to know where its solution located on that dimension and why it is there. All involved in the design of solutions should be aware of these distinctions, but in today's design education there is little attention to such issues.

Along similar lines is the critique about the relationships between participation and democracy through e-democracy may be contested (Pateman, 1970) and in fact has been contested since the 1930's (Schumpeter, 2010). As, in design thinking, the first step consists of [re]formulating the original design question those involved in the design of solutions for democratic processes should be aware of such issues. What is the larger context? The question is whether design methods such as co-design or participatory design are powerful enough to create solutions that bypass such often held notions surrounding democracy of whether they to be explicitly aware of the worldview they work from.

A design approach has the ability to create new solutions for tomorrow: does design create solutions for today's democracy or that of tomorrow? When today's solutions are judged to be inadequate we will strive for the new. But solutions will need to sustain a consistent experience of democracy while at the same time providing new inspiration to citizens and compensate for current inadequacies and instabilities. The 'newness' that comes so natural to a design approach, may become a sensitive issue when applied to democracy solutions.

And finally, the experience of living in a democracy may be determined by much more than just systems and solutions to democratic processes such as policy development or voting. When we enlarge the notion of democracy to that of a civil society, the question becomes whether our healthcare solutions, our economic organizations and our learning institutions contribute to a civil society that creates the feeling of being embedded in a democracy. This would mean that democratic quality may be designed into many different systems and that, in order to be succesful it may advisable to develop democratic design patterns that are easy to implement in different contexts and, although they have different goals, still create an awareness of a civil society and democratic quality in their users.

The Design Product: the Fundamental Materiality of Democracy and Governance

An essential quality of design is its focus on the materiality of the product it creates. That makes embracing a design approach for democracy challenging for the other stakeholders involved in democracy. For all its abstract and political notions, in the end democracy shows itself in the material experience of papers, screens, events, conversations, sounds and images. That power of artefact, infrastructure and process and the fact that the quality of (the experience of) democracy is determined by the quality of those material expressions is mostly underestimated by other stakeholders. In a recent design workshop on the question "where do you meet Europe in your daily life" the audience (an international group of policymakers and NGO's) could not identify the concrete moments and situations in which they actually met Europe. Their dominant rhetoric was that of in fields of democracy and governance: abstract political and policy concepts. Only after repeated attempts they could specify specific material situation that calaysed a notion of 'Europe' in their daily life, and only after that they were able to envision and design new products and services that would enhance that notion. The structural introduction of a design approach for democratic systems and solutions will lead to an increased awareness of the materiality of democracy and the importance of its quality.

Design for Democracy: Opportunities and Challenges

Embracing a design approach to e-democracy seems necessary and unavoidable, but there are opportunities as well as challenges. Applying design may create better quality solutions that are more attuned to the wishes of citizens. The implementation of such solutions, being created in a methodical way, may be scaled up easier. But looking at the different elements of the design process several issues come up. The design worldview would have to embrace systems and/or cybernetic thinking to be able to deal with the inherent complexity of the context and should be aware of the larger context of democracy and politics. The design approach may be more inclusive of citizens, but will have to be aware that such methods may create solutions that are too narrow to be sustainable in the long run. For other stakeholders involved in designing democracy solutions it will help when they are aware of the contribution that the material expression adds to the experience of democracy. Design for e-democracy requires a new level and quality of critical reflection that needs to be developed alongside the activity of design itself. The design field should identify the new opportunities and challenges of good design for e-democray at the level of the world view, the design view, the design process and the possible products. To create awareness of and knowledge and design skills for good quality solutions there should be adequate curriculum to educate designers, clients and other stakeholders.

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About the Author

A.W. Mulder

Bert Mulder is associate professor Information, Technology and Society at the Hague University in the Netherlands. His main interest is the large scale application of ICT to society where he focuses on government, care and welfare. His work is increasingly involved in designing solutions for fundamentally new and different forms of governance and social welfare. Earlier he acted as the information advisor to the second chamber of the Dutch parliament.

Citizen's Participation in Democratic Governance Processes through ICT in Africa

Citizens' Advocacy for Public Accountability & Democratic Engagement through ICT Convergence in Eastern Africa

Johnstone Baguma

Project Coordinator & ICT4D Researcher, Toro Development Network (ToroDev), Uganda, jkbaguma@torodev.kabissa.org

***Abstract**: This paper aims at contributing to the concept of [electronic] e-participation by exploring empirical relevance of the ICT Convergence approach to promoting citizens' democratic advocacy in the developing world context. It presents an analysis conducted on ToroDev's ICT convergence approach for democratic engagement in western Uganda. It describes how simple, affordable, and cost effective ICT tools are used to mobilize, activate the intuitiveness, assertiveness and facilitate local citizens' participation in good governance processes. ICT tools have strengthened offline citizens' gatherings to deliberate on good governance issues through advocacy forum platforms. As a result, essential service delivery is improved at the grassroots level. The paper also relates ToroDev's approach to other initiatives in the Eastern Africa and discusses challenges and potentiality of the approach in empowering local citizens to democratically air out their views, monitor and participate in planning, budgeting for improved service delivery together with leaders on a larger scale.*

***Keywords**: Governance, Good Governance, ICT Convergence, Democratic Engagement, Advocacy Forums*

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Introduction

Information and Communication Technologies (ICT) offer concrete opportunities for local and national governments to improve their performance in terms of transparency, participation and decentralization (Guchteneire & Mlikota, 2008, p.2). Many other scholars and development practitioners globally, have echoed related statements in recent years. However, many are anecdotal and coming across empirical case studies to support such conclusions has been difficult.

The United Nations (2010) reported a social media boom supported by mobile technologies in Africa. It is also argued that countries that have harnessed the potential of ICTs have attained significant social and economic development. This transformation also has influence on how political leaders govern citizens in these knowledge-based economies or nations. For example, the boom of online social and broadcast media and mobile technology use in the North African states of Egypt, Tunisia and Libya is believed to have contributed to change in governments that were perceived undemocratic by citizens since the year 2011. Strand (2010) stressed that in a given state, citizens must have access to public information in order for democracy to function. For lack of it, results in a non-participatory society in which political decision making is not democratic. Therefore, access to information and transparency are prerequisites for democracy as well as key tools in the fight against corruption.

This analysis paper consequently, examines innovative and practical ways in which local citizens are empowered to use ICT to democratically engage their leaders for improved essential service delivery in western Uganda. It also briefly explores other practical e-participation processes in Kenya and Tanzania where the ICT for Democracy Network for East Africa currently operates. The major goal of the paper is to contribute to a body of empirical knowledge about the ability and challenges of ICTs in promoting bottom-up (citizen participation) good governance practices in the developing world. It presents the preliminary results of a project kick-started in July 2012 titled, "*Converging ICT Tools to Promote Public Accountability & Democratic Engagement for Improved Service Delivery in western Uganda*". The project is implemented by ToroDev in partnership with SPIDER at Stockholm University, the National Endowment for Democracy, USA and ICT4Democracy Network for East Africa. The novelty of this project is that, it conceptually employs an "*ICT convergence approach*" that emphasizes broadcast media as a hub, where all other information and knowledge sharing initiatives – including internet enabled online platforms – can be accessed and used by the bulk of local citizens in a rural or countryside context of the developing world. The paper also analyses the effects of the ICT convergence approach and ICT for development in general; creating a sense of responsibility, spuring individual and group intuitiveness to tackle complex socio-economic and political development challenges in the community and forge unity among the rural populations. Outcomes from ToroDev's interventions show that this kind of citizen empowerment continues to be possible in western Uganda. For example, through the emergence of ICT-enabled citizens' *advocacy forums* as physical and offline platforms, rural citizens objectively engage leadership for essential service delivery accountability and government leaders are finding it challenging to match civically empowered citizens' information needs.

Methodology

The methodology used for data collection and analysis, combined both qualitative and quantitative approaches within the framework of evidence-based theory and practice (Drisko, 2012). It focused on tracking outcomes of ToroDev's use of different ICT tools to promote accountability and democratic engagement- where broadcast radio has been used as a *convergence hub* - in western Uganda since 2011. The analysis gathered data on perspectives and noticeable changes as result of using ICT convergence for democratic engagement, active citizens' participation in good governance processes for realization of improved service delivery. A total of 214 local citizens organised in the forteen citizens' advocacy forums spread in six out of seven districts where ToroDev operates were interviewed. The other data was collected from 40

broadcast media practitioners organised under the Rwenzori Journalist Forum, 60 local and central government political leaders and civil servants in the seven districts of Rwenzori region, western Uganda also provided vital information for this analysis. The literature on other ICT-enabled citizens' participation initiatives in Eastern African countries (Kenya and Tanzania) were also analysed in relation to ToroDev's ICT convergence approach.

Context, ICT Infrastructure & Policy Framework in Eastern Africa

ITU (2010) estimated that ICTs could be accessible to everyone by 2015 and bring internationally agreed development targets ever closer to achievement (UNDP, 2012). The realism of this estimation remains an unanswered question in Eastern Africa due to contextual challenges. These could be social, economic, political and technical, including infrastructural issues, which slightly differ from country to country in the region. The Swedish International Development Cooperation Agency argued that in government, ICT may increase accountability and transparency and counter corruption through more efficient administration and increased flows of information. This may also strengthen good governance and improve interaction between government and citizens (Primo & Esterhuysen, 2009). However, one the challenging questions faced with development practitioners has been how to practically localize access and use of ICT to benefit rural citizens in their quest for active participation in governance processes that target to improve their livelihoods in the developing world.

The concept of *governance* has been around in both political and academic discourse for a long time. However, the cornerstone of *good governance* involves high quality service delivery, quick and efficient response mechanisms, easy access to necessary resources, and high civic engagement (Moraa, 2011 & Olugbenga, 2001). Oloo & Kamungi (2012) defined governance as a process by which public institutions conduct public affairs, manage public resources and guarantee the realization of rights and services. On the other hand, they described good governance as public service delivery in a manner that is free of abuse and corruption, respects the rule of law and commitment to democratic values. It is participatory, transparent and accountable, based on broad consensus and includes the voices of the poor and vulnerable in decision-making processes (Oloo & Kamungi, 2012).

More so, as Chaligha (2008) stressed:

> *"…good governance refers to existence of democratic norms accepted and nurtured by citizens and their government. The involvement of citizens in development of rules and procedures (norms) is crucial. Hence, the government has to be close to its people by involving citizens in development and implementation of policies, programs that affect them in their localities. A government that ensures citizens' participation also ensures continuous accountability, transparency, legitimacy and trust. When citizens take a role in determining and implementing projects, their quality of life improves. Under such conditions, citizens' participation can be perceived as a prerequisite for poverty reduction. Consequently, the lack of citizen participation in determining their own destiny can impact upon citizens negatively. Citizens may feel ignored if they are not involved in formulating and implementing projects in their own communities. When they feel that their local authority does not involve them, they may feel alienated. Good governance suffers under such circumstances, and democracy is also undermined." (Chaligha, 2008, p. ix).*

While much has been reported on the benefits of ICTs for promoting development – including governance processes, recent studies indicate that the technologies themselves cannot bring about positive changes in people's lives; it is ways in which these technologies are used, the infrastructures available to access these technologies and institutional frameworks that protect those that do use these technologies. Often it is these other factors that enable positive transformation (Kriz and Qureshi, 2009, p.2). A brief exploration of the ICT sector and government openness frameworks in some East African countries reveals the following;

The Uganda government drafted the National ICT Policy in 2003 and established a fully-fledged ICT Ministry in 2006. Later on, the enactment of Right to Access to Information Act (2005) signified government's commitment to empowering local citizens to actively participate in governance issues. The Uganda government recognizes the potential of ICT tools to improve delivery of development services, transparency and governance through availability of public domain (ICT Policy 2003, pg.9). The Uganda Vision 2040 and the National Development Plan 2010-2015 also acknowledge that there is serious lack of ICT skills and knowledge in the population that would propel local citizens to engage government for social economic development, especially in the rural areas (NDP, 2010; pg. 126). However, Uganda's promising ICT policy framework implementation could also be let down by recent hostile legislations like the Regulation of Interception of Communications Act (2010) and the Public Order Management Act (2013). These in turn could limit the enthusiasm and assertiveness of several local Ugandans to use ICT tools to demand accountability from political leaders. Their boldness to act as whistleblowers on any impropriety or misappropriation of public resources meant to improve essential service delivery could also be curtailed by the same laws. Amnesty International (2010) echoed similar concerns about the uncertainties caused by communications interception law in Uganda towards citizens' freedom of expression, participation in good governance processes and privacy during the course of its operation. Specific articles four and five of this act need review, since the persons and circumstances under which the interceptions of the communications are authorized seem controversial in Uganda's current context of pursuit for democratic and open governance. More so, the Public Order Management Act (2013), particularly article nineteen, reveals the government's double standards on commitment to citizens' freedom of assembly as embedded in the country's constitution and, endangers civil active participation in good governance processes (Free Word Centre, 2013). In Kenya, the national ICT policy was launched in January 2006, whereas in Tanzania, the same policy was approved in 2005. ICT stands out to be one of the main pillars in achieving Tanzania's Vision 2025.

Conversely, the ICT infrastructure has steadily improved in Uganda due to considerable government's enabling environment in the last decade. The Uganda Communications Commission (UCC) estimated that there were 14 million mobile phone subscribers in the country as of June 2012. National internet backbone fiber optic laid is about 2,500 kilometres countrywide by both private and government investment, with major regional towns and border posts connected. However, much of it is not yet operational and therefore fewer citizens are accessing it. But also, there is increasingly a shift in the means of access to internet services, with the strong emergence of mobile and wireless as opposed to traditional fixed access. There are WiMAX and WiFi, 3G access in some towns, cities as well as GPRS connections on the GSM networks (Mulira, 2010). In Kenya, there were 24 million cell phone subscribers in July 2011, out of a population of 41 million. Throughout the East African region, the cost of mobile telephony service is also reducing tremendously. For example, costs in Kenya for voice and SMS have dropped over 90 percent in the

past five years (DANIDA, 2012), whereas 67 percent of the total population were mobile phone subscribers. In Uganda, call cost per second has reduced from an average of 8 to 4 shillings for local calls in the last three years and over 48 percent of all Ugandans subscribed to mobile telephony by 2012. In Tanzania, mobile phone subscription had gone up to 25.6 million by 2012, representing 55.5 percent of total population (World Bank, 2011). In Rwanda mobile telephony subscription is at 57 percent (over 6 million of total population) by April 2013.

Figure 1: Typical Ownership of ICT tools in Kenya in 2009 (Source: Table 15, Kenya National Housing and Population Census (2009) Report, p. 423)

Noteworthy, the World Development Indicators reveal that there were fewer East Africans using internet services in 2012. Tanzania at 13 percent of over 40 million people, Kenya was at 32 percent, Uganda at 15 percent with over 31 million people and Rwanda at 8 percent of the total population (World Bank, 2012). With these findings, mobile phones and broadcast media technologies become the most widely accessed ICT tools in Eastern Africa. Despite the region's connection to huge fiber optic cable projects like EASSYs, TEAMs, SEACOM, and SEAS (African Undersea Cables, 2012), access to broadband is still in third position below radio and mobile telephony. This therefore, calls for strategies and approaches that combine the power of online, broadcast and physical information and knowledge sharing initiatives for citizens' democratic empowerment. This is where and when the ToroDev's ICT convergence approach becomes conveniently deployed.

Why the ICT Convergence Approach for Citizens' Democratic Participation Processes in Eastern Africa

The cost of internet connectivity and infrastructure still pose challenges to realizing benefits of the digital revolution in Uganda and rest of Eastern Africa. Not everyone in the developing world has the opportunity to access internet connectivity as it could be the case in the western developed world, yet this revolution has forged new ways to create knowledge, educate people and disseminate information. It has restructured the way the world conducts economic and business practices, runs governments and engages politically (ITU, 2013). The fundamental question now, is how the majority citizens in the developing world can leapfrog to benefit from this digital revolution, meanwhile as the infrastructural issues are addressed.

ICT convergence is not a new terminology; it has been around in practice and academic discourse for many years. Jussawalla (1999) defined ICT convergence as merging of content and

carriage via multimedia channels. Moreover, Huang *et al* (2012) described ICT as a convergence in itself, combining Information Technology (IT) – which refers to both hardware and software used to store, retrieve and process data- on one hand, and Communication Technologies (CT) – which includes electronic systems used to communicate data to individuals or groups and communities. ToroDev's ICT convergence approach does not fundamentally differ from the above descriptions. It focuses on combining the power of internet and computerized applications, mobile technologies and electronic broadcast media – which includes both means to store, retrieve, process and facilitate communication of relevant data or information to appropriately build a democratic community of local citizens in western Uganda. However, the approach deployed by ToroDev is rather improved to suit the social-cultural and economic situation of the rural citizens. It recognizes the power of electronic broadcast media in a rural developing world context and deploys a frequency modulation (FM) radio as a central point or *"hub"* where information from all other ICT tools converges. It puts into consideration the notion of both basic and ICT skills illiteracy of majority local citizens in rural Uganda and arguably in the Eastern African region, yet they determine who governs them through one of the key democratic governance practices – participating in periodic general elections - that place individuals in positions of leadership and development resources management.

Lessons learnt from democratization processes in different parts of the world underscore the importance of grassroots' movements for democracy in bringing about social change (SIDA, 2009). These movements need constant access to relevant information for their activism. This is because real functioning democracy and equitable access to information are inseparable. A collaborative research program between Denmark, Kenya and Tanzania (2009) also reported that although democratic engagement in Africa had developed tremendously in the past decade, one of the major challenges in the process, however, was to secure inclusive development processes, where all groups of society are participants, feel included, have a say in decisions influencing them and see a way forward in their individual and collective development. The ICT convergence approach that recognizes electronic broadcast media as a major information communication channel for local citizens in a rural context becomes appropriate.

Although e-participation in democratic governance processes by local citizens is showing positive trends in Kenya – at its highest peak immediately before and after the 2013 general elections - much is desired in neighboring Eastern African countries. The analysis of the region proves the need for a hybrid approach of converging traditional and modern ICT tools to facilitate both online and offline democratic engagements between local citizens and leaders to improve essential service delivery. It is always important to note, however, that there are other socio-cultural and economic contexts that affect citizens' motivation to participation, not technology alone. These may not be similar in all Eastern African countries and, therefore, this could also account for noticeable differences in ICT uptake and enthusiasm of citizen participation, country per country. However, the fact that broadcast media and mobile telephony top the list of ICT tools accessed and used by local citizens in the entire Eastern Africa region, their potential needs to be harnessed optimally, with consideration to specific country socio-cultural, economic and political context. Internet information and other online applications can be accessed on a radio and smart mobile phones, with abundant satellite telecom network countrywide. Whereas online social media and crowdsourcing is important for global connection, information dissemination and knowledge sharing beyond local audiences, radio becomes the most convenient older ICT tool to raise the voices the voiceless in a rural context compared to newer ICT (internet-enabled) tools

with limited broadband connectivity, costs and poor usage skills coupled with inappropriate packaging in foreign languages instead of indigenous ones.

Wamala (2013) echoed similar concerns about usage inappropriateness of newer ICT tools by the rural population in a development world context. While analyzing results of a related ICT for development project implemented by the Women of Uganda Network (WOUGNET), focusing on promoting local citizens' participation in good governance processes in communities of the Northern Uganda, she stressed;

> *"…a pertinent question is to what extent the communities in question succeeded in amplifying local voices through these ICTs. Mapping social issues on crowd sourcing platforms for example, has come under scrutiny with an underlying question "what's in it for the crowd"? Similarly the Face book updates, the blogs and the Twitter feeds have not been placed there by the affected individuals. The medium of discussion on all these platforms has been English, which is itself exclusionary to the "crowd" that is contributing the content. This brings the discussion towards what is meant by ICT for development? Whose development does ICT4D consider?" (Wamala, 2013, p.6)*

In above analysis, Wamala (2013) observed that broadcast media or radio was a relevant, additional ICT tool used by WOUGNET to complete the information access, use and dissemination loop amongst rural citizens in northern Uganda. Radio even became a main medium of engagement between citizens and their local leaders. This would have been very difficult, if only crowdsourcing and other newer online platforms were used throughout the project, hence giving relevance to the ICT convergence approach that ToroDev is piloting in western Uganda.

Other Citizens' e-Participation through ICT Convergence Experiences in Eastern Africa

In Kenya, the use of ICT by local citizens to participate in good governance processes has taken great strides in the last five years. Since the occurrence of the post-election violence in 2007/2008, the significance of ICT in consensus and peace building has been evident. A number of private and public ICT initiatives have been adopted. For example, the design and deployment of online application tools like 'Ushahidi' (http://www.ushahidi.com), 'Huduma' (http://www.huduma.or.ke) and 'Uchaguzi' (http://www.uchaguzi.co.ke) that are used by citizens and civil society to engage community to participate in good governance processes like service delivery, election and human rights monitoring, deserve mention. These applications can also be accessed via mobile technology with specific application versions for android powered smart phone, iPhones, iPads or use of the common Short Message Service (SMS), whose presence is wide in the Eastern African region. The use of ICT played a key role in keeping the citizens engaged during the constitutional amendments, referendum and 2013 general election processes in Kenya.

As Oloo and Kamungi (2012) observed:

> *"Over the years, ICT tools have played a critical role in the constitutional reform process. The use of diverse technological tools and resources to communicate, create, disseminate, store and manage information about the reform process increased public awareness about the process itself as well as opportunities for active participation. ICTs also emerged as the main mobilizing tool during the referendum on the constitution. Campaign messages were broadcast in mainstream media while 'soft'*

mobilization took place in the social media, where those 'connected' to the internet initiated and debated vigorously reform issues on blogs and social networking sites. Old and new ICT tools were the main avenues through which information about the reform process was communicated to citizens.

ICTs also provided a platform for debate and feedback by facilitating posting of alerts, reactions and public debate about the reform process. ICTs were used to educate voters and to mobilize for a peaceful referendum. Since the promulgation of the new constitution, citizens have used ICTs to draw public attention to incidents of corruption or abuse of office, increasing accountability of public office holders and promoting adherence to provisions of the constitution. During the establishment of constitutional implementation commissions, citizens used ICTs to provide information for purposes of vetting and recruitment" (Aloo & Kamungi, 2012, p. 42-44)

A typical empirical case to support the role of ICT – enabled citizens' participation in governance processes (e-participation) is recorded during the appointment of the nine-member team of the Judicial Service Commission (JSC) in Kenya in December 2010. The process was very competitive and transparent with the interviewing process relayed through live broadcast on several televisions and radio stations in the country. Before then, advertisements for the positions were done through online, broadcast and print media. Aloo and Kamungi (2012) also argued that the high level openness and participation demonstrated in this democratic exercise, increased confidence among all Kenyans in the new constitution implementation and actual feeling of ownership of the judicial sector in the country. In Tanzania, citizens self-initiated practical cases of e-participation are not well documented. This raises concerns of the extent to which ICTs are actually empowering the population to actively engage government for improvement of essential service delivery in the country. Nevertheless, the boom of mobile technologies in Tanzania cannot be underestimated.

In Uganda, for over a decade, the use of ICTs continues to entrench in local citizen's quest for access to information, knowledge sharing and struggle for active participation in good governance activities. The recent survey conducted by CIPESA, a partner of the ICT4Democracy Network in East Africa revealed that at 54% percent of respondents - local citizens in Uganda use e-participation or ICT tools to demand service delivery from their leaders. Survey results also showed that 56% of citizens communicate with each other and other interest groups about the same using ICT tools (CIPESA, 2012). It should be emphasized, however, that the above survey found out that citizen's use a convergence of both 'old' and 'new' ICT tools for their e-participation activities in Uganda. In particular, the important role of broadcast media and television was specially mentioned in the survey carried out by CIPESA.

Analysis of Effects of the ICT Convergence Approach on the Citizens' Democratic Engagement Processes in Western Uganda

ICT-Enabled, Citizens' Advocacy Forums

Zanello & Maassen (2009) urged that when citizens want to be engaged, they need information to be aware, communication to organize actions, organization to make their action more effective and feedback to have results. This is the rationale for the citizens' advocacy forums model piloted by ToroDev in western Uganda. The disconnection between elected leaders and citizens in Uganda is wide, leading to limited continuous consultation and feedback between the electorate and their

democratic representatives. There is limited awareness among local citizens about their power and the extent of this power in the democratic system, limiting their ability to exercise it in promoting and demanding particularly democratic practice and accountability (Kiranda, 2013). Citizens are not fully confident to demand accountability from their leaders and are also not mobilized towards achieving common development goals through engagement with leadership. Advocacy forums are organized citizens' groups that champion deliberations, instil intuitiveness and unity among rural citizens, organize democratic engagement forums between citizens and leaders and monitor of service delivery. They use appropriate ICT tools like social and broadcast media, FM radio, online or internet platforms like the '*Ushahidi*', facebook and mobile applications (SMSs) to communicate important service delivery information and also mobilize citizens to take action. So far, there are fourteen citizens' advocacy forums initiated by ToroDev and spread in six districts of western Uganda.

An empirical case of the Mugusu Forum for Development in Kabarole district, in western Uganda informed this analysis about how local citizens engaged the local government through the forum, to extend gravity flow water scheme to their locality. ICT tools that included mobile applications of SMS, facebook and radio were used to mobilize local residents where over three hundred signatures were collected to petition the district chairperson for a seven kilometer water scheme extension. As a result of this mobilization and later meeting with the district officials, at least a four kilometer water extension was agreed on between local citizens and local government leaders in the next financial year. Surveys were done by engineers and citizens are now preparing for the launch of the project (Akugizibwe, 2013). The advocacy forums bring citizens to think and deliberate together on priority service delivery needs in their rural communities.

Moreso, the analysis results also showed that in Kyenjojo district, Bufunjo People's Forum mobilized local citizens through mobile telephony technology, facebook posts and radio broadcasts to repair a local bridge that had broken down due to heavy rains, yet it interrupted business at a major marketplace - a source of income for the community. The education sector in the community was also heavily affected by the breakdown of this bridge. A primary school pupil would be charged at least one US dollar daily to be helped cross over, and this definitely had negative social and economic implications on households in that community. When the local citizens organized in the advocacy forum contacted the district leaders and responded that there were no funds in budget to promptly to repair the bridge, the ICT-enabled mobilization was well organized to ideologically bring citizens together and temporarily repaired the bridge as they waited on the local government's response. This case study goes a step ahead to demonstrate the potential of ICT tools to positively influence rural people's behavior for a common development cause in the developing world.

The ICT tools convergence approach has also influenced citizens – leaders democratic engagements for planning, budgeting and ensuring transparency in the local governance processes, particulary in Western Uganda. During the analysis, many district local government political and technical civil servants revealed the positive and negative effects of this approach. As Baguma, et al (2014) revealed in one of the analysis results' article:

> *"The mismatch is that there is a lot of demand for information and yet for us as local government leaders, we are limited by resources in giving this information either through media or going for community meetings. Going for community meetings would require moving with technocrats, will require getting a vehicle and you know these technical people will always demand for*

per diem and fuel. When we go on radio, we speak to people and they also speak to us the calling directly on radio or send messages - through online social media or mobile SMSs - of the comments, questions and concerns which we definitely incorporate in our planning" (ToroDev,2014)

Nevertheless, the analysis results also revealed a number of challenges associated with the ICT convergence approach. Whereas 80 percent of the citizens who participated in the analysis reported that there was indeed a close relationship between information and knowledge sharing through the ICT convergence approach for local citizens to actively demand for accountability, there was a high level of both basic (40 percent) and ICT illiteracy in the rural communities of western Uganda. This resulted in low access and use of ToroDev information and knowledge platforms for citizens' participation in good governance processes. The other challenge was low access to new ICT tools, including online social media at 20 percent in the Rwenzori region of western Uganda. However, the analysis found out that rapid penetration of mobile technologies presented great potential to address the ICT access problem in the rural community. The analysis also found out that the contribution of ICT-enabled offline citizen gatherings (advocacy forums) for deliberations on how to actively participate in good governance processes was appreciated to counter challenges that illiteracy poised to citizens' participation. ToroDev continues to support the initiation of citizens' forums in seven districts of Rwenzori Region up to end of 2014 when this project comes to a closure. ToroDev expects the advocacy forums to act as a bridge between the rural grass root communities and the leadership using the combination of both older and newer ICT tools for improved service delivery in the region. Most of the advocacy forums were formed by the 120 rural monitors trained by ToroDev since August, 2012. The training focused on online advocacy, monitoring service delivery using online social media and Ushahidi platform for online documentation, visualization and mapping. The Advocacy Forums also use FM Radio Broadcasting as an ICT tool for *"convergence or hub"* since it is the most accessed media channel in the rural areas of the Rwenzori Region.

The Rwenzori Journalists' Forum (RFJ) Converging ICTs on Broadcast Media for Improving Citizens' Participation in Governance Issues

Rwenzori Journalists' Forum is an institutional framework initiated by ToroDev to bring together all broadcast media practioners working with thirteen media stations in the Rwenzori region of western Uganda. In this context, broadcast media practioners is a term applied to describe individuals involved in using radio as a traditional ICT tool to collect, process and communicate relevant content information and provide electronic platforms where local citizens and their leaders meet virtually to democratically engage and deliberate on policy frameworks and implementation of essential service delivery in the region. Due to both basic and ICT illiteracy in the region, especially the majority rural women (Baguma & Komuhendo, 2009), a radio station acts as a hub of other modern ICT tools convergence. The media practioners, through their institutional framework, have agreed to gather information from internet, repackage it into relevant local content and broadcast it on radio for the benefit of local citizens. This information ranges from the best practice articles, reports, the constitution, policy and other legal information documents. Local citizens are, on the other hand, invited to participate on radio live discussions through use of mobile technology applications like voice (call-ins) and Short Message Service (SMS).

Figure 2: Online Social Media Usage to Advocate for Good Governance & Service Delivery in western Uganda

A case of the Ushahidi Online Platform for Mapping & Visualization of Status of Essential Service Delivery Points in the Rwenzori Region of Western Uganda

This is an online, interactive platform for visualization and mapping of status of essential service delivery points in western and northern Uganda. The Ushahidi platform was developed on free open source software in Kenya to offer a chance to the 2008 post election violence victims to tell their stories online. 'Ushahidi' in Swahili language means 'testimony' and its use has spread over world and used in over 150 countries globally (The Hindu, 2013).

In this project implemented by ToroDev, the Ushahidi platform page to gather, visualize and map status of service delivery points in western Uganda was launched in 2012, in partnership with the Uganda Women Network (WOUGNET). A similar platform page was launched for the same purpose in northern Uganda by WOUGNET. Broadcast media practitioners from twelve stations and rural service delivery monitors trained by ToroDev post constant updates on the online platform. Local community citizens were also are oriented by those few initially trained by ToroDev to post updates on their own on the Ushahidi platform. ToroDev volunteers and radio journalist pick the posts from the Ushahidi platform and broadcast them on public accountability programs on the twelve radio stations collaborating with the project. This has helped raise the attention of political leaders to engage with local citizens and address their priority service delivery needs on time.

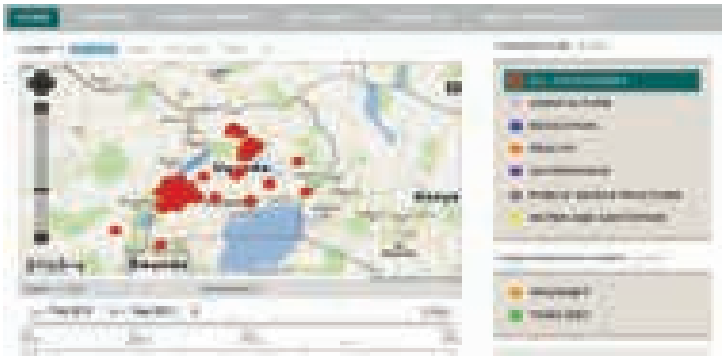

Figure 3: A print screen of the Ushahidi Online Platform used by Service Delivery Monitors in Western & Northern Uganda

Conclusion

Citizens' participation in good governance processes in the developing world requires free access to information and communication opportunities that are appropriate for a rural context. Whereas ICT have proved to have the potential of facilitating information access and communication, localization of these tools is becoming mandatory, if results have to be well achieved. The ICT convergence approach seems to present this opportunity. In the developing world context, electronic broadcast media appears to have an edge in converging other online/ internet-based tools that provide platforms for information, communication and knowledge sharing on a global platform. This calls for more research to understand how broadcast media can be improved to complement mobile technologies whose infrastructure and access skills are more available than broadband infrastructure and computer applications use skills in the developing world, especially in the rural communities. ICT for Development practitioners also need to include a convergence approach in their projects and activities to be implemented in Eastern Africa and any other developing world communities with similar contexts. When converged appropriately, ICTs have social, economic and political influence on both citizens and government leaders in Africa and rest of the world. The literature exploration and analysis in this paper shows that state governments in the developing world, especially in Africa, are adding ICT access and use on a list of pre-requisites for successful and inclusive governance processes.

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About the Author

Johnstone Baguma

Johnstone Baguma is the Executive Director, Toro Development Network (ToroDev), Uganda. He currently works also as the project coordinator for the SPIDER co-funded project on converging ICTs for Public Accountability. He has wide practical experience in managing and researching ICT for Development projects for over seven years. After his Bsc in Information Technology at Makerere University, he co-founded ToroDev in 2005 and has also been involved in co-founding other community based CSOs in the region. He is currently studying Business Administration, majoring in Human Resource Management at Royal Holloway, University of London, UK.

Mobile Enhanced Human Rights Reporting – The Case of CHRAGG Tanzania

Wilfred Warioba, Abdallah Ally

Box 71754, Dar es Salaam, wilfredwarioba@gmail.com

Abstract: *This paper addresses the key factors that influence the adoption of m-government to support and enhance human rights in Tanzania; the experience of Commission for Human Rights and Good Governance. The paper analyses SMS solution to support and enhance human rights and Good Governance in the Country. Besides, it reveales that though the government adopted e-government in improving interaction and efficiency of service delivery, there are several stumbling blocks that hinder the smooth utilization of the technology.Poor internet infrastructure, high Internet cost, shortage of electricity in most parts of the country and Internet illiteracy among citizens have been serious barriers. To curb these challenges, it was found that the adoption of m-government through utilization of SMS seem to be the logical approach for delivering E-government services.*

Keywords: *e-government, m-government, SMS,CHRAGG,TUME*

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Introduction

Information and Communication Technologies (ICT) has provided Governments across the world new ways of doing business and delivering services. The adoption of ICT in various government sectors has enabled governments to enhance their relationship with their clients, citizens in particular.[1]

The adoption of ICT to enhance work efficiency and improve service delivery in order to meet the needs of the public in a responsive and transparent manner (e-government) has been given a condusive room in Tanzania. The Government of Tanzania recognises the imperativeness of ICT in the public sector and therefore prepared the National e-Government Strategy 2012-2017 to provide the required guidance on exploiting the ICT opportunities and addressing challenges for value added public sector services.[2]

[1] URT, Tanzania e-Government strategy 2012 pg.1
[2] Ibid pg. 2

The adoption of e-government has strengthened the creation of a more open, user-oriented and democratic administration. As e-Government becomes more widespread, it is the government's aim to allow citizens to monitor the progress of their own cases via the Internet, and to be able to receive information on case procedures, decisions and case processing on time.

While the adoption of e-government has shown promising service delivery in the country, however, poor infrastructure has been a serious barrier. One of the fundamental issues associated with barriers is the question of access to e-Government services, that is the whole concept of digital divide: the gap between those with full access to electronic information and those without it due to such factors as socio-economic conditions, language barriers, physical situations, age, education, and so on. It is thus widely accepted that implementation of e-Government services should go hand in hand with strategies to narrow the digital divide.

It is with this view that, the Commission for Human Rights and Good Governance (CHRAGG) decided to adopt a mobile government strategy that will harmonise digital divide and therefore improve service delivery. CHRAGG has developed SMS for Human Rights System, integrated into the Case Management System and allow citizens to report violations against human rights and good governance through SMS.

This paper discusses in detail the motive behind the adoption of mobile government (m-government) to support and enhance human rights in Tanzania, the experience of commission for human rights and good governance (CHRAGG).

What is CHRAGG?

In 1992 the Government of Tanzania initiated a broad review of the legal sector under the Framework for Institutional and Legal Management Upgrading Project (FILMUP), which resulted in the creation of a Legal Task Force. The report prepared by the Legal Task Force, among other things, critically analysed the strengths and weaknesses of the Permanent Commission of Enquiry (PCE). The report recommended the establishment of a Commission for Human Rights and Administrative Justice in place of PCE. Following the approval of the report, the Government invited the public to air their views on the proposal to establish the Commission and related issues. The outcome of the process was the 'Kisanga Report', which confirmed that the establishment of the Human Rights Commission was generally acceptable to the public.

The Commission became operational in Mainland Tanzania on the 1st July 2001 after the coming into force of the Commission for Human Rights and Good Governance Act No7 of 2001 as amended by Act No 16 of 2001 and Government Notice No. 311 of 8th June 2001. The Commission was officially inaugurated on the 15th March 2002 following the appointment and swearing in of its Commissioners by the President of the United Republic of Tanzania. The Commission became operational in Zanzibar in 2007 after the Zanzibar House of Representative ratified the Act.

The Commission is an independent government department, established as the national focal point institution for the promotion and protection of human rights and duties as well as good governance in Tanzania. The composition, functions, powers, privileges and other matters in relation to the Commission are established by article 129 of the Constitution, and regulated by Act No.7 of 2001. [3]

The Act specifies a number of functions for the Commission, and the key ones being to:

[3] CHRAGG op.cit pg.18

- Promote within the country the protection and the preservation of human rights and of duties to the society in accordance with the Constitution and laws of the land;
- Receive and address allegations and complaints on the violation of human rights and contravention of principles of good governance;
- Conduct research into human rights, administrative justice and good governance issues and educate the public about such issues;
- Investigate the conduct of any person whom or any institution which discharges functions in excess of authority.

It's a constitutional and statutory establishment enabled it to provide fair, effective and expeditious redress mechanisms for victims of contravention of principles of good governance and human rights violations. The Commission also promotes and protects fundamental human rights, freedoms and duties of all persons in the country.4

The Commission also works as an ombudsman, since its founding legislation abolished the Permanent Commission of Enquiry (the Ombudsman) that dealt with the investigations of complaints of abuse of power by public bodies.

The Commission is empowered to promote ratification of or accession to treaties or conventions on human rights, harmonization of national legislation, monitor and assess compliance, within the country by the government and other persons. The Commission complements the formal legal system by providing a flexible mechanism for addressing human rights issues, governance problems and violation of human rights and the practice of good governance. The Commission acts proactively to address such problems and develops strategies to address these problems in a manner which the court cannot, and plays a developmental role through its educational and information programmes.5

The Transition from Manual to E-government Through Adoption of SMS

Tanzania is located on the East Coast of Africa with borders to Kenya and Uganda to the North, Rwanda, Burundi and the Democratic Republic of the Congo to the West and Zambia, Malawi and Mozambique to the South. The total population is estimated at 44,928,923 for 2012 with rural residents that account for 77 per cent of the population. Tanzania is one of the poorest countries in the world, according to the Human Development Report 2006, where it is ranked 162 out of a total of 177 countries.

Tanzania received an e-government ranking of 137 out of 184 countries, according to the UN's Global E-Government Survey 2010, with an e-index of 0.293 compared to the world average of 0.441.[6] These data therefore reveals that the utilization of e-government in public services is still at an infant stage.

Besides, the statistical information available in the CHRAGG offices reveals that the large proportional of the population living in the rural areas where infrastructure and communications are poor, lodging complaints and receiving confirmation or feedback has been an issue.

Complainants have to either use the postal services that may be slow and unreliable or to travel to one of the offices of the commission the situation that is time consuming and costly.

[44] Ibid
[5] Ibid
[6] Ibid pg.30

Electricity is inadequate, unreliable, scarce, costly and not easily available in most parts of Tanzania. In 2000, 9 per cent of the population had access to electricity.[7]

Tanzania faces severe power problems both in rural areas as well as in the main cities. Even in the major city, Dar es Salaam, long power-rationing periods occur.[8] Concerning the road system, most mains roads are gravel roads with only minor parts being paved. During the rainy season, rural areas in southern and central Tanzania are not accessible at all.[9]

The CHRAGG is not adequately spread in the country and therefore submission of complaints for rural dwellers or other complainants in regions without CHRAGG offices is tiresome and very challenging.

To curb this problem, CHRAGG has recently initiated the project of complaint handling system from a manual to a digital by implementing a Case Management System. As an additional functionality, and to rely on the rapid increase in accessibility and affordability of mobile phones, CHRAGG has developed SMS for Human Rights System integrated to the Case Management System and allow citizens to report violations against human rights and good governance through SMS. This system will save Citizens both the cost of the trip and the loss of time travelling to the Commission offices or risking delays by post.

The system has been developed in collaboration with coding expertise from Bessbrook International Ltd., the local IT private company in a Private Public Partnership.

The Motive Behind the Adoption of SMS in Handling Complaints

Mobile technology is the fastest growing communication technology in history and is fundamentally changing the way we communicate. This holds true all over the world.[10] Mobile-broadband subscriptions have climbed from 268 million in 2007 to 2.1 billion in 2013. This reflects an average annual growth rate of 40%, making mobile broadband the most dynamic ICT market.[11]The number of Tanzanian phone subscribers has reached more than 28, 000, 000, in the year 2012, with the majority using mobile phones. According to Quarterly statistics report released by Tanzania Communication Regulatory Authority (TCRA), shows that the country has 28,024,611 phone subscribers in all mobile and wired networks. Several factors have contributed to the rapid growth in mobile phone subscribers. These include: (i) the relatively low cost of adding new subscribers to the cellular network (mobiles are much more scalable than fixed-line phones), (ii) the high premium placed on mobility by consumers, (iii) the strong presence of the private investors in mobile phone provision, as rising demand by consumers has boosted profits for manufacturers and operators alike, and lastly (iii) the growing favorable regulatory environment fueling this exponential growth.

Mobile phone technology in Tanzania has been growing at an amazing pace in terms of both the number of service providers as well as that of the users. Due to this growth, the Tanzanian government through the Act of Parliament (2003) established the Tanzania Communication Regulatory Authority (TCRA) to regulate communication and broadcasting activities. By 2009, a

[7] Ibid
[8] (Sheriff 2007)
[9] Wicander op.cit.pg.33
[10] Wicander op.cit pg.19
[11] ITU (2013).ICT facts and figures

total of six (6) mobile phone service providers were issued communication licenses by TCRA. These providers are TIGO, Zanzibar Telecoms (ZANTEL Mobile), Vodacom, Benson, TTCL (Mobile) and Celtel - now known as Airtel. In addition to that, two fixed line companies i.e. Tanzania Tele-Communication Limited (TTCL) and Zanzibar Telecoms (ZANTEL) have been operating along with the existing mobile phone service providers.

The rapid expansion of mobile phone usage in Tanzania has been triggered by a highly competitive market and service diversification, with the operators now providing different mobile phone services such as voice and message transmission, data services, paging as well as Internet services.

SMS is a widespread and accepted way of communication. Arguments in favour of SMS can be found in terms of its cost, speed, and accuracy.[12] The fact that most rural and urban dwellers in Tanzania lack access to computers and the Internet as well as landline phones, coupled with the dramatic growth of mobile phone access through most of Tanzania, creates an opportunity for the use of the mobile network in handling human rights violation complaints.

In developing countries and Tanzania in particular, people are more familiar with SMS than the Internet, the number of SMS users is much higher, the SMS infrastructure is more extensive, SMS costs are lower than Internet costs and mobile phones are much more affordable than PCs. For these reasons SMS could be the more appropriate channel to deliver E-government services in developing countries. Additionally, SMS-based E-government has proven benefits.

It therefore goes without saying that handling of complaints through the SMS channel significantly reduces time and cost; introduces a cheaper, easier and faster information-accessing channel; improves transparency, accountability, communication, and the relationship between government and citizens; makes the services and procedures easier for the citizens to use; improves the political image of the district, engages more people and increases citizens participation, and promotes E-democracy.[13]

The Experience of CHRAGG

SMS for human rights system was developed by the Commission for human rights and good governance in collaboration with Coding experts from a Bessbrook International (T) Ltd with support from SPIDER, the system was developed using Free and open source (FOS). The main function of the SMS for human right system was to enable Citizens to submit their complaints before the Commission via SMS technology.

The system was developed to cater for those who live in rural and remote areas. To be able to use the SMS system the complainant will be required to send a message using mobile phone 0754 460259This system design comprises three fundamental components:

1. Complainants enter and submit complaints through their phones.
2. A centralized server sitting in the Commission office connected via a modem to the telecom providers, which coordinates all the data that flows through the system and directs it to the correct recipient.

[12] Wicander op.cit.pg.20
[13] Ibid

3. A password protected web interface for Commission's officials and implementing partners, where they can view information, graphs, and maps showing how the system is performing in real-time.

Current Complaint Status

The number of complaints received is on increase, there is a plan to conduct the intensive awareness raising campaign to cater the level of a ward in all thirty regions in the country. From the current trend/usage it appears that many citizens will be encouraged to use the system to report human rights violations. However this will give the commission the challenge to be able to resolve the complaints on time.

The following table shows the number of messages that have been received and sent from the system:-

1. Messages received - 173,702
2. Messages Sent(replied) - 174,225
3. Total - 347,927

The total number of messages transacted in the SMS for human rights system to date is 347,927. As indicated above, the SMS system is built to receive message and at the same time to send acknowledgment message to the sender, that is done automaticaly after the receipt of complainant message. Table one shows the number of messages received against the mesage replied, the reason for this is because we did not noticed a bug which was duplicating some of the replies therefore the additional of 523 were (acknowledgements)to senders by error.

Received Complaints

The complaints/messages received needs to be authenticated and be filtered to be able to be admissable to the commission, this process of authentification required a team of experts and investigators) who they qualify the complaints to be a genuine complaint. From the total number of messages received only 597 messages have been authenticated and being passed to the Commission for further the investigation. There have been several challenges contribute to this problem including lack of awareness of being able to send complaints, we have also been receiving adverts/ promotion messages, gambling messages etc.

To be able to submit the complaint, complainat type and complaint are needed and sent to the number 0754 46059. The example of the submission is as follow:-

> **Report** I have beaten by police at police post x then send to 0754 460259 in order to follow up the status of successful complaint the complainant will type
> **Status** 3020 and send to 0754 460259

The experience shows that many user fail to submit the message as per the instructions, the experience shows most of received messages appear start without the prefix "report" and hence these are not reported to the successful complaint column as a result more than 322 complaints were registered as fault messages. The system is built to capture all the messages therefore manual work is required for clarifications and confirmation of all complaint received in a day.

1. Complaint received correctly - 275

2. Complaints received wrongly without prefix word "Report" – 322

CHRAGG has received a total of 597 complaints since its launching in 27th June 2013.

Unwanted Spamming Text

SMS for human right system has been receiving spamtext messages, we communicated with Vodacom unsuccessful and we came to realize some of the number charge the system when it reply, Vodacom seems not to be aware of its actions but strangle all the offices we visited, City Centre – Posta and Mlimani City they never helped much on this problem. The cost of message is 68 shillings, therefore so far CHRAGG spent more than 7,000 US$ for reply to these messages.

Mobile phone adverts including gumbling messages seems to cost the Commission great time in sorting complaints as well as cost of messages reply however CHRAGG has written to Vodacom to ask the number to be excluded, they seems not to care.

1. A number identified as Vodacom submitted 329 messages
2. A number identified as 15544 submitted 132 messages
3. A number identified as 15577 submitted 171,659 messages

The problem of these messages is that they make the work of sorting messages to be tedious and cumbersome.

Processing Complaints

All complaints received via SMS must be authenticated to establish it's legitimate, the authentication exercise involves: -

1. Calling back the complainant to take full details of the complaints, and who he/she is complaining against
2. Request additional evidences via post, fax, physical deliver or via email, what complainant benefit with the system is that he/she submit complaint to the Commission and there after investigation staff can follow up. The complaint received must have evidences in this case SMS can not support receiving documents, therefore complainant is required to use alternative messages provided above to submit the supporting documents.

Successful complaints

A successful Complaint submitted via SMS once is authenticated and verified to be a valid and from a genuine complainant, then the Complaint is then lodged to the Case Management System as a new Complaint. This allows the investigation to start.

Processing complaints

The experience shows that the SMS for human right system is used as a whistle blower tool, a number of complaints have been received which aimed to tip the Commission about the human

rights violations some where in the country. In most case these information requires urgent response, however the Commission's current working procedure required the complaints to pass several departments and Sections in order for the Investigation to start, as shown in the figure below

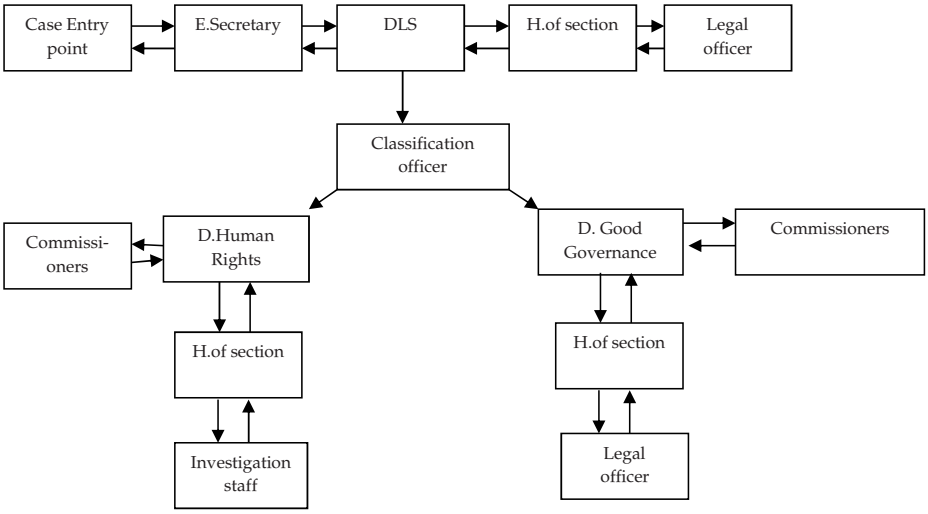

Figure 1: The Commission's Case Flow

According to the working guidelines there are check and balance within the Commission which requires the complaint to be thorough checked with different officers and the Commissioners in order to start investigations Any complaint requires 15 days and pass into ten diferent staff in order to start the investigation, the SMS system has brought a quick responses and force the Commission staff to change how they work. Current the Commission is reviewing its working processes and hopeful this process will be shortened.

How the Sms For Human Rights System Works

Initial investigation of the SMS is to see whether this is a genuine complaint, investigation staff will conduct pleliminary check and if they are satisfied it will be submitted for further investigations

Figure 2: How the SMS system receives complaint to Complaints handling system

Once the investigation Unit has confirmed that this is a genuice cmplaint then, it will be passed to the second leve, which is the investigation stage. Different teams will register the complaint to the Case Management system.

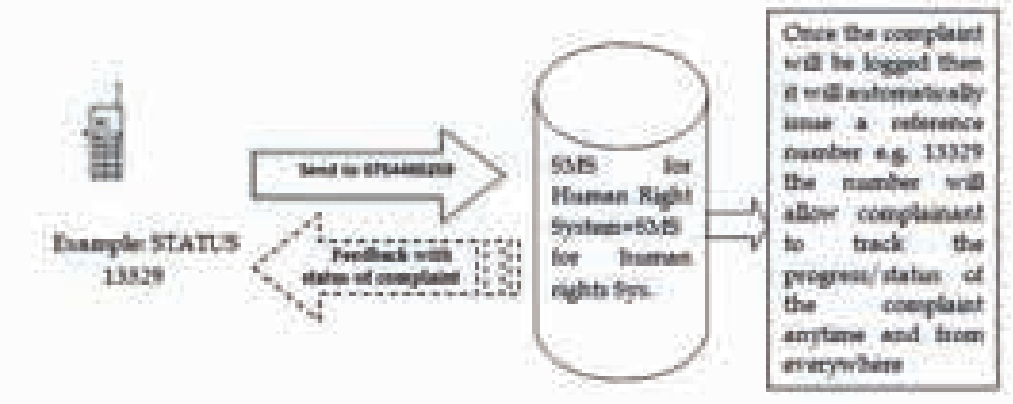

Figure 3: How the SMS system obtains status from Case Management System

Complaints Status

The complaint passes through three status',

a. Admisability – Legal dept every complaints need to be checked for its admissability
b. Classfication – the complaints is either channeled to HR Dept or Good governance dept for the investigation,
c. Decision time- complaints goes to the Commissions for recommendations

Challenges

The Commission has only conducted awareness in seven (7) regions out from 30 regions in the country. The awareness campaigns were given to journalists, NGO staff and secondary students. The seminars ranged from one to five days and were conducted in several parts of the country in order to create awareness on the existence of the SMS for human rights system, during the launch we conducted the media campaign and also the press releases.

The regions visited include Dar es Salaam, Mwanza and Lindi region, lack of adequate funds hindered the expansion of the awareness campaign. Therefore, not many Tanzanians are aware of SMS for human right system. This is a huge step back and the system might not be used to it's full extent. So far the Commission has given awareness seminar and trainings to 210 students,112 journalists and 30 Civil society members

Conclusion

Mobile technology has transformed various governments in providing services to its citizens even in areas with poor infrastructure, shortage of electricity and internet connectivity. Mobile technology has removed barriers and is empowering citizens to quickly and efficiently connect to government for various services such as health, education and human rights violation complaints.

However, In order to increase the usage of SMS-based m-government services, governments should make citizens aware of and provide information about the services by organizing various awareness campaigns.

The CHRAGG should reach all regions in order to disseminate information about the use of SMS in submitting complaints. Citizens should be educated on proper use of SMS channels so that they cannot abuse the system.

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About the Author

Wilfred Warioba

Wilfred Warioba is currently the the head of management information unit, at the commission for human rights and good governance and he is also a project coordinator for sms for human rights system. He joined the commission in april 2007, after working in academics for over seven years. He received msc in computer forensics (thesis) open university, 2010 Tanzania, bsc (hon) in computing and network system

management, university of lincolnshire and humberside 2000, uk, he attained a higher national diploma in computing, 1999, reading school of art and technology, certificate in - "business related it-consultancy" 2004 in germany, diploma in german language 2004

He started his IT career 1998-2000 at a specialist computer holdings recruitment agency in United Kingdom, where he worked as a system engineer and database operator, he has academic and industrial experience. In year 2001 he joined the university of Dar es salaam computing centre as instructor cum technical staff later becomes the head of training (2001-2005). In year 2004-2006 he worked as it expert for the danida project establishment chragg, he worked as ict coordinator for for Tumaini university Dar es salaam college the position he held until he joined back to the commission for human rights and good governance. Wilfred is a member of ict security research group of the open university of Tanzania, he is a human rights defender and also a vice chairman for kaso (kijana amka sasa organisation).

Ally A.M. Abdallah

Abdallah Ally is currently a PhD candidate at the Open University of Tanzania and an Assistant Lecturer at the Faculty of Law of the Open University of Tanzania stationed at Coast Regional Centre. He is also an Acting Director at Coast Regional Centre.

He was employed with the Open University of Tanzania in 2007 and stationed at Coast Regional Centre. He holds a Masters in Law from The Open University of Tanzania, Bachelor of Laws from the Open University of Tanzania and Bachelor of Education Science from the University of Dar es Salaam, majoring in Physics.

Abdallah is a member of ICT Security Research Group of the Open University of Tanzania and has therefore participated in various Conferences as participant and speaker. He has done research and presented papers on cybercrimes, computer forensic evidence and electronic commerce and currently his main focus is on Mobile banking critically assessing risk mitigation strategies and legal frame work.

Introducing U-Call, an IVR System to Promote Citizen Participation

Valeriy Savinov*, Asreen Rostami**, Lars Lorenz***

*Department of Media Technology, Linnaeus University, Sweden, valeriy.savinov@live.se
**Department of Media Technology, Linnaeus University, Sweden, asreen.rostami@gmail.com
***Department of Media Technology, Linnaeus University, Sweden, lars.lorenz@lnu.se

Abstract: *This paper introduces U-Call, an IVR platform which creates an easy way for illiterate people to participate in local governance in rural environments such as northern Uganda. In the summer of 2012, we carried out two weeks of ethnographic field research in Kampala and the Northern districts of Uganda. We used participatory design to study and analyse the technology engagement and its usage in the area. The results of the field study lead us to design a service that can be available to everyone, through existing technology and basic mobile phones. U-Call is a free and automated reporting system which facilitates the communication between the local people and the organizations.*

Keywords: *ICT4D, VoIP Drupal, IVR, U-Call*

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Introduction

Like the most developing countries, people in Uganda face the lack of public service delivery in their everyday life. Several researches show that, with the increase of civic participation people have more chances to receive a better state of service delivery. Where this can raise their living standard (Deininger & Mpuga, 2005).

Citizens need to be sufficiently motivated in order to actively engage in public discourse. Reports, specifically on public service issues, need to reach the responsible bodies. At the same time, information about such issues should be disseminated effectively to other citizens in order to enable public engagement, which may facilitate changes (Pluljiz et al., 2005).

It has to be considered that the available ICT infrastructure in Uganda mainly consists of "first generation" mobile phones, e.g. such with basic voice call and text messaging capabilities, and information dissemination generally happens via radio transmission. The available ICT tools that can realistically be used in such scenarios are limited, posing a serious, but not insurmountable

challenge. An internet connection is not easy to access or a familiar tool in the Northern Uganda. On the other hand almost every village has at least one mobile phone and this amount is growing quickly.

People's Voices project pursues to elaborate the problems of civic participation in northern Uganda using ICT (Information and Communication Technology). Based on the current research efforts in the field of civic participation, we developed a system that facilitates simple and cost-saving communication capabilities for end users in rural Uganda, posing a low threshold for active participation with the aim of increasing civic engagement. Considering the situation of rural communities, and to achieve the goals of our project, we developed "U-Call" an Interactive Voice Response (IVR) reporting system.

The paper is structured as follows.

Related Work

In a research effort carried out in South Africa (Megwa, 2007) it was pointed out that although some organizations have launched different initiatives to counter the digital disparities between urban and rural areas in South Africa, most of the attempts tended to introduce more and more ICT hardware to rural areas instead of looking for creative ways to expand ICT access to benefit poor and rural communities.

According to a report by *SPIDER*("Spider Stories 2011," 2011) up to now there is only one key project in the region that uses ICT towards empowerment of communities helping them in demanding better health service delivery. This project is run by *Transparency International Uganda*[1] *(TIU)* with the support of *SPIDER*. The project focuses on health service delivery in Lira and *Oyam*, two of the three districts which we have also visited. The project uses voice as a medium to deliver reports and information made by initial reporters through a phone call to a call center, specifically about the situation of health offices and the absenteeism of nurses and staff. The only ICT solution used and promoted in the *TIU* project is a toll free number utilized to get and record the reports. While this solution is effective in a short scope it is still only a one way communication channel between the community and call center, where there is no automated solution to organize further follow-up meetings. Apart from this one-directional reporting channel there are no other social media communication patterns which support connectivity between ordinary citizens and organizations in the region, by the use of ICT.

The main source of information is typically radio, especially because of relatively low literacy rates. So called "community talk shows", where callers can call in and report whatever they are concerned by, are a major source of information. Other "traditional" forms of media such as TV or Newspapers play only a minor role, so does the Internet for a lack of connectivity and especially end devices.

Mobile phones, even though not very wide spread in rural areas, are used for communication as well as several other purposes such as financial transactions. Typically, there is no social component in communication. The current modes of communication usually include direct communication with government agencies or similar, but except for face-to-face meetings collaboration does not take place.

[1] http://www.tiuganda.org/

Another consideration is that the phones are possessed and handled by few, typically more influential persons, and shared, though certain groups (especially women) usually do not have access to them (Burrell, 2010).

The isolated use of these ICT tools within Northern Uganda's districts has not effectively impacted on reducing corruption within the local communities. This has greatly continued to hinder development within the local communities hence failing to meet the most critical Millennium Development Goals (MDGs). An integration of Cross Media (use of a wide variety of media channels in an integrated manner) to empower the local communities in monitoring and reporting corruption would go a long way to impact community development and attainment of the MDGs. Cross media refers to interactive experiences across multiple media, including the Internet, video, cable TV, mobile devices, print and radio. The new media aspect of the "cross-media experience" involves some high level of audience interactivity (Davidson, 2010).

A system that bridges the Internet world and classic mobile phone technology can extend the classical "one-to-one" communication model from a mobile phone, and allows a person to reach a wide audience.

The 3C (Communication, Coordination and Cooperation)(Fuks, Raposo, Gerosa, & Lucena, 2005) collaboration model approach is a model to understand the emergent community participation that can evolve into communication or collaboration. Where communication (e.g. through the media provided by the system (such as mobile) is related to the exchange of reports and information among people; coordination is connected to the organization of people and their actions (e.g. meetings); and cooperation, which is the production.

Bearing in mind the problems which we mentioned earlier we can see a lack of communication-collaboration system which can act synchronously and asynchronously at the same time to promote citizens´ participation in local governance activities of the region.

System Background

U-Call system was designed in the winter of 2012, after the initial field research trip was conducted in the context of the "People's Voices: Developing Cross Media Services to Promote Citizens Participation in Local Governance Activities[2]" in summer 2012. Project was funded by the "Swedish Program for ICT in Developing Regions" (SPIDER[3]) as a collaboration between Linnaeus University[4] (Sweden), Makerere University[5] (Uganda) and the "Women of Uganda Network" (WOUGNET[6]). It allows people to make a free call to whether report their problems in their neighbourhood or listen to already reported problems. The one who wants to use the system simply needs to make a call to the system, the system will hang up the call to eliminate the air time cost therefore user don't need to pay for call. Then the system calls the reporter back.

[2] http://peoplesvoices.org/wordpress/?page_id=531
[3] https://spidercenter.org
[4] http://lnu.se/?l=en
[5] http://mak.ac.ug/
[6] http://wougnet.org/

Design Process

An ethnographical field research was conducted in Northern Uganda in the summer of 2012. This ethnographic approach (Gray, 2009) included open participant observation of daily activities, gathering field notes and extensive recordings of activity sessions, especially of focus groups.

With the support of several WOUGNET members we visited three parishes (a parish is an aggregation of several villages) in order to talk to groups of local "Voluntary Social Accountability Committee" (VSACs) members. The local VSACs focus on the issues of holding corrupt officials accountable and carry citizen's concerns to responsible authorities. These members talked about various issues of public interest (mainly relating to public service delivery and corruption) they had reported in the past (using the help of WOUGNET and their existing online reporting platform).

Following the ethnographical methods, we conducted several workshops including interviews and observations related to the situation. We collected field notes, video and audio recordings of dialogues with the different stockholders. The main objective of the interviews was to create a "coming closer" situation, where we could justify the real settings in different situations. The interviews followed these main areas: a) what was the problem, b) how was the information of the case reported, c) what kind of ICTs were used to convey the information, and d) how ICTs would have improved the state of event (Rostami, Rodríguez, Lorenz, & Savinov, n.d.).

Over the course of general group discussions and focus group sessions we identified a number of issues that currently exist and which inhibit current efforts of reporting on (an disseminating information about) public service delivery issues.

While the relevant tools (e.g. mobile phones) often exist, there are issues with their usage such as a high cost of making calls ("airtime cost") as well as the price of electricity for charging the phones. Existing structures involve a large amount of calls that are required in order to assemble committees and for similar administrative aspects, and could potentially be improved.

The findings of these workshops clearly showed that there is a lack of efficient use of the available ICT (mobile phones) when it comes to organizing efforts, reporting issues as well as disseminating information on them.

Results and Analysis

Following the field research we transcribed and analysed the collected video and audio recordings of the workshops. Moreover, we identified the requirements based on the different causes such as the type of the involved ICTs, number of affected people, duration of the process, the priority for the community, etc.

Among the most 12 important cases which we collected from the focus group from different districts (Apac, Oyam and Gulu), we identified 3 of them as the most problem representatives. These cases are related to the public infrastructure, health and agriculture. We used these cases to identify the requirements and limitations. We aimed to develop a solution which could cater these requirements and enable an easier communication channel between local people and organizations.

Identifying the Problem and Limitations

As a result of our field study, we identified a list of limitations that we used as a base to develop the U-Call prototype. The following we highlight the important ones which we took into consideration (Rostami et al., n.d.):

- The rate of illiteracy: Due to high level of illiteracy in the Northern part of Uganda, those services which rely on sending or receiving text should be preferably avoided.
- The cost of air-time: People the mentioned area cannot afford the air-time cost for calling or sending messages.
- Basic technological infrastructure: At least one mobile phone is available in every village

Considering the aforementioned limitations the requirements of the solution service can be listed as following:

- System should be available to everyone.
- System should use voice as the main channel to convey the information.
- System should be available to everyone for free and without charge.
- System should be understandable and easy to use for everyone with different level of education.
- System should use the available technology, like basic mobile phones and limited access to the Internet.

Implementation

Based on statements made during the meetings, functional and non-functional requirements were identified. We envisioned two separate fields that a potential solution should tackle: 1) the aspect of initially reporting service delivery issues and providing a structure for simplified reporting and communication on these issues "Data Collection", and 2) the "Dissemination of Information", where for instance people can have access to reported cases and information through different channels.

We implemented U-Call system an Interactive Voice Response (IVR) platform which creates an easy way for illiterate people to participate in local governance in rural environments and report the problems they face in their community. We developed it based on Voip Drupal[7] platform, and tested the feasibility of the idea considering technical and interaction design on a small scale, locally.

Figure 1 illustrates the overall architecture of the U-Call system. As it shows, the system includes an Android App that receives the incoming calls, stores the number and hangs up on callers (to avoid airtime cost for callers). Thereupon forwards them to the Drupal for Android module which is installed in our Drupal-based Web site. This number will be sent to the Tropo[8] through Voip Drupal module. While Tropo got the information it will call back the initial caller.

[7] https://drupal.org/project/voipdrupal
[8] https://www.tropo.com

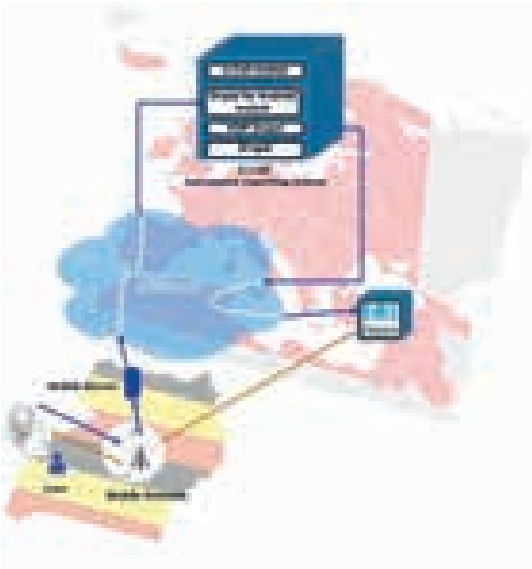

Figure 1: Overview of the U-Call Component and Its Integration

When initial caller answers the call, the voice menu will be played back to interact with. This voice menu will be available through Reporting System module according to different user inputs (see Figure 2). At this moment initial caller can listen to the stored reports as well as leave an audio report. This audio file will be saved on system as an unpublished and unverified reports until one of the administrators verify and publish it.

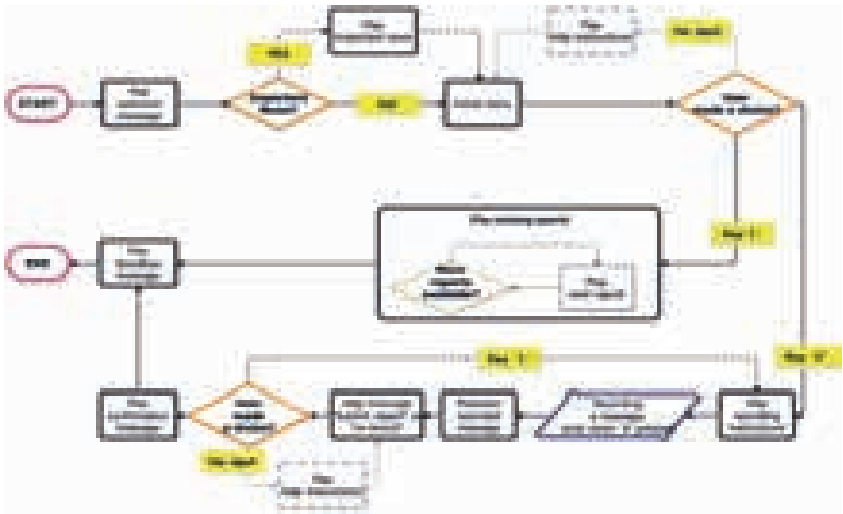

Figure 2: The Voice Menu

There should be mentioned that the Web backend has also an interface where WOUGNET can take administrative action on stored reports, by publishing the audio reports and transcribing

them to the text version. Figure 3 shows the Web interface of the system with relevant audio reports, created by VSAC members during the workshops. And text version of the reports, transcribed by WOUGNET.

Figure 3: U-Call's Web Interface

We ran tests using regular phones, calling from the Swedish phone network. These tests showed that the system was successfully able to record voice reports, save them, and play them back to other users.

Pilot Deployment

Once the aforementioned considerations have been tackled and the solution has been implemented, we launched a pilot deployment in July 2013 in Uganda. We demonstrated the U-Call system to the local VSAC members of 3 Northern districts including sub-counties. The workshop included hands-on session where all participants could use the system with their own devices. More than 30 VSAC members trained during the workshops in different districts.

Study Findings

In this section we present the main findings during the pilot deployment and user interaction with the system during the workshops.

During the course of 20 days workshops more than 300 calls were made to U-Call system and 147 audio reports stored. The system was out of reach in some areas in Northern area simply because there was no mobile network coverage.

People mentioned that however there are not enough mobile phones available to everyone in their villages, they still can use U-Call because it will be free of charge and they are more encouraged to share their mobile phone with others to report their issues.

Users were asked how they would prefer to have reports while they call to listen to the reports: sorted by time- the latest first (current setup), by category of the report and topic, by district or parish, by importance (for example, according to WOUGNET). All the users mentioned they preferred to have access to the reports by location, importance and time.

User behaviour

- However U-Call system is free to call, still some amount of airtime is required in order to place the call; even though it won't be charged.
- Voice menu and voice instruction feature can be complicated for some users, especially if system offers a lot of options to user.
- Currently the language of voice menu is English, during the workshops people mentioned they prefer a language selection feature in the beginning of the voice dialogue this kind of feature is typical for automated phone systems in Uganda and people are familiar with it.
- Users stretched that anonymity is very important. U-call system doesn't share any private information of users. However we should take in consideration that reporter's voice will be shared and people should be aware about it.
- During the workshop and based on conversation with participants we found that this project was clearly not the first solution that was presented and promised great new opportunities, but then at some point those projects were stopped and other partners stopped continuing the projects. Users are very aware about such problems, so they want to be assured such solutions will stay alive long enough.
- Instructions from the computer voice are occasionally difficult to understand. People preferred to hear recorded voice of real speakers.

Conclusion and Future Works

According to the information gathered during our field research, people of the Northern districts of Uganda face different problems in their communities which need to be reported to the responsible authorities and organization. The potential use of ICT, especially mobile phones, in aiding their situation is substantial. Solutions hosted online, using Voice over IP, can remove one of the main issues with mobile communication: the high cost of airtime. Furthermore, a cleverly designed voice communication system allows the support of structuring and organizing efforts.

Feedback from the focus groups indicated that voice can be an appropriate medium in rural areas in order to share information and let local VSACs, responsible communities and organizations communicate. This suggested that a service that focusing on asynchronous voice-based reporting with a toll-free or low-cost number could be useful.

Using the outcomes of the participatory design and ethnographic techniques we developed U-Call system, using the existing technologies. U-Call allows its users to submit their reports using

basic mobile phone and voice menu interaction. The report will be submitted as an audio file to the server and will be available to listen on the Web interface or through mobile using the voice menu.

We ran use case testing, in Sweden and Uganda in order to test the functionality of the prototype in both lab environment and in the field. The results showed that the concept we envisioned is feasible, and the technical components we identified work as intended.

Performing more in-depth investigations on the administration of user-generated voice content including developing customizable voice-based interfaces, would extend the scope of our work. However given the applicability of our solution and the diversity of potential use cases, there are still many avenues for future development.

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About the Authors

Valeriy Savinov

Valeriy Savinov is a master student of Social media and Web technology at Linnaeus University. He holds a master degree in control and automation systems from V . N. Karazin Kharkiv National University. He currently works as a system engineer consultant at ABB, Sweden.

Asreen Rostami

Asreen Rostami holds a master degree from Computer Science, with an emphasis on Media Technology from Linnaeus University, Sweden. She was part of the People's Voices project, where as her master thesis she worked on administrative functionality of the U-Call system. She is interested in ICT4D, the effect of social media and networks on participatory politics, social movements and empowering minorities.

Lars Lorenz

Lars Lorenz is a master student of Social media and Web technology at Linnaeus University. He worked at CeLeKT research group as a system and web developer. He holds a bachelor degree in applied computer science with an emphasis on multimedia technology.

II. Reflections

Solving the Democratic Deficit: The Role of Open Data and Intermediaries

Mark Frank*, Phil Waddell**

*Politics and International Relations, University of Southampton, UK, mark.frank@soton.ac.uk
**Web Science, University of Southampton, UK, phil.waddell@soton.ac.uk

Abstract: *Over the last ten years many national and local governments have adopted open data policies and, amongst other things, proponents of these policies expect them to lead to greater transparency and increased democratic engagement, potentially reducing the democratic deficit. To meet these aims intermediaries such as civil society organisations (CSOs) and the media are required to act as a link between government and citizens. However, there has been little systematic analysis of the role of such intermediaries. This paper presents a simple framework for different ways citizens may interact with government using open data based on information flows and uses this framework to explore the roles that intermediaries are playing or could potentially play.*

Keywords: *Open Data, Democracy, Transparency, Democratic Engagement, Intermediaries*

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The Political Aims of Open Data

It is widely accepted that democracies all over the world are struggling to operate as they should, and that there exists in contemporary democracies a "democratic deficit" which reduces the ability of the polis to interact with a representative, democratically elected government. In the last ten years, and particularly in the last three or four years, democratic governments round the world have announced open data policies which have among their aims improving the operation of democracy and thus addressing this deficit. Of course many governments provided data to their citizens prior to these policies (for example through Freedom of Information leglislation) but open data policies are distinctive in two respects:

- *Government data is made routinely available without being asked* - limited only by considerations such as cost of publishing, national security and personal privacy.
- *The data is made available with the intention it will be reused*. This entails that is easy to find; it is in a suitable technical format; there is an explicit license to reuse; it is free or low cost; and there is support for external developers who wish to use it. It also implies that the data is as "raw" as possible. It is data not information and it is up the user to decide how to interpret and use it.

These policies are justified on many grounds. The 2012 UK Government White Paper on open data describes its value as:

> *"holding governments to account; in driving choice and improvements in public services; and in inspiring innovation and enterprise that spurs social and economic growth."*(H.M. Government, 2012, p. 5)

The potential economic benefits of open data are an important part of the open data agenda, especially in times of austerity, however, the political aims are equally important. Two distinct but related political narratives have emerged: a **Greater Transparency** narrative posits that open data allows citizens to see inside government and thus hold it to account – allowing citizens to better protect their freedoms and interests (and possibly increasing their trust in government); and an **Increased Engagement** narrative which focuses on new ways for citizens to engage with their governments to solve problems, provide better services and possibly address the democratic deficit.

These narratives are not mutually exclusive and may support each other, but each emphasises a different aspect of open data. It is vital for transparency that government does not filter, select, or modify data but not necessarily vital that the data is easy to reuse. Whereas for effective engagement the reverse is true; data must be available for reuse but it may not matter if government has selected the data.

Transparency

Of the two narratives, transparency has the higher profile. The argument that publishing data will lead to greater transparency and accountability has been at the heart of the open data movement since its inception. Global organisations, such as the Sunlight Foundation and the Open Knowledge Foundation, present open data as essentially a tool for greater transparency and accountability, particularly in countries where corruption and inefficiency are major issues. Transparency, with its message of rooting out waste and inefficiency, has a populist appeal in Western democracies. Eric Pickles, the British minister for Local Government, talking about his recommendation that local government publish all spending over £500, said that open data would *"unleash an army of armchair auditors and quite rightly make those charged with doling out the pennies stop and think twice about whether they are getting value for money"* (Pickles, 2010).

In essence the argument is very simple – access to data leads to transparency which leads to accountability and eventually a more efficient and responsive government.

However, the extent to which access to data does increase transparency is arguable. Even the most unprocessed data takes on its meaning from the context in which it was gathered and inevitably incorporates assumptions and decisions (Desrosières, 1998; Porter, 1996; Power, 1999). More recently Geoffrey Bowker and others have argued that there is no such thing as raw data (Bowker, 2005; Gitelman, 2013). Furthermore, even if we accept that access to government data does increase transparency it will not necessarily lead to greater accountability. Peixoto (2013) points out that for transparency to lead to accountability other mechanisms have to be in place including publicity (for example through a free press) and political agency (for example through elections), mechanisms which enable citizens to know about the data and be able to use it to influence government.

Engagement

Engagement is a more complex aim and the benefits to the citizen are harder to present. Unsurprisingly it gets less emphasis in explicit policy statements. Nevertheless it is also a continuing theme. The UK government's recent draft action plan on open data (H.M. Government, 2013) devotes a section to participation and responsiveness in addition to one of transparency. However, engagement is a broad term that can include anything from providing more information to citizens when they vote, to complex forms of political participation such as consensus councils. In the context of open data Noveck (2010) describes direct democracy, deliberative democracy and collaborative democracy as different types of engagement. This is valuable, but it is not intended to be comprehensive and it does not emphasise the distinctive contribution of data to each type of engagement. What is needed is an understanding of the different ways data and information can flow between citizen and government, how these are affected by open data, and how these flows shape democratic engagement. These can be framed as four levels of increasing complexity:

- **Level 1: Citizen Support.** This is simply the improved availability of useful government data such as education, health, crime or transport to support citizens in running their lives. It is *hoped* and *expected* by governments that the citizen will make good use of this data, but there is no attempt to create any kind of dialogue with government. It can reasonably be argued that it is not a type of democratic engagement as there is no conversation between government and citizen within the lifecycle of the data itself. However, it is the basis for other levels of engagement and it does allow citizens to solve problems and create useful services which may well change their relationship with government. At this level the flow of data is one-way from government to citizen and the transformation of data to information is conducted by citizens.
- **Level 2: Consultation/Protest.** Governments often wish to demonstrate that they have consulted their citizens about policy and open data may facilitate that consultation or at least give it the appearance of being more thorough and open. Information based on open data flows from the government to the citizen. Information about the citizens' responses flows back to government which may influence its action. This level can be extended to include protest which can be thought of as "involuntary" consultation where, based on open data, citizens make their feelings known about policy without being invited to do so first.
- **Level 3: Deliberation.** Open data may facilitate better deliberation among citizens about government policy which may in turn affect activities such as voting for representatives or even direct democracy. This is based on the assumption that having access to more data, and being able to reuse and manipulate it, will improve the quality of deliberation. This level includes the vast majority of engagements that are classified as deliberative democracy including formal tools such as deliberative polls and more informal debate such as blogs. Although there is still a flow of information from government to citizen, and in most models some flow of information back to government, the distinguishing characteristic is the flow of information between citizens.
- **Level 4: Collaboration.** As with deliberation, open data may enable citizens to collaborate with their governments and solve problems. The best known example of this is the Peer-to-Patent application (Noveck, 2006). Noveck emphasises that collaboration is different from deliberation and goes beyond crowd-sourcing. It is a structured approach to harnessing

expertise outside government to solve government problems. Open data enables information to flow between government and citizens leading to joint action. Proponents of this level such as Noveck see collaboration as a transformation in the way democracy works – effectively devolving government activity to external experts who are self-selecting and self-managing.

The Role of Intermediaries

Open data is often difficult for citizens to process without help. It requires technical and subject matter expertise to turn the data into information. While government open data initiatives frequently include some attempts to interpret the data as well as making "raw" data available, it is part of the open data culture to expect and help organisations outside of government to interpret the data themselves (Robinson, Yu, Zeller, & Felten, 2009). These might be journalists, pressure groups or even charities or businesses. What is the role of these intermediaries in transparency and the categories of engagement described above?

The open data movement has sometimes been guilty of assuming that because its proponents can see a role for intermediaries that organisations or individuals will fulfil those roles given sufficient publicity and support. However, any such intermediary needs the skills and resources and above all the motivation to play that role, particularly if that role is to be sustained. In some cases the role and motivation is clear and may well be a straightforward extension of a role that already existed before the advent of open data or even the Web. In other cases it is far less certain why any organisation or individual should become an intermediary.

In the case of transparency third parties have a long history of providing Peixoto's publicity and political agency. Governments have been releasing data and information about their operation for many decades and journalists, pressure groups and other intermediaries have been monitoring and interpreting that data. As a result they have publicised the data and on occasion this has become political agency. Open data can be seen as an additional resource for this long-standing activity. A recent high profile example in the UK illustrates how this can work. A study done by a partnership of health and IT professionals discovered hundreds of millions of pounds being spent unnecessarily by GPs prescribing expensive branded drugs (statins) when much cheaper, but equally effective, generic alternatives were available (Open Data Institute, 2013). The role of intermediaries like this in transparency appears to be a relatively clear extension of roles they already play and an increasing number of organisations and individuals are doing just this.

In the case of engagement the role of intermediaries is more complicated. On the face of it there is a role for an intermediary organisation to use open data to enable different forms of democratic engagement, at a minimum in selecting the data and presenting it in a more accessible way. But few organisations wish to do this for its own sake. Intermediaries, whether they are journalists, pressure groups, charities or businesses, have agendas of their own and facilitate engagement to further those agendas. These will vary according to the type of engagement:

- **Level 1: Support.** Intermediaries can and do help present open data to the public in more useful ways. There are many applications developed by third parties that use open data in areas such as transport (Dietrich, 2012). The objective of these is not to hold government to account but to provide helpful services to citizens. These are frequently small organisations or even individuals, and may be motivated by a perceived business opportunity, personal

satisfaction in creating a good product, or altruistic desires to fill a perceived need. They measure their success in terms of how much the application is used and user satisfaction.

- **Level 2: Consultation/Protest.** Intermediaries have a long history of coordinating citizen responses and presenting them to government during consultation and are often invited to contribute to consultations such as public enquiries. They are typically motivated by a prior desire to influence government in particular direction. A protest group may coordinate and present local reactions to a proposed construction project. A mental health charity may represent the needs of those with mental problems. In theory open data may provide additional ammunition to the intermediary's case and as a result they will present it to the public. There seems little doubt that an intermediary in this position will take advantage of open data assuming it is aware of it and has the skills to use it.
- **Level 3: Deliberation.** Intermediaries could in theory foster improved deliberation by providing infrastructure, informing citizens about the opportunity, coordinating and moderating deliberation, and processing the results of the deliberation. However, it is not clear what would motivate an intermediary in this case. As Noveck points out – deliberative democracy initiatives tend not to be linked to action – and this leaves intermediaries with limited reasons for participating. To date the most successful attempts to facilitate deliberation have been facilitated by government itself or by academic institutions doing the project for research purposes (Noveck, 2009).
- **Level 4: Collaboration.** As with deliberation, intermediaries have in theory an important role to play in collaboration. Collaboration requires a committed community of contributors who are prepared to take responsibility for solving a problem. In the case of peer to patent this community was created and nurtured by government – but the project also had extensive backing from external organisations such as IBM and Microsoft which gave it credibility. Contributors need to have confidence that their time and expertise is being used to good effect. In an environment where trust in government is low, a trusted intermediary can play a vital role as well as providing the practical support that is needed. Collaboration is also much more dependent on suitable data than consultation and deliberation. Solutions need data and intermediaries can help in finding and interpreting that data. Unlike deliberation, collaboration is linked to action and there is a potential motivation for intermediaries to get involved. The sponsors of Peer-to-Patent had strong commercial reasons for improving the process. However, the need to link collaboration to action may also limit the role of intermediaries. Voluntary participants need reassurance that their time and skill will be lead to results (e.g. rejection or acceptance of a patent). An intermediary that is perceived as coming between them and government (as opposed to providing support) could cast doubt on the link between the participants' actions and any change in policy.

In summary – in the case of transparency and consultation/protest the role of intermediaries in using open data can be seen as an extension of existing roles; requiring perhaps an expansion of skills and resources, but building on existing motivations and networks. In the case of support and collaboration open data requires intermediaries to take on roles that did not previously exist - but there is some evidence that there is motivation for individuals or organisations to perform these roles. The biggest question mark is over deliberation where prior to open data intermediaries were not forthcoming and it is not clear that open data will create a role for them.

Conclusion

There is little doubt that open data can be used to improve the lives of citizens on both physical and intellectual levels. Once data is made available and transformed into understandable information the polis has the ability to enter into a more constructive and democratic debate with its elected government. But having the ability does not necessarily translate into action, and open data is by no means solving the democratic deficit. In this paper we have considered the two narratives of open data; that it supplies greater transparency and that is leads to deeper engagement between the citizen and the state. Our analysis of these narratives has shown the ways by which each goal can be achieved, but also the obstacles to realization that exist. The data itself will not change democratic practice, the actions of an informed and engaged polis will, but it is still not clear how citizens become informed and engaged without an infrastructure that provides both education and moderation of open data resources. Although there have been a limited number of government initiatives seeking to provide such an infrastructure, it is an inevitable consequence of data being open that organisations outside government will play an active and even dominant role. Indeed it is part of the ethos of open data that this is to be encouraged. Open data is called open because it can and should be reused by anyone. Governments should not have a monopoly on interpreting it for citizens. Therefore this paper has moved to an examination of the role of intermediaries in meeting democratic ideals for open data. Do intermediaries have to play new roles or old roles with new data? What is their contribution? How will they be motivated to play those roles? What resources, organisation, support and legislation are needed to make them effective? The argument of this paper is that the answers will vary from one type of engagement to another and a framework is needed to provide a systematic approach.

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About the Authors

Mark Frank

Mark Frank is a mature student doing a Ph.D. in Open Data and Democratic Engagement after retiring from a career in IT. His research interests include UK local government use of Open Data and the role of intermediary organisations. He is a graduate of the University of Southampton Web Science Doctoral Training Centre.

Phil Waddell

Phil Waddell is a Ph.D. researcher with the Web Science Doctoral Training Centre at the University of Southampton. His research explores ideological Web use and the relationship between contentious political engagement and the Web.

Kenya's Open Data Journey

Anne Muigai

Open Institute, Kaya I/O, Ghandi Avenue, P.O. Box 50474 – 00100, anne@openinstitute.com

Abstract: *In June 2011, President Mwai Kibaki launched the Kenya Open Data Initiative (KODI) to international acclaim, making Kenya the first country in sub-Saharan Africa (and one of a handful around the world at the time) to launch an open data portal. The open data portal (opendata.go.ke) had 200 datasets, ranging from education, health and public expenditure data. Nearly three years since its launch, the Kenya Open Data Initiative (KODI) has been noticeably inert, especially since the exit of its most prominent champion, the former Permanent Secretary in the Ministry of Information, Dr. Bitange Ndemo. Despite this, there are signs that the government is taking steps to revive the initiative, with civil society organizations also working hard towards implementing policies and investments in infrastructure to complement open data efforts. In this reflective piece, we look back on Kenya's open data journey.*

Keywords: *Kenya, Kenya Open Data Initiative, KODI, Africa*

Launching the Kenya Open Data Portal

In her paper *"Disseminating The Power Of Information: Kenya Open Data Initiative, 2011 – 2012* Rushda Majeed (2012) explores the genesis of the Kenya Open Data Initiative (KODI), the challenges it had to overcome and the key actors that played a role in making the initiative possible. Mostly due to the efforts of the serving Permanent Secretary in the Ministry of Information at the time, Dr. Bitange Ndemo, the initiative overcame the hurdles that had kept government information unavailable to the public for many years.

Rushda's interviews revealed that in spite of a clear constitutional argument for the release of information to the public, Dr. Ndemo faced significant resistance from other ministries. Leveraging his influence and high social clout in government, Dr. Ndemo lobbied the President for support on the initiative as high level support was necessary to encourage ministries to allow the release of their data. The President was convinced that Dr. Ndemo was on the right path and gave both his support for the initiative and his commitment to launch the portal at a public event. With the President's approval secured, Dr Ndemo mounted pressure on his counterparts in other ministries as well as the Kenya National Bureau of Statistics (KNBS) and obtained additional data for the initiative, as well as the budgetary support to make the launch event possible and cover the costs of securing and hosting the data portal.

On June 28th 2011, President Mwai Kibaki launched the Kenya open government data portal (http://opendata.go.ke), making Kenya the first country in sub-Saharan Africa (and one of a handful around the world at the time) to launch an open data portal. At launch, the portal had 200 datasets in six categories: education, energy, health, population, poverty, water and sanitation.

Data from the 2009 census also made it onto the platform, as did data on public expenditure, budgets and the Kenya integrated household survey.

In their analyses of KODI, Majeed (2012) and Nugroho (2013) note that in the absence of clear policy, the initiative was starved of its critical supply of data by a culture of data hugging, low awareness and very low capacity to process and publish data to the portal. In early 2013, one major newspaper in Kenya reported that open data in Kenya had hit a dead end, attributing their statement to a quote by Dr. Ndemo (Wokabi, 2012). While they may have taken his quote out of context, the reality is that at the time of writing this report, there have been no more new datasets published to the portal in nearly a year. Dr. Ndemo's assertion is that the unwillingness of other government ministries, departments and agencies to publish data or provide it to the team that could publish it had resulted in the situation at the time.

Driving Demand

Publishing the data, building awareness and encouraging the use and re-use of data became one of the more prominent elements of the initial KODI iteration. The Socrata-powered platform allows data to be uploaded easily and presented in various data formats and visualizations, enjoys access to technical support from the vendor as well as training on management of datasets and customization of the platform. The Board also had an active communications office through which information about the platform and the initiative was disseminated. The existing personnel responsible for community engagement carried out activities designed to grow awareness of the portal within different parts of the ecosystem (academia, technology, media, etc). This capability is still present in the new ICT Authority and can continue to play a critical role in building awareness of open data in the country.

Suffice it to say, however, if people cannot use open data, it serves very little purpose and its value is greatly diminished. Citizens need to be just as clued-up on open data as those who work in the administration that is tasked to provide said data ("*Data, data everywhere*", 2010). Relevance and the ideal level of granularity are two aspects that require a properly functioning feedback system that reaches beyond the portal's management to the data's origin (Rahemtulla et al., 2012).

Goldstein and Weinstein (2012) demonstrate that while new activity was triggered from the catalytic effect of the government rolling out open data portals in other departments such as the Ministry of Health and the Ministry of Lands, international acclaim that the portal initially received quickly gave way to domestic disollusion. The primary audience targeted by the initiative (particularly journalists and software developers) did not consume data in the way that they had originally anticipated, and most felt that high value data remained elusive (Akunga, 2012):

> *"A year after the launch, both Ndemo and Kukubo noted that software developers, the media and the public had not used the open data portal as widely as they had anticipated. The ICT Board reported that as of June 2012, it had no data on commitments from civil society groups or even government ministries to use data from the site." (Majeed, 2012)*

Driving demand remains a challenge for the Kenya Open Data Initiative and stakeholders are looking into ways of stimulating demand by empowering infomediaries such as journalists and civil society organization to use and curate data. While some of the projects (listed in Table 1) had made efforts to release data, others made efforts to make use of open data by hosting workshops and roundtables. For the latter, four prominent efforts occurred in 2012 to help achieve this,

namely: Nairobi Data Bootcamp, Code4Kenya fellowship program, The Open Data for Development Camp, and the Africa Counts Roundtable.

Table 1: Projects related to open data in Kenya

Project Name	Launch Date	Status	Organization
Kenya Open Data Initiative **http://opendata.go.ke**	June 2011	Active	ICT Authority
CodeForKenya **http://code4kenya.org**	June 2012	Active	African Media Initiative
District Health Information System (DHIS2) **http://hiskenya.org**	Unkown	Active	Ministry of Health
eHealth Portal **http://ehealth.or.ke**	2010	Active and updated frequently	Ministry of Health
eProMIS **http://e-promis.treasury.go.ke/portal**	Not yet launched	In progress	Ministry of Devolution and Planning
Maji Data **http://www.majidata.go.ke/**	2013	Active and in use	Ministry of Water and Sanitation

Bridging the Digital Divide

In addition to the demand and supply of open data, access to technology and ICT infrastructure play a significant role that could, under the right conditions, either hazard or enhance the open data experience. In line with the efforts being made towards making Vision 2030 a reality, the five-year National ICT Master Plan 2017 developed by the Ministry of Information and Communication aims to drive Kenya forward and lay claim to being the African leader in ICT, with a heavy push towards closing the digital divide and giving Kenyans access to the information that they need by developing ICT policies, infrastructure and initiatives further.

Schumann and Kende (2013) state that Kenya has a high Internet penetration, even when taking into consideration those at a lower income bracket. This is largely due to its affordability of Internet access (with the lowest price point in the African region). The low prices could be a result of a combination of increased competition in the telecommunications sector, progress on institutional reforms, and the liberalization and increased private-sector investment in the submarine cable sector (World Bank Country Report, 2010). This solidifies the ICT Board claims that upon laying the fifth and last remaining undersea cable, they aim to increase Kenya's bandwidth capacity by nearly double to 15 terrabytes per second (TBps) from the current 8.56

TBps ("*National ICT Master Plan 2017*", 2013). This allays concerns that may arise on whether demand for open data and capacity to utilize it would be hampered by poor access to infrastructure necessary for the exploitation of this resource.

Legal and Institutional Frameworks

Like many initiatives or programs in Government, open data requires strong institutions and the right legal framework to function. In the case of the US government, the Executive Office of the President (EOP) is responsible for the data.gov portal and interfaces with other agencies to publish data to it. There exists an explicit department within the EOP to deal with open data and the broader open government initiative. The UK government vests the responsibility of publishing government data to data.gov.uk, its open data portal, with the Public Sector Transparency Board, a high-level board in which at least three government ministers sit in addition to luminaries like Andrew Stott and Sir Tim Berners-Lee.

In Kenya, the legal and institutional frameworks related to open data include:

1. The ***Official Secrets Act*** has been mentioned on many occasions as major hurdle to opening up government data in the past. Amendments to this act are expected in order to harmonize it with the new constitution and with other laws yet to be enacted. Until then, however, its spectre continues to loom large on any efforts to facilitate proactive disclosure of government data by civil servants in Kenya.
2. The ***Access to Information Act*** is, as at writing, awaiting debate in Parliament. The enactment of the Act will result in amendments in the Official Secrets Act and explicitly create the requisite processes anchored in law necessary to compel government ministries, departments and agencies (MDAs) to provide data on request. The act defines the time within which requests must be fulfilled, penalties for non-compliance by MDAs and defines the individual office holder responsible for the process.
3. The ***Commission on Administrative Justice (CAJ)*** was established under the Constitution of Kenya 2010 to replace the Public Complaints Standing Committee through an act of parliament (Commission on Administrative Justice Act 2011). Under the proposed Access to Information Act, the CAJ will be responsible for governing the access to information process throughout government and enforcement of the act.
4. The ***Constitution of Kenya 2010*** guarantees, through Article 35, freedom of information to citizens.
5. As described by Nugroho (2013), the Kenya Open Data Initiative (KODI) was very quickly initiated and commissioned in the absence of supporting legislation but with clear support from the new constitution. Despite high-level support from the President however, the initiative lacked the institutional framework necessary to transition it from a project at the Kenya ICT Board to a government-wide process for opening up data to the public.

   The Board was an agency established under the Ministry of Information. It is likely that its position on the general government pecking order reduced its effectiveness in compelling or convincing government departments to release data for publishing online in the absence of legislation. The difficulties the Board faced in this regard were highlighted in an interview with Dr. Bitange Ndemo (Wokabi, 2012). There was also mention of this by the Board in its progress report for 2007 – 2013 (KICTB, 2013). It is likely that this would not be easily remedied without institutional changes (relocating the initiative to a 'higher order' department/ministry) and complimentary legislation.

The ICT Authority was formed following Executive Order No. 2 and through a legal notice in the Kenya Gazette in August 2013. An amalgamation of three major ICT-related departments in the government (The Kenya ICT Board, the Department of e-Government and the Government IT Services), the new organization inherits all the projects of its successor organizations including the Kenya Open Data Initiative, eliminating the siloed efforts of ICT related government as was common in the past. As an '*Authority*' rather than a '*Board*' it is likely that the new organization will carry the necessary political clout to midwife the enactment of the Data Privacy Act 2012 and the Access to Information Act 2013 through Parliament and into law.

6. The ***Kenya National Bureau of Statistics*** was established through the Statistics Act 2006. The Bureau is the principal agency of the Government for collecting, analyzing and disseminating statistical data in Kenya and is the legal custodian of official statistical information. In the past, there was considerable overlap between the ideals and mandate of the Bureau and the activities of KODI under the Kenya ICT Board despite the fact that KNBS was one of the stakeholders in the KODI.

There may be gaps in legal and institutional frameworks for open data to function going forward but some legislation and the institutions necessary for it to function already exist. With the passing of additional pieces of legislation in the near future these will be strengthened considerably. It is clear though that the ICT Authority, the Kenya National Bureau of Statistics and the Commission on Administrative Justice will need to work closely together in order for open data to function well.

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About the Author

Anne Muigai

Anne Muigai is the Knowledge Lead at the Open Institute — a catalyst think-do tank of domain experts that provides technical and advisory services in the open data and open governance space to governments, civil society organisations, media and corporate companies. Her work focuses on gathering and sharing information on social innovation, grassroots community organisation and policy level development to give citizens a stronger voice in governance. Anne is also a recent graduate from the University of Sheffield with an MComp (Hons) in Enterprise Computing: Information Technology Management for Business. She has a deep passion for technology, people and enterprise. http://www.openinstitute.com

Open Data Planning Activities: Emerging Practices from a Public Value Approach

Meghan E. Cook

Center for Technology in Government, University at Albany, State University of New York, 187 Wolf Road, Suite 301, Albany, NY 12205 USA , mcook@ctg.albany.edu

Abstract: *Open government and data planning and assessment processes have become more important within the last three years. Yet few models help government agencies to identify and assess the public value impacts of opening government data. This paper reflects on a public value planning approach that provides a structured way to guide organizations toward an analysis of the value of opening data that produces information for decision making, priority setting, and other agency efforts. I draw on my experiences working with government agencies to discuss some emerging practices from three public value planning initiatives.*

Keywords: *Open data, open government, public value, planning, assessment*

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Introduction

It is easy to get practitioners together to talk about the benefits of opening government data. These are conversations that ensue and take shape in almost all meetings. What is not easy is to systematically assess the benefits, value, and impacts of opening data and how it relates to the mission of the government agency. As a consequence, open data planning and assessment processes have become more important over the last couple of years. However, there are very few models that help to identify and assess the public value impacts of opening government data and also provide a structured way to guide organizations toward an analysis that produces information for decision making and other uses. In this reflection piece, I draw on my experiences working with government agencies to discuss some practices emerging from public value planning activities.

A Public Value Approach to Opening Government Data

In late 2009, the Center for Technology in Government (CTG) received an Early-Concept Grant for Exploratory Research (EAGER) from the United States (US) National Science Foundation (NSF) to address the most challenging questions facing open government leaders. Done in cooperation with the US General Services Administration (GSA), CTG developed a conceptual model of the Public

Value Assessment Tool (PVAT) which uses key concepts from CTG's Public Value Framework (Cresswell, Burke, and Pardo 2006) and draws on CTG's twenty years of applied research and expertise in information and communication technologies and effective forms of cross-boundary collaboration to support government policy making and service delivery.

The PVAT creates a formal and structured method for assessing the public value of opening government initiatives, particularly opening data. It also provides a way to make public value thinking a systematic part of the planning process. The tool outlines a series of steps that document the perceived public value for various initiatives across a set of seven public value dimensions. The tool constructs an overall summary of public value propositions, which can guide group deliberation and decision making, mainly among public managers but potentially also involving the public.

Table 1: Public Value Types

- **Social:** impacts on family or community relationships, social mobility, status and identity.
- **Economic:** impacts on current or future income, asset values, liabilities, entitlements or other aspects of wealth or risks to the above.
- **Stewardship:** impacts on the public's view of government officials as faithful stewards or guardians of the value of the government in terms of public trust, integrity and legitimacy.
- **Quality of Life:** impacts on individual and household health, security, satisfaction and general well-being.
- **Strategic:** impacts on person's or group's economic or political advantage or opportunities, goals and resources for innovation or planning.
- **Political:** impacts on a person's or group's influence on government actions or policy, on their role in political affairs, influence in political parties or prospects for public office.
- **Ideological:** impacts on beliefs, moral or ethical commitments; alignment of government actions, policies or social outcomes with beliefs, moral or ethical positions.

CTG tested the conceptual design of the public value tool with teams from ten federal agencies including the US Office of Personnel Management, US Department of Transportation, US Department of Housing and Urban Development, US Merit Systems Protection Board, US Environmental Protection Agency, US General Services Administration, and the White House Office of Science and Technology Policy.

Case Stories

Since that time, CTG has led numerous efforts using the public value analysis approach to guide governments in planning and assessing open government, open data, and enterprise management initiatives. Governments looking to identify and understand the value of their efforts have found that CTG's public value planning approach offers a framework and tools to systematically collect, understand, and assess many types of value.

CTG has worked with the following agencies, leading them through a public value planning process:

- The United States Department of Transportation (US DOT) used CTG's PVAT to assess and prioritize their 25 open government initiatives for the purposes of producing their agency's formal and public open government plan (US DOT Open Government Plan 2.0).
- The New York State Office of the State Comptroller (NYS OSC) used CTG's public value approach to assess proposed datasets for the purposes of developing an agencywide open data portfolio (NYS OSC Workshop)
- The Metroploitan Transit Authority (MTA) in New York City used CTG's pulic value approach to plan the development and implmentation of an enterprise asset management program which created an asset information strategy.

Emerging Lessons and Practices

Make it a Team, Not Individual Effort

No one person or program has a clear understanding of all the differnt types of value that are likely to accrue to different stakeholders through open government and open data activities. The public value planning process is best conducted through a set of meetings, workshops, and individual work, all designed to foster knowledge sharing, encourage idea development, promote discussion and debate, and produce deliverables. Our experience shows us that successful planning processes require an "all staff" enterprise approach where staff are divided into teams to conduct workshops and analysis. Table 2 provides examples of the types of teams needed for public value planning.

Table 2: Examples of Needed Organizational Teams

- **Planning Teams.** People within the government entity that serve as the main point of contact for the public value activities and who are responsible for internal government communication for the project, management, and logistics of all meetings and workshops.
- **Open Data Teams.** People within the government entity responsible for the development of the open government and data plans and strategies. For some agencies this may be the same as the Planning Team, while in other agencies it may be a larger group of people, including members of the planning team.
- **Government Expert Teams.** Agency professionals with deep knowledge and experience on the technical, data, business, program, or services aspects of the agency's core mission. Experts will attend meetings, workshops, and discussion sessions as needed and will provide critical knowledge sharing activities.
- **Leadership Teams. S**enior leaders and executives responsible for the overall direction and decision making for the agency.

Teams often organize their activities in the following ways: (1) individual team members do a public value assessment alone, and then come together to discuss and reconcile their statements and judgments, or (2) teams start working together from the beginning and one person is assigned to document statements and disucssion. If the timeframe for the planning is short, individuals can

do more work on their own but, it is essential that the individuals and teams come together to discuss and debate their collective public value judgments. Teams that are the most successful are those that have guidance and support.

Guidance is Needed to Express Meaningful Statements of Public Value

Learning to create qualitative statements of value often takes considerable time. While practitioners and leaders often talk about value in their every day work, expressing them in a structured and useable way is more difficult. Engaging in a public value assessment requires organizations to train staff in public value thinking. Particularly, teams members need to understand the public value types, their respective dimensions, and how to construct value statements. This requires individuals to think about value in three-dimensions—value specific to the project, value specific to the stakeholder, and value specific to public value type.

Crafting a value statement often took multiple tries. Through group exercises, teams generally started at a high-level of abstraction and then worked to revise the statements to be at a more granular level with specific examples, if-then logic, and benefits and consequences built into the statements. Teams often combined two or more values in statements. When this occured, it required more discussion or a second reviewer to separate out the value statements so that they were more meaningful and useful. Figure 1 shows the beginning stages of crafting public value statements. The statements are at a high-level and not specific.

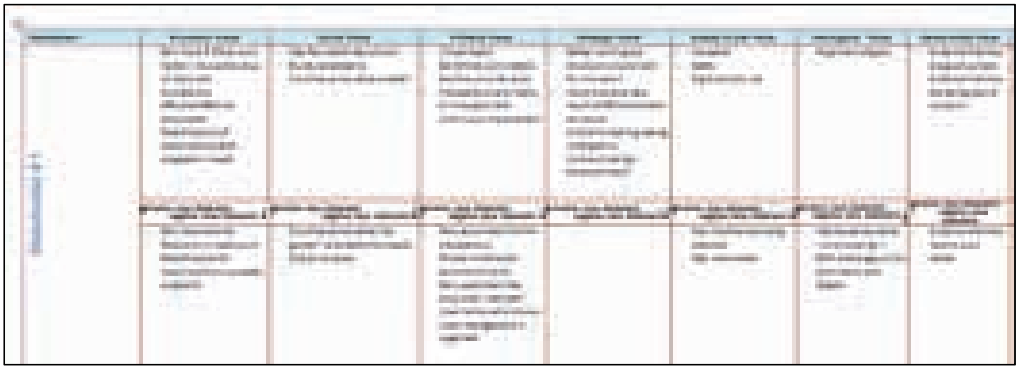

Figure 1: Example of Initial Public Value Statements

Figure 1 shows a teams response to using data to improve operations. In the example, the teams starts with a simple statement for Social Value [May feel better about work]. As the team discussed and debated the statements, they subsequently begin to expand on their original thinking and are able to write more detailed and meaningful statements of public value. The PVAT asks teams to consider both positive and negative expressions of value which is designed to elicit the total value public value accrued to each stakeholder for the initative.

Techniques for Examining Positive and Negative Public Value

Any one stakeholder group can have a range of positive and negative public value statements emerge as part of the analysis. Thus, it is necessary to provide some type of overall judgment on whether the stakeholder actually has more positive or more negative with respect to the value in any of the seven categories. There are a range of methods that can bring together a team's collective thinking. Figure 2 shows an example of an exercise for teams to create quick value judements. The goals is for teams to use this technique to detemine if they think there is more positive or negative value for each public value type. The quick value judgement offers a powerful visual for discussion and debate which further creates clarity and understanding for the team's collective summary of public value.

Creating Public Value Metrics

Cresswell and Sayago (2012) argue that public value impacts are not simply isolated events but are embedded in a context of social and economic activity. They also suggest that opening data value impacts are likely to have secondary effects, all of which makes the task of impact assessment much more difficult. For example, the NYS Office of the State Comptroller wanted to open data about the length of time it takes the State to process payments. Opening the data would provide agencies and vendors, primary stakeholders, with the actual number of late payments exclusive of interest. Some of the measures to determine the financial and economic gains would be the lost interest in late payments and the number and frequency of those types of payments. Secondary value may accrue to individual citizens. The State reports annually on prompt payment interest

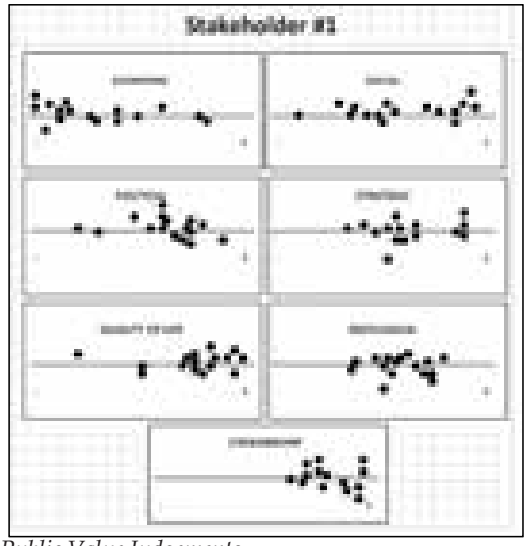

Figure 2: Example of Initital Public Value Judgements

paid to vendors, however, there are late payments made to vendors that do not generate interest. Providing this information to the public might garner attention and bring about improved transparency and processing times for all categories of payments. In this example, the metrics for

group or institutional view would be different from the measures for the societal point of view. Opening this data might also yield other results including increased satisfaction with government or trust in government as faithful stewards of public finances through honest actions in managing the State's resources. Thus, stewardship value may acrue at the institutional or societal level. Other types of value that may be realized are the vendor's strategic value and in turn increase the credibility and reliability of working with the state.

The above example is a complex chain of multi-level impacts with different value types. To translate public value statements into metrics requires the identification of variables by value dimension. Cresswell and Sayago (2012) examine the value types by level of observation – individual, group, institutional, and societal. They illustrate in Table 2 how what is a useful variable for expressing impacts from using open data on a personal point of view, may not be useful from a group or institutional point of view. While the metrics may be similar or closely related, they cannot be the same variable, even if some of the underlying data is the same.

Table 2: Example Public Value Metrics by Level of Observation (Cresswell & Sayogo, 2012)

Financial value	**Individual point of view**	**Group point of view**	**Institutional point of view**	**Society/National point of view**
Dimension: Wealth	changes in value of financial, intellectual, & physical assets, property, changes in education level, qualifications, health status, entitlements	changes in value of financial, intellectual, & physical assets, reputation, entitlements	changes in value of financial, intellectual, & physical assets, reputation & brand legitimacy	changes in productivity, natural resources, education & skill levels, infrastructure, built environment, & other physical assets, intellectual property

Developing metrics from qualitative value statements is the latest step in the public value planning process. More research and experience is needed to determine to what extent these metrics accurately represent value creation.

Conclusion

Through this type of organizational, team-based planning, governments have produced a range of deliverables including (but not limited to): open government plans and roadmaps, open data plans and portfolios, communication strategies, business cases, change management plans, training guidance, indicators and metrics, and budget justifications. The benefits of the information generated as a result of the structured group planning process is that leaders have more information about stakeholders interests, risks, and costs in order to make better decisions. Communication staff have information to target outreach plans to appropriate stakeholders, and all staff tend to have more clarify around organizational and strategic goals with respect to open data initiatives.

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About the Author

Meghan E. Cook

Meghan Meghan E. Cook, MPA, M.S.Ed.is the Program Director at the Center for Technology in Government (CTG) at the University at Albany. CTG is an internationally renowned applied research center focused on fostering public sector innovation, enhancing capability, and generating public value. Working with multi-sector teams from government, corporate, and academic organizations, Meghan leads large scale government information management efforts through collaborations focused on the policy, management and technology issues associated with information technology innovations in the public sector. With over 20 years expeience, Meghan has experience and expertise in opening government, strategic IT planning, intergovernmental information management, public value planning and assessment, mobile government, and building smarter cities.

User-Based Open Knowledge Increasing E-Democracy in Finland

Mika Sihvonen, Miikka Sipilä

School of Information Sciences, FI-33014 University of Tampere, Finland, mika.sihvonen@uta.fi

Abstract: *Active citizenship is experiencing changes in Finland as election participation is constantly decreasing. Finnish legislation is under external influence from various EU directives. Hence, some citizens might see participation as meaningless. One way to increase civic participation is by utilizing modern technology. Faster Internet connections, well-developed software and mobile devices enable citizens to participate in new ways. The government is interested in increasing transparency by granting public access to its various databases. Through modern interactive tools and open data active citizenship could take new forms.*

Keywords: *open knowledge, open data, E-Democracy, public engagement*

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Introduction

The access to virtually unlimited data resources and the opportunities this offers have become an important topic in recent discussions of the information society. In the field of open and big data, institutions such as commercial enterprises and public organizations have enormous databases that could be utilized to create wider knowledge. However, the data might be in the shape of a huge document of different numbers and letters and to utilize it you have to understand the structure of the data. Before an ordinary user can utilize such data, it often has to be reworked by an independent software developer.

In one scenario, the data is created and enriched by an active group of users. Modern technology provides fast and efficient ways to learn and to communicate. Organizations can share versatile content in various formats and citizens are given better ways to adopt information. However, citizens are not just passive observers. They can also be creators of versatile content such as reports on local problems or broader initiatives. Through crowdsourcing, people can participate in, for example, the co-creation of documents and in discussion about current issues.

In this paper, we present a broad review of the recent open knowledge-based solutions in Finland that allow for active citizenship, in order to structure the discussion about different open data and e-participation models. We argue that the open data concept is seen as a rather broad, technology-related issue and its benefits for the active citizen are typically map-based solutions

such as real-time public transportation applications. The openness of data can be considered a governmental issue and data storages might be released for public relations related reasons without any clear vision whether the data is useful to the users. Of course, the policy of openness itself is positive and it eventually might create useful knowledge, as well as give rise to new businesses. However, without a sufficient user-based approach, it might be challenging to get the target audience involved. In our approach we focus on the open knowledge impact on individual citizenship.

Public Engagement Through Online Media

The idea of supporting public involvement through online media is not new. According to Moon (2002), 85 % of U.S. municipal governments had web sites in 2000. Scott (2006) suggests that support for effective Web-based public involvement, such as virtual participation, is needed once the philosophy and the objectives for local e-participation have been set.

When it comes to open government data (OGD), governments have rich traditions and long-standing practices of record-keeping and state archival systems (Davies and Bawa 2012). Huijboom and Van den Broek (2009) examined strategies for government data in five different countries and found three primary motivations for publication of governmental data: 1) Increase democratic control and political

Open Data and User-based Approach

The challenge in developing a user-side approach is that there is a gap between different data sets and the typical user who would use the data. The data owner might not want to share the data, or might not know who would find it relevant, or might not know how the data could be used. Users on the other hand might not know what kind of data could be available and therefore might not be aware of their needs for it, or they might not know how to use different data sets. The data sets are often huge and are shown often only in machine-readable form and to utilize this data you have to have adequate computer programming skills, which few people have. Thus, between the data owner and the end user a developer is often needed. So, if we look at the open data and its utilization, we can identify three different actors: 1) The owner of the data, 2) the developer of the data and 3) the end user of the data.

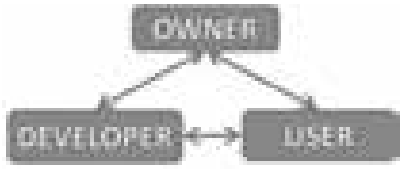

Figure 1: A figure of open data actors

In Figure 1 we can see the three identified actors. Arrows in the figure show the dialogue that is needed to enhance the utilization of open data. The data owner might not know how to utilize the data and the user might not know what kind of data might be available. Hence, neither the owner nor the user might identify the need for the information to be available. If the user knows what kind of data is available and the owner knows what the user needs, the utilization of data becomes

more feasible. The dialogue between the owner and the user can help in identifying these needs. When the data is made available, a developer creates an interface for users. The developer needs a dialogue with both the owner and the user. Therefore, the developer can sometimes be seen as an interpreter who figures out from the user what is needed and from the owner what kind of data is available. However, it is notable that the roles of these actors can be shared. The developer, or the owner, might be users of the data as well.

Modern Active Citizenship

Modern mobile technology creates new avenues for active citizenship. Citizens are able to gather more real-time information about decisions and backgrounds, as well as to affect common matters. Municipalities are able to increase transparency by allowing everyone to see their records. For example, the municipal council of Helsinki offers a route to all the records about their meetings. With mobile applications (for example, Ahjo Explorer, Figure 2) users are able to follow issues they are interested in or that concern the district they live in.

Modern technology also enables citizens to gather more information about political authorities. For example, information about members of parliament is provided by a service called Kansanmuisti (The memory of the people, Figure 2). It gathers various data from different sources, such as members' voting behaviour and what kind of statements they have made, what kind of opinions they have expressed in their election campaign and how their election campaign was funded. In a representative democracy, this allows citizens to monitor politicians to see if their opinion changes after the elections or to see connections between politicians' funding and the political issues they try to promote.

In addition to providing more information, modern applications also enable interaction between citizens and the city they live in. As we review these digital and interactive services, we realize that many of them were not accessible a few years ago. Many of these new services enable easier, faster and crowdsourced ways for civic participation. With modern applications, citizens are able, for example, to report local problems or to co-create initiatives and follow how the procedure is handled.

Figure 2: Ahjo Explorer (left) provides information about political decisions in Helsinki (http://www.hri.fi/en/applications/ahjo-explorer/). Kansan muisti (right) allows comparing campaign statements with actual voting records of members of the parliament (http://www.kansanmuisti.fi)

The most notable reform has been the possibility to create a citizen's initiative online. In Finland, an initiative needs 50 000 votes from citizens before it gets submitted for discussion in parliament. The site kansalaisaloite.fi (citizen's initiative) allows citizens to create, support and monitor citizen's initiatives. During the first year of the service, it already enabled five different initiatives to reach the required 50 000 votes. It was the first time in the history of Finland that citizen's initiatives obtained the requisite votes.

Meanwhile, avoinministeriö.fi (Open Ministry) is a service that allows the creation of high-quality initiatives with the help of crowdsourcing. The service allows anyone to present their ideas for initiatives and vote for, or comment on, other initiatives. Users can discuss, for example, about what needs to be taken into consideration regarding the initiative. The best ideas will be included into the final form of the initiative with the help of experts from different fields. The purpose of the service is to enable the transformation of an incomplete idea into an actual initiative.

There are other modern services as well. Via a service called kuntalaisaloite.fi (inhabitants' initiative) inhabitants of municipalities are able to create initiatives for city councils. Otakantaa.fi (Take a stand) is a platform for anyone to create a topic and to collect opinions about it.

Naturally, there was internet-based public engagement before, but these actions often fragmented into different unofficial platforms that were not monitored by any authorities. It is notable that most of the modern services are provided and monitored by the authorities. The development of digital services in Finland is guided by various actors such as the Government Programme, national ICT 2015 & 2023 Programmes and the global Open Government Partnership Initiative.

Open Knowledge Promoting Everyday Life

Probably the most useful applications in everyday life have been different map-based and location-based services. In mobile devices, different route planning applications can suggest the fastest ways to get to a desired location with the help of public transport data and mapping solutions. Open content may also offer solutions for people with special needs, such as people with disabilities. In Figure 3 we present a service map provided by the city of Helsinki. Among other things, it allows people to add content about the accessibility of public buildings in Helsinki. It can help, for instance, in the everyday life of visually impaired people, or wheelchair users.

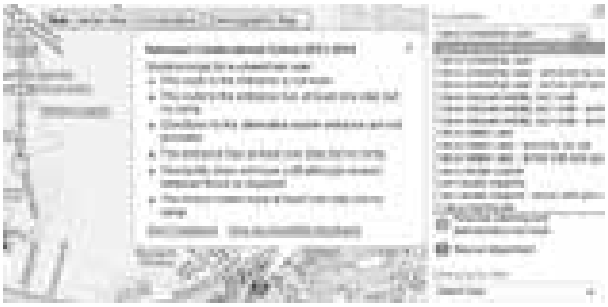

Figure 3: The service map of Helsinki (http://www.hel.fi/palvelukartta/)

Conclusions

There are different ways to categorize open knowledge and its properties. The content can be, for instance, automatically accumulating or be created by users. The intended impact can vary from promoting the common good of the society to personal learning and helping in everyday life. Despite the different properties content can have, it is important to understand how the requirements for using the content can be identified.

The collaborative creation process is not necessarily democratic in public services that are based on social computing. In many cases, control teams supervise the publication of uploaded content. (van den Broek et al 2010). Some may argue that technical skills related to the use of the API of the data source divides the people into active data miners and passive onlookers. Free access to open data is not the same thing as being user-friendly. Gurstein (2011) remarks, that the new outcomes for open data may be only available to those who are already technically well equipped. If the building of open data related applications is only possible for third party companies, the idea of E-Democracy and be diminished and the digital divide could be increased (Geiger & von Lucke 2011; Currie 2013). However, the increased administrative transparency driven by open knowledge solutions can be seen as positive factor for democracy.

It is easy to understand how people get benefit from an online public transportation monitoring system. When we are able to get real-time information about the traffic on the nearest tram line, it will be easier to plan our journey and we can avoid wasting time. These types of services are typically map-based and scaled down for mobile use.

Yet, this is not the case with most of the open data. Large organizations such as governments, produce large amounts of data that can be released for public use. However, the huge stacks of digits do not say anything relevant and we need suitable solutions for mining the data, in order to make it comprehensible to the users. Making data understandable doesn't automatically mean that the data is relevant in everyday life. We argue that the open data providers should take the users' interests into consideration.

There are various ways to utilize different data. Visualizations can help people to adopt information easier. Using infographics, or heat maps are common ways of simplifying huge amounts of data. Yet again, we run into the issue that there has to be an actor who processes the data into an understandable form for others to use. Open data is seen as the answer to various problems. However, we argue that specific needs have to be identified before the information can help in everyday life. User-friendly sites encourage e-participation, but massive amounts of open data might still be useless to most citizens, who do not have adequate computer programming skills.

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About the Authors

Mika Sihvonen

Mika Sihvonen works as a Senior Researcher in Information Studies and Interactive Media at the School of Information Sciences of Tampere University. Besides his teaching work he is a researcher in the project AKTIIVI Plus - Active Citizen in the Open Learning Environments

Miikka Sipilä

Miikka Sipilä works as a Research Assistant and is finishing his Master of Science degree at the School of Information Sciences of Tampere University. He speaks Finnish and English and has also studied Swedish and Polish.

Political Economy Frameworks for Assessing E-democracy and Digital Government

Satyan Ramlal

Independent scholar, The Hague, Holland, satyanramlal@gmail.com

Abstract: *This paper argues that political economy perspectives should be incorporated within research on e-democracy and digital government. Past and current incidents -both overt (e.g. legislative pushes for ACTA, SOPA, PIPA) and covert (revelations about secret NSA activities)- offer compelling evidence about the interplay of economic and political power on (inter)national levels. Relations between public and private organizations, and their respective interests, turn out to be more covert, dynamic and intertwined than previously thought. Such political economy perspectives are relevant to assess, because these offer fundamental dimensions to normative views on e-democracy and digital government. Questions can be raised about the justifications and rationale behind digitization, and about the nature of its effects on matters of the public interest. Implications range from new research / policy fields to focus on, to growing awareness about inherent dangers of current frameworks of digitization to the public interest and to the democratic process.*

Keywords: *Political economy, internet, public interest*

Political Economy and Digitization

What is political economy and what does it have to do with the fields of e-democracy and digital government ("digitization" for short in the scope of this paper)? This paper will define political economy as the way economic and political fields, issues and actors (including organizations) relate to each other (O'Brien, Williams, 2010). Political economy studies the way economics and politics depend on each other and influence each other. It provides overall frameworks, including critical frameworks, for understanding and explaining a wide range of economic, political and social phenomena. Its scope traverses the national and the global.

The opinions in this reflection are implicitly argued from a partly "critical" perspective. This means that the interplay of politics and economics (in matters of digitization) are assessed from its context of, and consequences on (admittedly) abstract and multi-interpretable notions of "oppression, exploitation and dominance" (Fuchs, 2011, p. 12).

These notions are followed by the second central theme of the reflection, that of the "public interest" in relation to digitization. The implicit argument in this reflection is that it is *vastly insufficient* to look at digitization and challenges in direct matters of, say, increased citizen participation and trust in governmental and democratic matters, and governmental effectiveness and efficiency. Instead, this reflection treats the "public interest" in broad ways to include

freedom, autonomy and independence (on personal and global levels), and the challenges that overall political economy frameworks of digitization pose to these notions.

At national levels, political economy illustrates the context of dependency and leverage between public and private organizations. Oostveen (2010) describes an incident in Holland, in which the Dutch government, over the course of 20 years, had "outsourced" the election process to private manufacterers of electronic voting machines. The outsourcing was comprehensive; not only did the manufacturers produce and maintain the electronic voting machines, one of them also organized the process of elections around voting booths and stations in municipalities. Upon finding out about security leaks in the electronic voting machines, the government decided to set up commissions to investigate them. One of the manufacturers (which also wrote and owned the software of the electronic voting machines) decided to threaten the government of completely sabotaging the upcoming election if the commission would continue the investigations, or if the government would not comply with financial compensatory demands made by the owner of the software. Fortunately the government was still in the position to prohibit the use of the electronic voting machines, and ended up organizing the upcoming election itself. Elections in Holland have since then been carried out by analog "pencil and paper".

National regulatory configurations towards internet access and the behavior of private actors pose direct challenges to issues of the public interest and democracy. Subjects in this regard are degrees of "net neutrality" and the behavior of private actors in the larger internet "eco system" of search applications, mobile operating systems and mobile applications (Krämer, Wiewiorra, Weinhardt, 2013). As yet, there seem to be inconclusive results about the impact of challenges to degrees of "net neutrality" on issues of the public interest. Nevertheless, such configurations offer additional possibilities for private actors to act as gatekeepers to public services and information. It is not only a matter of ensuring equitable and open access to private media and services. The leverage and dependencies that exist between private and public actors might also adversely affect *public* services and *public* information if relations between the actors, for whatever reason, turn sour. Imagine a provider using its leverage to impose crippling or restricted access to (non-)essential government services and information, demanding unfair compensation for its "carrying" services. In this example, the issues concerning access to technology do not directly concern personal skills or physical infrastructure. Rather, political economy assesses overall (economic) enabling frameworks, relations between public and private actors and positions of bargaining power and dependency between them.

The (adverse) relations of dependency and leverage between public and private organizations are real and not merely hypothetical. Serious questions can be raised about current dominant configurations of outsourcing technology, skills and data from public organizations to private organizations. Are any tentative and contingent benefits of e-democracy and digital government worth the real loss of control over core democratic and public tasks (such as organizing fair and open elections, and making sure elections can occur in the first place)? What *should* the ideal configurations between public and private organizations then be around digitization, given the risks that economic incentives of private actors pose to the public interest?

These questions become even more acute when outsourcing occurs on a global scale: what are the implications of digitization on the "sovereignty" of countries, when core technical infrastructure and data is hosted in or by other countries? Before describing actual current manifestations of these themes, the paper will provide other examples of political economy

perspectives to show that public and private organizations, more often than not, cooperate with each other to maintain existing dominant interests.

The cooperation between private and public organizations manifests itself prevalently on global levels. A direct example of the interplay between economics and politics, is the shaping of global (trade) treaties and regulations concerning intellectual property (copyrights, patents, etc.). Cooperation between public and private organizations in shaping laws that protect eachother, is visible in global trade forums (and in national legislative processes as well). Efforts to control the sharing of content and communications strike at the heart of economic actors in ensuring their economic profits, whether the consumption or use of content and communication is domestic or not. Public protection of private actors becomes visible when treaties and regulations are drafted (in, for example the World Trade Organization (WTO) or other multilateral fora and treaties, e.g. the Anti-Counterfeiting Trade Agreement (ACTA)) and in export restrictions of high-tech, sensitive technology and knowledge to other countries. The general pattern of such negotiations and concerns is that stricter rules and enforcements of intellectual property and the protection of domestic industries, infringe on matters of the public interest (both "domestic" and foreign), such as free speech, privacy, increased online surveillance and harsh penalties for consumers, service providers and (as suggested in the Trans-Pacific Partnership, TPP) even states. It has also been observed that global trade discussions become vehicles of leverage in themselves; failure to comply or ratify treaties, or failures to create favorable climates for foreign investment means the potential loss of deals in other bi- or multilateral talks or foreign policy agendas.

Political economy perspectives on issues close to digitization have also been prevalent in assessing the effects of privatization, market liberalization and commercialization of media and (tele)communications actors (media outlets, producers, providers). This has led to concerns about the degree to which media outlets operate from purely economic incentives (e.g. generating advertisement revenues or maintaining "monopolies") to the detriment of producing independent news that benefits the public interest (McChesney, 1998; Pickard, 2013).

A more direct example of political economy perspectives on digitization concerns debates around various issues of "internet governance". Main topics of contention surround global and shared participation into key regulatory and organizational fundamentals of the current internet architecture (McLaughlin, Pickard, 2005). A division of relations and interests is discernable between on the one hand, dominant public and private actors that favor the current status quo, and on the other hand, peripheral / marginalized public actors (governments from, for example, the Global South) and societal actors. The demands in these discussions range from achieving a more shared control over the internet, to, for example, mechanisms to ensure freedom of content on the internet from purely market-based and economic incentives. The main argument against global and public control of internet is that it allows authoritarian regimes to impose censorship and other restrictions on content. On the other hand, democratic and liberal regimes exhibit restrictive behavior as well (Bambauer, 2013), through national legislative pushes, e.g. Stop Online Piracy Act (SOPA) and Preventing Real Online Threats to Economic Creativity and Theft of Intellectual Property (PIPA), and multilateral agreements between countries. The case can be made that these favor a context that allows market-based "censorship", i.e. placing restrictions on the free flow of content because not all content is commercially interesting, and instead falls within the public's right to freedom of speech and expression and falls within content that purely benefits the public interest. Yet in more direct instances, private actors act as "intermediaries" for public actors (governments) in securing measures for censorship (Ibid.).

One of the most striking instances of contradictions between rhetoric and practice has been the case of Wikileaks. Whereas on the one hand countries like China and Iran have been accused of censorship, the case of Wikileaks shows that dominant powers exhibit behavior disfavoring the free flow of information as well. The systematic sabotage of Wikileaks through indirect means (threats of prosecution of Julian Assange) and through private and financial means (Amazon's compliance to discontinue hosting the Wikileaks website and the disallowance of financial contributions to Wikileaks through PayPal, MasterCard and Visa) showed the extent to which principles of free speech and free internet are contingent upon the extent to which content and technology fit within, or challenge, the overall dominant political (global) structures.

A less cogent example of contradictions in rhetoric and practice is the way in which dominant powers selectively criticize internet and media censorship in certain countries, and the practical support that opposition groups in those countries get to gain open access to internet (Cramer, 2013). Such public criticisms of censorship and support for open internet access occur for countries that oppose dominant powers (Iran, China) or are of immediate interest to dominant powers (for example, when ensuring that a friendly regime is installed after "color revolutions" in countries bordering Russia). However, regimes that straddle the lines of dominant powers and that also engage in censorship receive far less condemnation about it, and opposition groups within these countries might not expect the same amount of material support for open access to internet that opposition groups get in other countries.

The political economy perspectives on digitization described so far pose direct challenges to normative discussions about e-democracy and digital government. If overall normative views of e-democracy and digital government posit that digitization is expected to solve problems surrounding public, democratic and governmental issues, then it is insufficient to look only at issues that arise *after* the decision has been made to encourage digital solutions. Political economy perspectives on digitization posit that the very acts and projects of digitization might pose real threats to the very issues it is supposed to fix (i.e., supporting the public interest in general).

The paper is yet to touch on the most recent examples of political economy aspects to digitization, namely the revelations about secret activities of the US' National Security Agency (NSA), as leaked by Edward Snowden.

Digitization and the NSA: new meanings to "C2G" and "B2G"?

The terms "Citizen2Government" (C2G) and "Business2Government" (B2G) traditionally imply extremely neutral categories of digital services and phenomena, in the interactions between citizens and businesses on the one hand, and the government on the other hand. Digitization "innocently" ranges from the way citizens use technology to voice their opinions, interact among themselves, with policy makers and with politicians, to the way citizens apply for various public services. The interactions between businesses and the government are often described in even more narrow ways, only to include, for example, the way businesses apply for permits or transact with the government.

The NSA's vision of C2G, on the other hand, seems to be to secretly harvest as much information as possible from each and every citizen on the world (digitally connected, at least) and foreign corporations. Its vision of B2G is to implement as many backdoors to software and hardware as

possible, so that it can monitor every bit of data on the internet and invade / corrupt every digital machine.

The culpability of private actors in the NSA's visions –and implementation- of C2G and B2G is far-reaching. It was already suggested that many social media providers, or providers of "innovative services", use (personal) data for economic and marketing purposes. The traditional concerns being raised related to matters of privacy, for which publicly sanctioned safeguards seemed to be the solution (e.g. "the right to forget / delete" on the internet, as suggested by the European Union). It turns out however, that all along, public and private organizations have cooperated in forging a strong surveillance apparatus against which the current digital architecture seems to offer no real solution, or has been designed to support from the beginning (when even manufacturers of, e.g. harddisks, routers and encryption technologies cooperate with the NSA in installing backdoors).

As Morozov (2013) argues, issues of privacy are related to issues of democracy. The direct implication that Morozov offers is that digital algorithms –of overt digital systems- are incomprehensible and cast doubt about the outputs of computer aided decisions. The ramifications of the (as yet) revealed NSA activities cast into doubt the reliability of the output of current and future digitized aids to government services, e-democracy initiatives and other private services even remotely used in political and public issues. The need for surveillance fits patterns of the need to control, direct and shape technology for purposes of maintaining current global patterns of dominance and public/private interests (described in the beginning of this paper). What makes the NSA revelations even more worrisome, is the total nature of the scope of manipulation –both technological and personal- of key persons, regimes and technologies.

Implications

At the very least, political economy perspectives offer fundamental insights into e-democracy and digital government. There is an urgent need to pay attention to these overall issues surrounding the current frameworks of digitization. This paper is but a small overview of political economy issues of e-democracy and digital government. Even within this limited overview, there is compelling evidence that this framework is diametrically opposed to the very normative principle that digitization is supposed to support, i.e. the public interest in general. In terms of research, sustained and dedicated attention should be paid to these issues. In terms of policy, the conclusion might be reached that the real costs digitization, i.e. less sovereign control outweighs short-term benefits of efficiency and effectiveness that digitization might bring.

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About the Author

Satyan Ramlal

Satyan Ramlal works as an information analyst for the public sector in Holland (though employed by a private sector firm, CGI). He is also an independent scholar focussing on critical aspects of digitization within the public domain and in public issues. He graduated in 2007 with a Master's degree in Social Science Informatics, from the University of Amsterdam.

Managing Legal Resources in Open Governance and E-Democracy: Eunomos - An AI and Law Response[1]

Guido Boella*, Llio Humpreys**, Robert Muthuri***, Lendeert van de Torred****

*University of Turin, Italy. Email: guido@di.unito.it
**University of Turin, Italy and University of Luxembourg, Luxembourg. Email: humphreys@di.unito.it
***University of Turin, Italy and University of Bologna. Email: robertkevin.kiriiny2@unibo.it
****University of Luxembourg, Luxembourg. Email: leon.vandertorre@unipmn.lu

Abstract: *This paper presents a pioneering document management system viz. Eunomos, the software founded on advanced technologies in legal informatics. We examine the challenges from hyper-regulation that stakeholders in e-democracy face in legal research in increasingly complex, multi-level jurisdictions in a multi-lingual world and how Eunomos can sift through the information overload. Consequently, such information is presented in an organised, structured and updated form. We describe the main functionality of the system utilising Open Data and illustrate the relevant applications for Public Administration (PA) and citizens for Open Collaborative Governance towards an Internet of Social Things where the laws can have unique identities and enriched with interpretation hence more active 'participants' in e-democratic processes. This may accordingly inform research efforts in design and co-creation of e-democracy.*

Keywords: *Legal document management, legal ontologies, classification, open collaborative governance, design and co-creation of e-democracy.*

Introduction

It has been effectively argued that an appreciation of the law is significant for participation in democratic processes.[2] As democracies advance, we are legislating more laws that are complex, dynamic and specialised to govern previously unregulated areas of our lives now commonly christened hyper-regulation.[3] Open Data and Open Government efforts have propelled the law into online portals but this is just the beginning. Eunomos is a legal document and knowledge management system that improves on the state-of-the-art by rigorous coupling of legislative text with the legal sources through linking parts of regulation with the concepts defined in its ontology and structured using legislative XML. Not only does this avail interpretive power to the text, it also synchronises the evolutionary process of the law by accommodating various

[1] This work has been partially funded by project ITxLaw financed by Compagnia di San Paolo.
* Corresponding Author. Email: robertkevin.kiriiny2@unibo.it
[2] Tiscornia et al, 2012.
[3] Susskind, 2008.

modifications. In the next part of this section, we discuss the challenges of hyper-regulation and why legal informatics is necessary. The second and third sections illustrate the core system of Eunomos and its application to eDemocracy and Open Government. We conclude by summarising how Eunomos tackles hyper-regulation and by extension the challenges in Open Collaborative Governance, Open Innovation, eParticipation, and design and co-creation of eDemocracy.

Growth and Interpretation of the Law

Hyper-regulation is partly fuelled by specialisation that stems from the build-up of multi-level societies thereby necessitating domain-specific laws. This subjects citizens to multi-level jurisdictions, which do not classify the law appropriately, and we end up with laws that contain norms traversing different domains. Additionally, as public administration (PA) advances in its administrative and technological applications, there is a growing need to regulate previously unreached spheres of society.[4] What's more, the diverse formats, structure and language of publishing the law hinders the semantic web vision[5] making legal research very costly for PA and citizens alike. Even with meaningful access to the law, it may still be difficult to understand it owing to open-texture complications. This may include polysemy or intentional ambiguity by parliament to accommodate social or technological evolution. Interpretive sources are therefore necessary to appreciate the law. Interestingly, calls for tailored ICT solutions for PA continue to be made yet there is minimal application of decades of legal informatics research to the sector. We aim to contribute to the IT/law alignment with the following research question:

"How to create a document and knowledge management system based on technologies from legal informatics to help PA and citizens access and interpret the law?"

The Core System

The methodology we use is prompted by developments in neighbouring fields of legislative drafting for parliaments i.e. legislative XML and Legal Ontologies. We extrapolate these technologies in the context of applications for PA and citizens to provide cost-effective legal knowledge management.

Legislative XML and Legal Ontologies in Eunomos

XML avails a structured method for organising legislation to facilitate the management and retrieval of norms. It is utilises a lexicon, syntax and grammar to define tags and rules for a particular community depending on the issue at hand. For instance, the NormaInRete standard is well appreciated in Italy's regional governments for publishing legal documents online while Akoma Ntoso, developed for African parliaments is quickly gaining global notoriety.

[4] An illustation is the practice in italian banks where every employee ought to know about 6,000 pages of internal regulations.Source: http://www.ictparliament.org/es/node/687

[5] G. Sartor, 2011 at 7.

Correspondingly, legal ontologies facilitate the semantic analysis of the information structured by XML.6

The Eunomos system is based on the advanced Legal Taxonomy Syllabus, which emphasises the distinction between notions of legal terms and legal concepts so terms can call on concepts to articulate their meaning.7 This allows for association of different taxonomies for different languages thereby allowing different national systems to organise the concepts in different ways based on the same legislative XML standards. Currently, it integrates the taxonomies of the EU and its constituent countries. The core is made up of an online document and knowledge management system developed in the context of the ICT4LAW project that was created to help legal researchers and practitioners manage and monitor legislative information.8 The system is available in two modes. The first option is as in-house software that enables experts to use, search, classify, annotate, build legal knowledge and keep up to date with legislative changes. The second is as an online service, which allows for effective outsourcing of legal monitoring services. Indeed, the Eunomos system is the foundation of Menslegis, the commercial version for compliance distributed by Nomotika S.r.l. a University of Torino spinoff.9

The Workflow

The system is valuable to PA and citizens from a bottom-up approach i.e. surveying and scrutinising the law on a given topic to determine its interpretation. Conversely, a top-down approach starts from the ontology level where one can appreciate the foundational concepts as they navigate down to the legislative norms. In the bottom-up view, the law is classified in a number of domains hence the possibility to select a preferred domain and search norms even at article, item or paragraph level. A top-down approach grants an even richer view as each concept is associated with the terms giving it expression, the language of such terms, the relevant jurisdiction, definitions and explanations in natural language, and links to the articles or items and laws that contribute to the definition of the concept.10 The alternative is to search terms to visualise all concepts and legislation related to a particular term. Lastly, an alert messaging system feature keeps users up to date with the law.

Applications

Public sector organizations may need to obtain laws and regulations from official legislative portals in foreign jurisdictions. A case in point is the younger democracies trying to fight global corruption for instance, in checking custom fraud. Intermediaries frequently corrupt the current customs monitoring where tariff classification and value of shipments is communicated prior to their departure from the exporting country.11 An extension of Eunomos with an exporting country's legislation would allow the importing country's customs PA to deduce corresponding

6 Several anthropological and psycholinguistic studies support the intuitive development of ontologies as an excellent way for people to understand the relation between concepts.
7 Ajani et al, ACM, 2007; Ajani et al, 2010.
8 Ajani et al, ICAIL, 2007; Ajani et al, 2010.
9 See http://www.nomotika.it/
10 Ajani et al, ACL, 2007
11 Olken et al, 2011

tariff categories in subsidiary regulations through scrutinising concept relations with the national legislation. This facilitates PA detection of corruption while circumventing substantial legal costs.12

As they do not compete, PA institutions may also wish to collaborate or share data. Besides, it has been shown that bribery may be a function of the structure of bureaucracy in PA.13 A desirable open governance policy reform would then be to integrate related PA institutions thereby enhancing efficiency and reducing corruption concurrently.14 Eunomos presents a structural and sustainable ontological system of integrating the taxonomies of the different institutions with effective features to add to and modify norms based on the distinct experiences yet in a collaborative way. A Web 2.0 extension of Eunomos could further harness the system's enriched knowledge in a shared manner. This allows for an ordered design and co-creation of eDemocracy both from a policy and technical perspective. Moreover, the system's application of intuitive lightweight ontologies makes it user friendly for non-technical staff and this helps to promote the adoption of ontologies in practice. It also gives PA an opportunity to advance from their current use of thesauri and taxonomies.

Finally, Eunomos may be deployed to promote the themes of transparency and Open Innovation in PA. On transparency, PA institutions may utilise Eunomos to assess their impact from users' comments and thus change their procedures accordingly. For Open Innovation, a public institution may engage its clientele to raise questions and comments on new legislation and to diversify eParticipation. It may also be applied as a support tool in the design and co-creation of eDemocracy for instance by extending the system to the conduct eConsultations. Ultimately, it guarantees more incisive feedback for we have seen the granularity of the system that allows users to comment even at the paragraph and item level of a document.

The Citizenry

The next chapter of Eunomos will implement a version for citizens. Again, this will guarantee intelligible access of the law to ordinary people thereby facilitating a more meaningful participation in democratic processes. This could for instance mean that laymen, NGOs and SMEs are able to navigate and comply even with the implicit regulations governing them. With access to public funds, Eunomos could be developed to facilitate direct democracy initiatives and regulatory impact assessments of legislative bills and other consultations by governments.

The emphasis on a wholesome view of the law is made clear here by a current illustration from Kenya. On 28th November 2013, Kenya launched a 10 billion Euro flagship railway project to link Nairobi and Mombasa and eventually, the entire trading block.[15] Part of the controversy surrounding the project is the single sourcing of the Chinese contractor that allegedly contravenes the Kenyan Public Procurement and Disposal Act. A visualisation of the relevant section by Eunomos would have averted the crisis as it highlights the proviso exempting negotiated loans and grants. Moreover, a concept view of the norm would then help to explain the ratio behind the exemption. This emphasises the need for such tools between PA and citizens.

[12] Ibid
[13] Hulstijn et al, 2008 at 81
[14] Brun, 2008
[15] AFP, 2013

Towards an Internet of Social Things

The larger vision of this paper is to illustrate the advancement towards a novel view of the law owing to contemporary technological developments. Availing access and interpretation of law enhances Open Innovation to realise different products and services. This may also enhance the quality of data on the portal. It is on such data that Eunomos leverages.16 On the other hand, Web 2.0 technologies and Web 3.0 technologies i.e. the semantic web are slowing converging towards the Internet of Things (IoT). The latter is the evolution from a network of interconnected computers to a network of interconnected objects. Here, objects will have attributes and will be able to participate actively in social processes seamlessly.17 Such capacity presents endless possibilities to PA for improving citizens' life as they present norms with 'real life'.18 It necessitates the combination of Web 3.0 and IoT using machine-readable legislation and advanced applications such as Eunomos implementing linked data, multi-level ontologies and advanced search facilities. It is the foregoing that would realise the themes of connected smart cities and actually progress that to connected smart worlds to achieve co-production at some point in time.

Conclusion

This paper describes the Eunomos software; a legal document and knowledge management system containing state of the art legal informatics tools to help PA and citizens manage complex legal resources in an eDemocracy and Open Government setting. Eunomos addresses the complexities of the law with a tripartite database architecture that accesses and presents the law meaningfully. Semi-automatic classification of articles in domains tackles the problems of specialisation and fragmentation of the law. By facilitating the integration of institutions' taxonomies, Eunomos evolves into a tool for design and co-creation of eDemocracy. This helps PA and citizens edge towards IoT. Ultimately, the Eunomos software is based on clearly defined aims and objectives with direct relevance to public institutions and their citizenry clientele in Open Government and eDemocracy Initiatives. It achieves the practical gains in translating AI and Law research into realistic application with its current incorporation as a module in a wider suite distributed by Nomotika S.r.l. a spinoff of University of Turin.

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About the Authors

Guido Boella

Guido Boella graduated in Philosophy at the University of Torino in 1995 and has a PhD from the Dept. of Computer Science. He is currently an Associate Professor at the Department of Computer Science in the Universita' degli studi di Torino. He is the vice general coordinator and co-author of the Erasmus Mundus Joint Doctorate in Law, Science and Technology. His major interests are in multiagent systems.

Lendeert van de Torre

Prof. Dr. Lendeert van de Torre is a professor of computer science at the University of Luxembourg, affiliated with the Computer Science and Communication Lab. For his sabbatical, he was the invited professor/visiting scholar at the Center for the Study of Language and Information (CSLI) of Stanford University from January 2013 until July 2013.

Llio Humphreys

Llio Humphreys a co-tutele PhD student in Computer Science at the University of Luxembourg and University of Turin. Her research is in the field of legal informatics, specifically information extraction of legal text. This was inspired by her previous position as an ICT4LAW researcher at the University of Turin, working on legal knowledge management and legal ontologies.

Robert Muthuri

Robert Muthuri is an Erasmus Mundus candidate in the Joint International Doctoral (Ph.D.) Degree in Law, Science and Technology (LAST-JD) focusing on legal informatics. He is currently based at CIRFID research centre at Università di Bologna. After his Bachelors degree in Law, he attained an LL.M Innovation, Technology and the Law from Edinburgh University and worked as an Innovation and Technology Lawyer in Edinburgh, Scotland and Nairobi Kenya.

The Use of Information and Communication Technology for Developing Democracy (New Model of Public Decision-making by Using ICT)

Behnam Faghih

Sama technical and vocational training college, Islamic Azad University, Boushehr Branch, Boushehr, Iran, e-mail: Behnam.Faghih@Gmail.com

Abstract: *The 21st century is the century of Information and Communication Technology (ICT). ICT influences most issues around the world. On the other hand, the concept of democracy has changed in its history, and these changes have accorded to each period of time. So this paper after reviewing opinions of Plato, Marxist, and Rousseau about challenges of democracy, proposes a new model of democracy based on the present century and also knowledge and experience of voters. The model is looking to make the world more democratic.*

Keywords: *Democracy, Electronic Democracy, Electronic Voting, knowledge based decision*

Introduction

Information and Communication Technology (ICT) can play a key role in voting which is one of the most important pillars of democracy. Many political and social theorists believe that humans will not be able to implement democracy as the actual meaning of the word (Rousseau, 1950) or reject democracy (Plato, 2000). However, some theoreticians of political science have made small changes in the definition and concept of democracy, depending on their time period.

The present century is ICT century, and because of that, the borders between countries have been fading and soon there will be no real border between people to interact. In the present century, decisions being made by one country could affect other nations. Therefore, some countries try to bring the decisions of other countries to their own direction, regarding their own objectives, by using their power, such as military (war) or advertising power.

According to these changes, mechanisms of social and political science should be changed. So a new definition of concepts of social and political science must be presented.

A lot of research has been done around the purpose of this article. The related subjects are:

1. Decision Support System (DSS): in this case a lot of work was done (such as: Arnott & Pervan, 2008; Kock, 2003), most of them are about what DSS is and how it should be developed.

2. Group DSS (GDSS) and public decision making: Izadi and Ketabi (Izadi & Ketabi, 2013) developed a system based on fuzzy for virtual GDSS, this study presents an approach to find a good decision according to the group decision. Atkinson (Atkinson, 2006) discusses the integration of two systems that are based on a specific theory of argumentation: first, an existing web-based discussion forum; second, a method to enable autonomous software agents to perform practical reasoning based upon their subscription to social values. Danielson et al (Danielson, Ekenberg, Grönlund, & Larsson, 2005) explain how ICT can be used to let people use their ideas and decisions to enhance democracy. Ferreiro et al (Ferreiro, Gonçalves, & Costa, 2013) show effects of conflicting values on public decision. Kim (Kim, 2006) presents a model and a case of participatory public decision making, this model looks for feasibility of participation with an economic approach.
3. Democracy: the rule of the people, justification and models of democracy are other related subjects. A lot of studies have been done on justification and the concept of democracy (such as: (Rousseau, 1950; Benhabib, 1996; Barber, 2003; Held, 2006)). Serota (Serota & Leib, 2013) and Dyck (Dyck & Lascher Jr, 2009) is research on direct democracy, that my article is looking to find it too, but in a different way.
4. E-voting and e-democracy: this kind of research usually shows how ICT can help make the society more democratic (such as: (Insua & French, 2010; Vos, 2012)). Also many studies are about e-voting (like (Narendira Kumar & Srinivasan, 2013)).

To achieve the aim of this paper all of the subjects, must be combined together. This paper will present a new model of democracy based on the present century. The model is looking to make the best decision according to the concept of democracy and by using e-voting and GDSS.

Challenges of Democracy

The concept of democracy is derived from two Greek terms: dêmos (people) and krátos (rule), that means rule of the people. Democracy is a form of collective decision making that presupposes some form of equality among the participants. A democratic system, for example, is one in which there are procedures and institutions for capturing the views of citizens and translating them into binding decisions (Bevir, 2010).

Marxists believe that democracy means free participation of people to display democracy and giving opportunity to the minority who has the chance to become majority. According to Marxists, democratic freedoms are a part of superstructure of government, and as long as private ownership of properties exists, the owner class uses this freedom for their personal objectives. Therefore, as long as private ownership has not been eliminated, the majority will be prevented, and civic freedoms are just a semblance. Marx called the modern democracy: the dictatorship of bourgeois (Ashouri, 1994).

But Jean-Jacques Rousseau brings forward another definition: "The sovereign may commit the charge of the people, so that more citizens are magistrates than are mere private individuals" (Rousseau, 1950, p. 56). He follows:

> *"If we take the term in the strict sense, there never has been a real democracy, and there never will be. It is against the natural order for the many to govern and the few to be governed. It is unimaginable that the people should remain continually assembled to devote their time to public affairs,*

and it is clear that they cannot set up commissions for that purpose without the form of administration being changed. … Besides, how many conditions that are difficult to unite does such a government presuppose! First, a very small state, where the people can readily be got together and where each citizen can know all the rest with ease; secondly, great simplicity of manners, to prevent business from multiplying and raising thorny problems; next, a large measure of equality in rank and fortune, without which equality of rights and authority cannot long subsist; lastly, little or no luxury-for luxury either comes of riches or makes them necessary" (Rousseau, 1950, p. 58).

But Plato denies democracy completely and says:

"The health of the state is of no less importance than the health of the individuals within that state. Taking a vote on matters of state is just as mad as taking a vote on matters of health. Democracy, then, is utterly irrational" (Wolff, 2002, p. 29).

To illustrate Plato's view, imagine that you have a serious problem with one of your hands and you are not sure whether or not you should let the doctors cut it off. To find out your solution you can either, go to a neighbourhood grocery store and ask the people who are there, about your problem and after collecting all positive and negative viewpoints, act as what the majority believe, or you can go to see a medical specialist, and since you have consulted with the doctor, you will act more confidently. Plato prefers the second method and he believes that democracy is a mistake and we need a specialist for every job (Wolff, 2002).

The concept and meaning of democracy like every other concept has changed throughout different periods of human civilization, what the ancient Greeks called democracy is different from what Liberalism, Socialism, Marxist, etc. believe. These concepts are more complementary in history than being against each other (Tabari).

Considering the fact that the present century is an ICT period, and it has caused social, political, and cultural changes, the effects of ICT on democracy cannot be ignored. Decision-making by citizens about different political and social issues have been provided since ICT came into existence, especially portable communication devices such as smart phones. Therefore, there is no need that every few years, citizens choose a person or a limited group of people to decide the country's issues, instead all people would be able to participate in each important decision-making process. So no time would be wasted and huge costs of voting would be omitted, and people could vote easily, by using these communication devices. But in fact, to achieve this goal several essential changes need to be made in the structure of the country. Regarding the basic changes in life of the present human, it is vital to use ICT to expand and explain the definition and concepts of democracy.

Proposing a New Model for Voting to Make a Decision

This section will be present a new model for voting and decision-making based on the combination of Jean-Jacques Rousseau, Plato, and Marxist's theories by considering the features of the present century and it's information systems. In Plato's view point, it should be considered that although ordinary people would not be able to have a viewpoint as good as a specialist, they could have some experiences which cuold be considered as valuable knowledge. Referring back to the Plato's patient example, it is realized that if a sick person goes to see one hundred non-specialist people, who have no knowledge and experience on the topic, and the person gets M agreements

and N disagreements and then he/she goes to see 5 doctors and gets X agreements and Y disagreements and after that tries to compare M+X (the number of agreements) and N+Y (number of disagreements), he/she cannot reach a proper conclusion. So a doctor's opinion should be considered more valuable than ordinary people. Coming to a conclusion, for example, this formula can be used: (N×1) + (Y×15) and (M×1) +(X×15). In this formula, more value is given to doctor's opinion and we will achieve a better result than the time when we just used doctors' opinions or just the viewpoint of ordinary people. It is worth noting that the accuracy of the formula depends on the accurate selection of a coefficient of ordinary people and doctor's opinions.

Now the coefficients can become more accurate, for example, dividing five doctors into five categories: specialist=30, academic doctors=25, senior doctors=20, junior doctors=15, Medical students=10, and also ordinary people should be divided into different categories, for example, if they have experienced the same disease, or if they have experienced some similar diseases, or if they do not have any experience at all, then we give the particular coefficient. In this condition the result would be much closer to the best decision. The result will help to have a better choice if other parameters, such as the number of books and articles that the doctors have written and the number of similar patients and result of their treatments are mentioned.

This method could generalize to all political and social voting. As mentioned before, in democracy, people participate in different decisions about the issues of their country and as we know, knowledge and experience of people about a subject is not the same. People, who already have related jobs, education, specialty, interest, etc. in the subject, are in the higher level of knowledge than the others, so they would probably make better decision.

Therefore, three methods can be followed for voting: 1- voting by all people with the same coefficient, 2- voting only by specialists, 3- voting by all people with different coefficients.

According to the above explanation, the third way seems wiser. Because society is a system and consists of different parts as subsystems, and also changes in a subsystem effect on other subsystems and the sum of these changes influences the whole system, which is society. So, for each specific issue, all the people in society must participate in the decision-making process. But should the participation of people be in the same ratio? As mentioned, society is a system, in which every transaction in one part affects other related parts as well and gradually its effect reduces as it goes to the less related subsystems, also as the knowledge and information of people in different subjects is different, it is obvious that opinions and decisions of a person with a higher level of knowledge are closer to the best decision.

So votes of different people should be counted with different coefficients to achieve the best result. Before ICT developed, this kind of voting was impossible but nowadays it is possible. Perhaps that is why no theorists of democracy have presented this method yet.

It should be considered that importance of people in a society differs in different matters. For example when voting is related to agriculture, farmers' votes gain higher scores and they are more important than others. But in a vote that is related to publications (like book or magazine) the importance of farmers' vote reduces and instead the coefficients of publishers and authors' vote will increase. This is impossible without assistance of ICT.

This model can expand to the whole world. In the present world, the behaviours and activities of a country have a great effect on the other countries. That is, the decisions of one country, influences the lives of other nations. So they should be permitted to participate in decisions which will influence their lives. It is obvious that people's votes in that country should have higher

coefficients and the other countries have different coefficients by considering the features such as neighbourhood.

Features of the Model

- Realization of democracy in the truest sense of the word (rule of the people)
- Reduction of the gap between government and citizens
- power structure based on knowledge
- Integration of the world
- The candidates cannot use demagoguery method to get people's vote

Conclusion

The implementation of the presented model could cause more participation of people in different matters of the social and political decision-making process. So it is not constrained that one person or a limited group of people would make a decision for the whole community while people could make decisions for themselves. Also by using the model, undesirable results would reduce. This result would be closer to the best decision. People of different nations would be able to participate in other countries decisions, which would influence their future. In conclusion, implementation of this model is a big step to develop democracy.

Finally I present a new definition of democracy following the model: participation of people in different decisions (but not every simple decision) being made all over the world, that influences their lives (directly or indirectly), specifying the coefficients of voters by considering knowledge and the amount of impact of decision on them, and these coefficients can be positive, zero or even negative, and also coefficients of each voter can be difference in different decisions.

Future works

- Specifying the subjects that people should make decisions themselves instead of the deputations.
- Specifying the fields that make differentiation among people. In other words the options that show importance of each voter should be specified.
- Experimental implementation of the model in subsystems to evaluate and clarify related statistics.
- Diagnosing the importance of this method of voting in different nations and the amount of usability and uselessness.
- Investigating the interaction between countries and investigating the methods that other nations would be able to participate in important voting of other countries that influence their life.

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About the Author

Behnam Faghih

Behnam Faghih has a Masters in information technology (e-commerce) and a Bachelor in Science of computer software. He teaches computer science in colleges and universities in Bushehr, Iran. Now he is looking to find a university or an institute to support him in his study of the model that is presented in this article.

Some Reflections on Possible Uses of E-Participation for the Local Level

Carolin Schröder

Centre for Technology and Society, Technische Universität Berlin, Hardenbergstraße 16-18, 10623 Berlin/ Germany; c.schroeder@ztg.tu-berlin.de

Abstract: *This contribution reflects on assumptions that E-Participation is (1) Based on (political discussions), experiences and research results from face-to-face participation, is (2) Influenced by technical & design development (online & mobile) and is (3) Influenced by specific patterns of communication in social networks and draws conclusion regarding the uses of E-Parrticipation at the local level.*

Keywords: *urban development, local level, relating social, political and technical aspects.*

While offline participation has become something like a standard in Western/ Northern urban development, the number of implementation cases at the local level (from street level via neighborhoods to whole cities) is still much larger than those at regional, national or global level. For political and legal reasons, the introduction of new or innovative forms of participation is much easier at the local level. Often assumed is that members of civil society can relate easier to the smaller scales and thus come up with more adequate ideas and solutions.

The professional conception and understanding of E-Participation is, for one, closely related to those offline experiences, for another, it goes beyond that – even more so when it comes to technical and social aspects. In the following, I would like to reflect on assumptions that E-Participation is (1) Based on (political discussions), experiences and research results from face-to-face participation, is (2) Influenced by technical & design development (online & mobile) and is (3) Influenced by specific patterns of communication in social networks. This again, has consequences of possible uses of E-Participation at the local level.

Conceptions of E-Participation are Based on (Political) Discussions, Experiences with Methods and Processes as Well as on Research Results for Offline Participation

E-Participation or e-democracy is defined as "the use of ICT to support … democratic decision-making processes" (Macintosh 2004). Narrowing this definition further down, one could add that e-participation refers to the goal-oriented interaction of civil society & administrators/ politicians via Internet, mobile devices such as Smartphone, Tablet, via different software and app. With this, e-participation can be delineated from either "Online Participation", a term often used in educational contexts and referring to the use of internet only or can be distinguished from "E-

Government", a term that is often used in administrative contexts and refers to the improvement of municipal services and feedback.

First experiments with offline participation were made in the late 1960s resp. early 1970s in the Western world, e-participation was introduced in the mid- resp. late 1990s. And understandably, the number of cases and implementation for e-participation is still smaller. In consequence, criteria for describing or analyzing e-participation rely heavily on the practical experiences and theoretic reflections on offline participation. Below is a list of criteria for both offline and e-participation; while assessing the level of participation, the stage in decision-making proceses, to consider the context and high accessability is necessary for each offline or E-Participation process, topics such as skills and resources needed, usability, and transparency/ privacy/ control are for one to be dealt with considerably different in E-Participation processes, and for another they reflect back on discussions about offline participation and advance professional discourses on participation in general.

Table 1: Criteria for describing resp. analyzing offline participation and e-participation (Cp. Macintosh 2004: 6; http://eparticipation.eu/wp-content/uploads/2012/10/eCitizeni_manuaal_A4_ENGLISH-1.pdf, http://pb21.de/files/2012/01/bpb-Expertise_Partizipation_im_Social_Web_Kurzfassung.pdf, Schröder 2013).

Criteria	**Description**
Level of participation	What level of detail, which degree of participation and decision-making (how much influence for citizens)?
Stage in decision-making	When to engage (early enough, at the right time), for what period of time?
Context sensitivity	Political, legal, cultural, economic, technological factors at the respective level
Accessibility	Who should be engaged, and by whom, how many, from where?
Skills & Resources needed	Who needs which (media interaction) skills/ resources in order to participate? How may s/he get them? Which options are there?
Usability	Which Methods and Technologies are being used? How do they relate to the target groups? How and with what to engage citizens, with which objective(s)?
Transparency/ Privacy/ Control	Which information is given, what are limits and restrictions, what personal information will be needed/collected, will there be an evaluation, how to find out about outcomes/ results, costs?

Conceptions of E-Participation are Influenced by Technical Development

The range of possibilities for implementing E-Participation has been influenced heavily by technical developments as the devices being used range from PCs to Laptops, to Smartphones, and Tablets with different operating systems. In addition, markets for such devices are rapidly growing throughout all age and social groups, commercial and non-commercial tools resp. software or platforms for discussions, dialogues, petitions, citizen budgets and decision-making have been developed. In principle, this range of technologies allows for multiple forms and methods of E-Participation, for combinations of methods, for stand-alone solutions, for interactivity and playfulness, and for a greater diversification of services and tools.

Table 2: Basic quantitative indicators for E-Participation processes in Berlin (Sources: https://radsicherheit.berlin.de/, https://buergerhaushalt.wordpress.com/, http://www.buergerhaushalt-lichtenberg.de/).

	Residents	**Site Visits**	**Registrations**	**Ideas**	**Comments**	**Votes**
Berlin - Online Dialogue on Biking security	3,400,000	30,963	?	4,254	3,144	2,700
£eith Decides 2012/13, Edinburgh/ UK	480,000	?	724	43	?	?
Berlin - Marzahn Online Citizen Budget	201,000	?	1,964	213	326	4,075
Berlin - Lichtenberg Online Citizen Budget	34,960	?	3,194	667	4,100	?
Geraldton/ Australia, 2029 and Beyond	31.350	5,700	?	294	355	?

In consequence, it is often assumed that E-Participation allows for reaching larger numbers of people than many offline participation processes (cp. below). But it is just as time-consuming and delicate to deal with. Many E-Participation processes try to limit the personal information needed from the participants in order to protect their privacy (and not to do what is technically possible). Unfortunately, this also leaves facilitators or organizers without any knowledge about social characteristics of the participants. In addition, availability of and accessability to up-to-date devices may be distributed unevenly throughout cities, regions and population groups. Table 2 gives an overview on the differences of actual residents, site visits, registrations, and contributions to five different cases.[1] It can be seen that some figures are missing and that the ratio of e.g.

[1] Doing several unstructured web researches on evaluations of e-participation processes, it seems as if there are not many evaluations of e-participation to be found on the internet at all. Those above are those with most detailed information on the topic (e.g. Blakey 2009; case studies on http://www.participatorybudgeting.org.uk/;

number of residents and contributions may differ considerably from case to case. While this lack of data is probably the consequence of self-restriction of people in charge (respecting privacy), technical challenges to E-Participation lie foremost in the fact that, due to (limits of) technical development all E-Participation is informal as there haven't been invented any mechanisms to introduce formal voting that would make decisions by administrators or politicians redundant.

Conceptions of E-Participation are Influenced by Specific Patterns of Communication in Social Networks

Another significant influence on E-Participation are specific patterns of social (online and mobile) communication and interaction such as social networks, short texts, instant feedbacks, with pictures and videos, ratings to name just a few. But it seems that the variety of forms and methods for e-participation is much more limited than in "offline" participation or in "unpolitical" discussions: In contrast to offline participation, where objectives – and therefore methods and target groups - vary widely, many E-Participation approaches are a combination of posting ideas, discussions, and informal voting as e.g. in many online citizen budgets, and municipal online dialogues.

Assumptions that e-participation may allow for more and new participants (ref.), and more contributions are not easy to verify as participation again relies heavily on individual access to the information about such an E-Participation process. In addition, those figures would not give any hints on the quality of the contributions and the process. While communication and interaction in E-Participation processes definitely ask for specific technical and social skills, e-participation is being considered a bigger challenge for members of local governments than for members of civil society. But with a new generation of administrators (those who learned about participation in schools and universities and those who grew into using computers and mobile phones) feedback and interaction are somehow a normality.

Conclusions

While there are lots of common grounds between offline and E-Participation, one should also ask whether this close relation also creates some problems: One question to be answered is whether all participation is suitable for all levels as e.g. E-Participation processes are not as small-scale (yet) as many offline processes. Thinking further, one could ask what consequences this has for the use of ICT in local decision-making processes and what are the relationships between social and technical aspects of ICT and democracy. Being far from replacing offline participation with E-Participation, the exclusive relocation of public discourses that deal with real spaces and real people into the internet realm may not be too much a vision to long for. In practice today, we often find a complementary mix of offline, online, and mobile solutions, even more so the smaller the scale to deal with gets (e.g. streets, small parks of only local significance, neighbourhoods).

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About the Author

Carolin Schröder

Carolin Schröder works as Head of the Participation Research Unit at the Centre for Technology and Society, Technische Universität Berlin/Germany. Before and after her doctorate in urban planning/ architecture at RWTH Aachen/Germany, she worked as a freelance facilitator for participatory processes in urban and regional development, and teached at several universities. Her research focuses on both offline and online participation, on sustainable urban development, and on inter- and transdisciplinary research. One of her current projects is: FlashPoll – Developing a municipal decision-making App, www.Flashpoll.eu.

Digital Youth Participation in Germany – An Evaluation

Kerstin Franzl

nexus Institute for Cooperation Management and Interdisciplinary Research, Otto-Suhr-Allee 59, 10585 Berlin, Germany, franzl@nexusinstitut.de

Abstract: *An international project funded by the German Federal Ministry of Family Affairs, Senior Citizens, Women and Youth, "Youthpart", fosters digital youth participation. Within this framework the focus lies on evaluating German municipal pilot projects on the participation platform Ypart. The aim of the evaluation is to define factors of success for municipal digital youth participation and formulate recommendations for administrative anchoring. The methodology of the evaluation combines various quantitative and qualitative social science research instruments to analyze five categories which reflect crucial aspects of the local youth participation projects: embedding, topic, method, course and effectiveness. First results show that the preparation phase of digital youth participation projects is very challenging to municipal administrations. The young users turned out to be very positive and constructive, but an ambitious mobilization strategy is needed to make them take part actively.*

Keywords: *Participation, digital, online, youth*

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Introduction

Youth participation is no longer the arena of passionate pedagogues or sports clubs. Instead it has developed into an inherent part of policies all over Europe over the last twenty years. Driving factors for this development are currently becoming ever more apparent. One such factor is the demographic change which asks for an active youth that cares about the common good and is engaged in volunteering. Along with national guidelines of an integrative civil society, European countries, cities and municipalities counteract to these demands with the idea of an open and participative political society.

However, implementing these policies seems to be more complicated than expected, especially on the local level.[1] With the rising necessity to mutually integrate participative processes with the internet – the living environment of its target group – this task is becoming yet more challenging. Still today administration staff in Germany is not well-acquainted with digital media tools. The

[1] See for example the report of the Bertelsmannstiftung: Fatke, Reinhard; Schneider, Helmut. Kinder- und Jugendpartizipation in Deutschland. Daten, Fakten, Persepektiven. Gütersloh, 2005, S. 23-30.

realities of administration do not take part in the online world. Most of the city and district councils in Germany are seriously struggling with changing demographic structures: the average age of its members is often above 50.[2] To this demographic, the internet, Social Media and the like are not only strange, but also threatening matters.

The internet community is a special actor indeed. Much is heard about cyber mobbing and so called “shit storms”. The opportunity to openly express opinions can be misused or lead to displeasing results as it ostensibly happened in the "Zukunftsdialog" in Germany (Dialogue of Future) which was set up by Angela Merkel in 2012. Two of the main results were the demand for a legalization of cannabis and an open discourse on the Islam.[3] The youth, so a common fear among political decision makers, may have even more astonishing ideas and behaviour models. So in the case of digital youth participation the decision makers‘ usual uneasiness to share political power through a participative process is exceedingly high, due to factors such as a lack of experiences and technological competencies, fear of public abuse and uncontrollable discussions.

The evaluation of pilot projects of digital youth participation aims in this context at two objectives. On the one hand it is to understand the youth: Can a digital participation process trigger their interest? In which way do they behave on a participative platform? What makes them take part, being active and discussing in a constructive way? What kind of moderation is needed to facilitate the process? On the other hand the challenges that administrations have to face are crucial: How can a political back-up be gained? Which competencies were missing in previous projects and how can competencies and knowledge gaps be closed? Where should a youth participation online project be located in municipal and state administration?

These questions are addressed in the evaluation of pilot projects in the project “Youthpart”.

Embedding of the Evaluation – The Project “Youthpart”

From October 2012 to June 2014 the multilateral cooperation project „eParticipation: International and National exchange of experiences and model development to foster youth participation in a digital society“, shortly „Youthpart“ is sponsored by the German Federal Ministry of Family Affairs, Senior Citizens, Women and Youth and is executed by the Fachstelle für Internationale Jugendarbeit der Bundesrepublik Deutschland (IJAB).

The project addresses questions on how young people can help shape digital society online. To do so, activities in European countries are collected and compared. In a joint process, Youthpart and its national and international partners develop guidelines for successful e-participation of young people in political decision-making processes at local, regional, national and international level. The guidelines are to give support and provide suggestions for the design of internet-based youth participation. The aim is to implement these recommendations on European level in the framework of the EU Youth Strategy and on the European Youth Portal.

Additionally the project aims at enhancing the usage and the further development of digital participation tools. Therefore, in Germany 18 municipalities set up pilot projects on digital youth

[2] This is one result from the interviews with administrative staff conducted in the evaluation.
[3] See https://www.dialog-ueber-deutschland.de/DE/20-Vorschlaege/10-Wie-Leben/vorschlag_einstieg_node.html?cms_gts=476850_Dokumente%253Dvotes%2526500186_Dokumente%253Dvotes#Inhalt (6.12.2013)

participation. This is where the evaluation takes places: the municipalities' participation processes are reviewed and compared to derive key factors for a successful accomplishment and administrative establishment of digital youth participation.

The Municipal Pilot Projects

The municipalities applied for two different kinds of support: in the first program (called youthpart #lokal) the municipalities get a funding of 10.000€ for the shaping and financing of the participation projects. Moreover each of them receives consultancy from a professional participation facilitator who supports them individually during the whole processes. The municipal project teams also receive training on how to use the participation platform Ypart, which was developed especially to serve the needs of digital youth participation (for more see the section below). The municipal projects obtain an individually configured entity on the platform that is shaped according to the projects' aims.

The youthpart #lokal-projects are coordinated by the German Children and Youth Foundation (DKJS) and run from May 2013 to the end of October 2014. Seven municipalities successfully applied for taking part in the program.

Municipalities of the second program (youthpart #national) do also have close contact to the platform Ypart, get trainings and individual instances, but there is neither funding nor external facilitators to support the participation processes. The program is without deadlines.

11 municipal participation projects run within this program.

The Platform Ypart.eu

The participation platform Ypart (www.ypart.eu) offers municipalities, private agencies, associations and other youth related groups the possibility to professionally implement a digital youth participation project.

The platform is the core of the practical experiences that are gathered in Youthpart, but it is open to any other interest groups as well. Functional foundation of the platform is the participation software *Adhocracy*, which is developed as open source software by the non profit organisation Liquid Democracy e.V. The platform is jointed and supported with IJAB and has been continuously optimized and adapted during the course of the project Youthpart.

The aim of Adhocracy and the platforms which are using the software (www.adhocracy.de, www.ypart.eu, www.offene-kommune.de) is to enable a democratic, transparent, open and goal-oriented dialogue amongst the users. Group leaders can set up a project and open it to members who can after a registration use several tools for a democratic opinion-forming process. They can post, comment and vote on arguments which can be connected to maps or a calendar. There is also a system of delegated voting available, but as the projects in Youthpart mostly deal with city planning matters this feature is not activated in their instances.

Design of the Evaluation

The evaluation is twofold: In the "project survey" basic quantitative data on all #lokal- and #national-projects are collected and compiled. Focus is a more descriptive and comparative view

on the project with the aim to gain an overview and a reference scheme for the second evaluation frame, the "project evaluation". Within this, three focus projects are analyzed in detail, using qualitative methods of social research. Basis for both studies is a sample of indicators and questions which were in a participative process set together with IJAB and BMFSFJ.

The methodology of the evaluation combines various social science research instruments. In a text analysis, documents produced by the projects are examined (project plans, profiles, press releases). Liquid Democracy, partner in the evaluation, is programming a special tool to readout data on user behaviour from Adhocracy. The quantitative data is analyzed by using SPSS and helps to draw conclusions on when users took what action on the platform. The results will be combined with the next set of quantitative data, an online-survey among the users and the qualitative data derived from interviews with project leaders and political decision-makers.

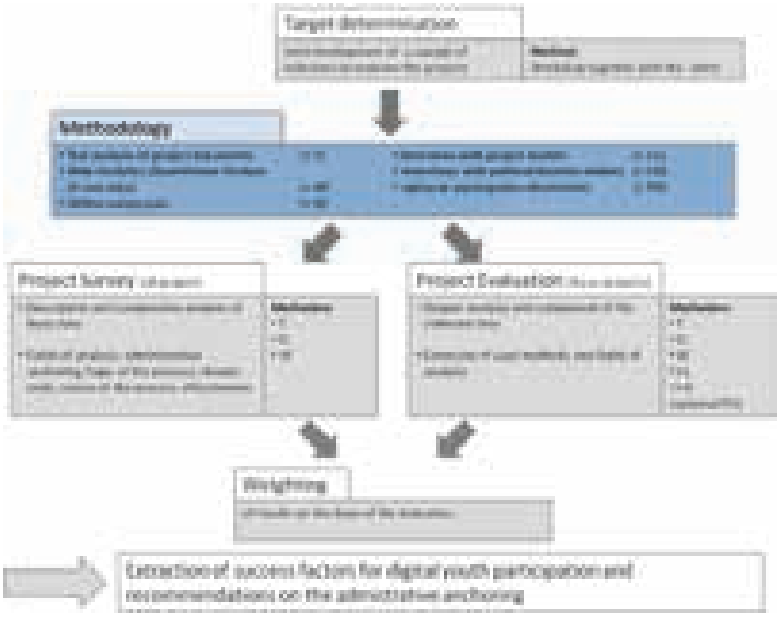

Figure 1: Design of the Evaluation

Fields of Analysis

The content of the evaluation can be divided in five categories which reflect crucial aspects of the local youth participation projects: embedding, topic, method, course, effectiveness.

- **Embedding**: On the one hand embedding means the administrative anchoring of the process, i.e. the administrative unit, available resources, set up of project management etc. On the other hand embedding addresses the project's embedment in an overall participative process. This can be a municipal participation concept or a running participation project in which the digital youth participation project is integrated.
- **Topic of the participation projects**: Participation gains strength when the discussed topics are of importance to the participants. In this field of analysis both is given: an overview on the chosen topics as well as the users' assessment of the topic's relevance.

- **Method**: In Youthpart the pilot projects all use the same participation software. Still they can chose among several features. Which ones are the most popular and most liked is one aspect of the analysis. Another is the question whether the tools fit the purpose of the participative process. This is crucial because in order to gain a valuable output tools and purpose have to match.
- **Course of the process**: The documentation of the users' actions on the server reveals not only attitudes towards the software, e.g. which tools are the most popular and at what time are the users active, but also which topics attract their interest, the influence of community management methods such like additional offline or online-events or moderation, type of users etc.
- **Effectiveness**: What happens with participation results is crucial to understand the value of a participative project. The expected, wished and realized impact of the projects has a high effect on the users' motivation to take part.

Results and Expected Results

As the evaluation is not finished until April 2014 (likely September) and pilot projects did not come to an end yet, the study is still running. Currently only four of the projects are online, the rest are still in the planning phase. So at the end of 2013 only a few results can be presented.

However, one of the main results has already been revealed. The pilot projects were expected to be online already, but as the planning or preparation phase turned out to be much more complicated than anticipated, most of them are in delay. The main reasons for this are:

- Insecure political backing: Even though the municipalities got the support of political agents when applying for the program, many of them faced obstacles when implementing the project. Councils and administrations delay conceptual decisions, withdraw resources etc.
- Underestimation of workload: The availability of software does not make a whole process. Especially during the preparation phase a considerably time slot is needed to get familiar with the software. The project concept must take into account what can be realized with the platform's features.
- Complex project setup: As the projects title says there are three aspects which are to be considered during the implementation and all of them need to be represented personally in the project group. Staff must have knowledge on new media, youth and participation processes. This often leads to a very complex and huge structure of the project team. All of them have to be coordinated.

In the course of the evaluation the most interesting expected results are:

- Young users' activities: Until now the users were without exception constructive and positive, not a single assault was done. They were most active shortly after offline events hold by the project staff. Activation via schools seems to be most effective.
- We will get more information on their behaviour and attitude, including data on what topics are interesting to the youth, how participation software and platforms should be shaped in their views, kinds of user-types (besides the usual types of readers, commentators and creatives) according to posted contents and online behaviour.

- From the differing administration and project structures we will derive ideals of anchoring and shaping of project management in municipal administrations.
- Strategies of closing knowledge gaps range from calling in external experts, connecting to related units, attending trainings to individual strategies. We will offer the most suitable pathways to build competences of technical knowledge, facilitation and cooperation management.
- Mobilisation and activation are crucial to a successful participation no matter if it is online or offline. However, digital youth participation needs some special arguments to deal with all interest groups that have to be included in the process. As a result of the evaluation target group-oriented communication patterns will be available.
- Even though the internet is the best way to address the youth, concomitant offline events have to be conducted. What style, how many and when, where and with whom will be known after the evaluation.

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About the Author

Kerstin Franzl

Kerstin Franzl (MA) has studied Social Anthropology, Philosophy and Computer Linguistics in Heidelberg, Berlin, Yangzhou and Wuhan. She has worked at the nexus Institute since 2010 on several projects on public participation, demographic change and services of general interest in Germany and Europe. She held lectures on participative methods in Germany and China and facilitated various participative processes by using methods like the planning cell (citizens juries), future workshop, focus group etc. She has evaluated an agency for labour recruitment in Thüringen. Currently she is evaluating the digital youth participation projects in “Youthpart”. Her methodological focus is qualitative analysis, evaluation and project management.

Surveys in the Field of E-Participation: Comparison of World Experience

Radomir Bolgov*, Andrei Chugunov**, Olga Filatova*

** St. Petersburg State University, Universitetskaya nab 7/9, St. Petersburg, Russia*
rbolgov@yandex.ru; filatovo@gmail.com
*** ITMO University, Kronverkskiy 49, St. Petersburg, Russia*
chugunov@egov-center.ru

Abstract: *The article compares five surveys of public opinion and experts in 2010-2013 covering Russia, U.S., EU, Switzerland and countries of Central and Eastern Europe. The authors have developed a list of criteria for comparing the attitude of citizens and experts to e-democracy. The comparison was performed on the most important sectors as well as issues, threats and challenges that respondents see in e-democracy and e-participation. The similarities and differences in attitude of citizens and experts from these countries to e-democracy and e-participation were highlighted.*

Keywords: *e-participation, e-democracy, comparative analysis, online engagement*

Introduction

In 2011 - 2013, a series of e-democracy projects were launched in different countries. In this context, research interest was on the analysis of the citizens' attitudes of various countries to the changes and the degree of satisfaction citizens have with government online services. This paper analyses five surveys on e-democracy and e-participation conducted between 2010-2013, covering Switzerland, United States, Central and Eastern Europe, the EU and Russia. These countries were chosen as a result of the first hypothesis of the authors, which is that there is a similarity in attitude to e-democracy among people in the U.S., the EU and Switzerland on the one hand, and Russia and the countries of Central and Eastern Europe on the other hand. The second hypothesis is that there is a difference between the opinion of citizens and the opinion of experts.

Literature and Research Projects Review

The development of information technology over the past 20 years and the emergence of new modes of communication has had significant influence on the interaction between society and the government, making the government it more open. Poster (1995) points out, the modern world is *"characterised by a decentralised network of communications [that] makes senders receivers, producers consumers, rulers ruled, upsetting the logic of understanding of the first media age" (p. 33).* This means that online communication can reverse the status positions of its subjects: citizens have the opportunity to appeal directly to the head of state, to get feedback, and to influence a particular

political decision. Hirst and Harrison (2007) noted that *"not since the time of ancient Greece, where the birth of democracy occurred, has political communication been so dramatically altered" (p. 356).*

The term "e-democracy" has a similar meaning to eParticipation but, it later became increasingly used to mean specifically eVoting. The concept of eParticipation has commonly been used to refer to the full spectrum of voter-representative communication means (Gronlund, 2003)

The term "e-participation" is defined as "*the use of information and communication technologies to broaden and deepen political participation by enabling citizens to connect with one another and with their elected representatives*" *(Macintosh, 2006).*

Issues related to the development of e-democracy, civic engagement, e-participation arefound in Bershadskaya, Chugunov, Trutnev (2012), Bunkov, Bolgov (2013), Kearns (2002), Hernon, Cullen & Relyea (2006); Macnamara (2010), Susha, Gronlund (2012), Medaglia (2012), Macintosh (2004, 2006, 2009), Gronlund (2003).

Assessment of the countries' level e-participation development is carried out within the Department of Economic and Social Development of the United Nations, which annually publishes reports in the E-Government Readiness Report.The eParticipation Index is part of E-Government Readiness Index. eParticipation Index evaluates how useful online services are and how often they are given to citizens . Its components are :

- eInformation for citizens from their government website on programs, budgets, laws and all that is of importance to society;
- eConsultation, where visitors of a government website have the oportunity to choose a theme or direction of public policy for an online discussion;
- eDecision Making with the participation of citizens. It is assumed that the government provides feedback on solutions to specific problems.

With regard to the EU, in the area of Citizen Engagement, there are several key research projects that explicitly deal with e-democracy and e-participation issues which have been funded within the EC-FP7. A detailed list of those projects, their objective and their impact could be found through the reports of the MOMENTUM project (http://www.ep-momentum.eu).

Currently there are no generally accepted concepts of electronic democracy and e-participation. Authors do empirically describe and solve problems involving citizens in public policy through ICT. This article deals with e-participation as a broader concept, and is focused on the analysis of citizens' opinions about e-participation projects.

Methodology and Research Material

The methodology of this study was determined by the principles of comparative analysis. Its task was to identify the role and to place the building blocks with the development of e-participation mechanisms in different countries.

This paper analyses five surveys on e-democracy and e-participation conducted between 2010-2013:

1. The Survey on Participation at Geneva's Constituent Assembly was conducted in Switzerland in 2010. Representatives of political parties and social movements, involved in institutional, mediated and informal communication in Geneva were polled (Glassey, 2010).

2. E-participation/E-democracy Survey 2011 was led by the company "ICMA". Questions were sent to the authorities of all the U.S. cities with a population of 2,500 or more people. Survey response was 28%. (*E-participation…*, 2011)
3. In 2011, the Institute for Electronic Participation (Slovenia) published the results of an expert survey of Central and Eastern Europe Citizens Network (CEE CN) "Do you e-participate?" The experts that were interviewed lived in Central and Eastern Europe (Delakorda, 2012).
4. In 2012, the Directorate-General of Communications Networks, Content & Technology of the European Commission prepared a final analysis report entitled "Public Services Online 'Digital by Default or by Detour?' - Assessing User Centric eGovernment performance in Europe - eGovernment Benchmark 2012". It analyzed the results of a public opinion survey of EU citizens on eGovernment and eDemocracy. The survey involved 28,000 respondents from 27 countries of the EU who are actively using the Internet (*Public Services Online…, 2012*).
5. A sociological survey of the All-Russian Public Opinion Research Center (VTsIOM) on e-Government and E-Democracy Development was conducted in February and March of 2013. It was commissioned by the Expert Centre for Electronic Government (Moscow). It polled 3,200 people from all over Russia. 78% of those polled were Internet users (*Public opinion about..., 2013*).

Key Findings

In order to compare the results of surveys on the subject of e-democracy and e-participation, the research team chose a set of parameters for comparison (see Table 1). The comparison of polling data in the United States, Switzerland, Central and Eastern Europe, the EU, and Russia made it possible to identify the similarities and differences in:

- What are the most important qualities of e-participation seen by the citizens and experts of these countries?
- Which sectors of e-participation are the most popular in these countries?
- Who should be in charge of projects in the field of e-democracy and e-participation?
- Which problems, threats and challenges of e-participation are seen to have the most significant?

Important qualities. As seen from comparison of the survey results in different countries, the question about the most important characteristics of e-participation is present only in the public opinion surveys and is absent in the expert surveys. In the VTsIOM survey (Russia) the most important characteristics of e-participation were the feedback from the authorities (22%), convenience (17%), and trendiness (15%). In the EU survey the citizens mentioned experience, expertise, convenience, privacy, possibility to save time and money, simplicity and openness.

Sectors of e-participation. It should be noted that the surveys in Russia and CEE e-collaboration is not mentioned as one of the most important sectors of e-participation. However, in all other surveys this component is present. All respondents identified an important sector as e-petitioning.

In the VTsIOM survey (Russia), citizens mentioned the possibility of the on-line evaluation of public servants (52% of respondents), the possibility to act free in the socio-political sphere (including e-petitioning - 33%), and e-discussions (18%) were the most important sectors.

Responsibility for e-participation projects. The question of who should initiate e-participation projects was presented in the survey in the U.S. and Russia. In the U.S survey the government as the initiator was preferred by 35% of the respondents, while a survey in Russia, the figure was **50%.**

Problems, threats and challenges. It is worth noting the differences in views on e-democracy between experts and citizens. Both CEE countries experts and Switzerland citizen agree in the understanding major e-participation challenges: outdated technology - 70%, lack of money - 84%, lack of staff - 67%, difficulty justifying the cost of e-participation applications - 54% (according to a survey in the Switzerland). However, this differs from the Russian citizens' idea of e-democracy problems. The survey includes strangeness, complexity - 19%, inaccessibility - 14% and the lack of interest of the citizens -19%. In the EU survey the questions about the problems of e-democracy were absent.

Table 1: Comparison of e-participation surveys

Comparison criteria	Switz, 2010	US, 2011	CEE, 2011	EU, 2012	Rus, 2013
1. Type of Study					
Expert survey	√	√	√		
Public opinion survey				√	√
2. Most important sectors					
e-Discussions		√		√	√
e-Petitioning	√	√	√	√	√
e-Collaborating	√	√		√	
e-Consulting	√	√		√	
e-Voting		√	√		
e-Campaigning			√		
e-Budgeting		√	√		
Open Data		√		√	
3. Problems, threats and challenges to e-participation					
e-Campaigning			√		
Outdated technology	√		√		√
Lack of money	√		√		
Privacy risks	√				√
Lack of staff	√				
Inaccessibility	√				√
Lack of interest from citizens	√				√

It is also possible to say that the hypothesis about similarity in attitude toward e-democracy for people in CEE and Russia was confirmed in that e-collaboration is not identified as one of the most important sectors of e-participation. The hypothesis regarding the differences between opinions of citizens and opinions of experts was confirmed.

Conclusions

After analysing the various studies on e-participation, we can draw a conclusion about the appearance of a clear trend in the institutionalization of "electronic democracy" and electronic interaction between the government and society in different countries.

It is worth noting an increase in citizen satisfaction with e-government services, although this level of satisfaction varies widely. More than half of the users of public services in Europe prefer the traditional channels. The proportion of potential users of online services is now increasing

However, Europe still has not fully implemented the transition to an e-government approach focused on the needs of users. Government agencies do not fully obtain expected results of e-government projects. It takes effort to inform those who do not know what public services are available online and to meet the needs of those citizens who do not want to use online services.

At this time, there is an obvious lack of studies of how public opinion and experts react to what is happening in e-participation. There are very few published studies on the level of citizens' trust in these instruments. Most of these studies are expert surveys, where experts express their sense of how the mechanisms of e-democracy are demanded by citizens. However, their expectations as experts do not always coincide with reality of citizens.

Public opinion surveys on e-participation have only recently come out in greater numbers. They allow the authorities to get feedback from the citizens, to assess the effectiveness of efforts in the area of e-participation, and to know people's expectations of e-democracy.

Such surveys have only covered Europe and North America. However, due to the active development of e-participation tools in Asia it is possible to expect similar surveys in this region in the near future. It will allow us to compare the results of public opinion polls and experts in Europe, US, Russia and Asian countries.

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About the Authors

Radomir Bolgov

Senior lecturer of the School of International Relations, St.-Petersburg State University. He achieved a PhD in political science in 2011. He lectures on the courses "Government information systems", "Information Security", "Information society and international relations". His current studies focus on the politics of cybersecurity, on Russian e-participation and open government projects.

Andrei V. Chugunov

Dr. Andrei Chugunov - the Head of Governmental Information System management Department, the director of e-Government Center, ITMO University (St. Petersburg, Russia). He achieved a PhD in political science in 2000. Having more than 20 years of experience in the field of education and training courses conduction he is the author of 6 courses in the sphere of eGovernment and Social Informatics and has published more than 150 papers dedicated to information society development, eGovernance, Open Government and educational services implementation. He is the organizer of annual scientific conference "Internet and modern society". He took part in a number of EU projects.

Olga Filatova

Olga Filatova works as the associate professor at the Department of Public Relations in Politics and Public Administration at the Saint-Petersburg State University. Olga Filatova holds Master's degree in Philosophy (1990) and PhD in Philosophy (1994) from St.Petersburg State University. Dr. Filatova has authored more than 130 scientific, educational and methodological published works. Main Fields of Research; Political Communications, Information and Communication Technologies and Politics, Internet Studies.

Online Consultations for Youth Participation in Rural Guiding Principles Development Procedures

Marie-Therese Sagl*, Hannes Leo**, Alfred Taudes**, Carl-Markus Piswanger***, Werner Rudolf***

**REO GmbH, Regions-Entwicklungs- und Management Oststeiermark GmbH (Regionalentwicklung Oststeiermark), sagl@oststeiermark.at*
***Community based Innovation Systems GmbH (cbased), leo@cbbased.com, taudes@cbased.com*
****Bundesrechenzentrum GmbH (BRZ), carl-markus.piswanger@brz.gv.at, werner.rudolf@brz.gv.at*

Abstract: *In 2014 the Regional Development Eastern Styria (REO) is preparing and operating a youth participation project within the Austrian Region East Styria (Oststeiermark) together with partners in the field of eParticipation. The expected outcome of the project is the preparation of guiding principles, which are the basis for the planning of means in youth politics. Tools for eParticipation (PC and mobile) are used to reach high acceptance and hence high participation turnout.*

Keywords: *eParticipation, Online Consultation, Youth Participation, Eastern Styria, Guiding Principles*

The Challenge

Youth participation is important for regional development. However, it is challenging to organise participatory processes in large regions with a large number of youths (about 30.000 in East Styria). Developing an online process to access this target group reduces transaction costs substantially and uses channels that are already widely accepted and used. Of course, access to the process must be possible with different devices (computer, tablet, mobile). In this reflection we present the approach taken by REO and her partners to involve young people from East Styria in the development of the regional vision.

The Project

In 2013, East Styria started a process to develop a regional vision and development strategy for the use of EU structural funds in the 2014 to 2020 period. This process has been organised and managed by the regional development agency. The process will be finalised by the end of 2014.

Young people from the region play a crucial role in this process and will be given vast opportunities to contribute their thoughts and ideas for their region. "Regional Youth Management", which is part of the Regional development, started a series of youth participation projects with the purpose of developing a mission statement and creating initiatives that are of

importance for young people. Parts of the project are funded by the federal province Styria (Departments "Youth" and "Country and community development"). Project partners are cbased for the development and management of the participation platform and BRZ (Federal Computing Centre) for secure hosting. The project consists of consecutive project phases.

Process Steps

The project will be conducted in 4 phases:

- **Phase 1**: The first step was a big "Open Space Youth Conference" in December 2013 for all young people in the region. 127 young girls and boys took part in this conference.
- **Phase** 2: The results of the youth conference were presented at the "Planning Conference" to important regional politicians and decision makers on January 18th, 2014.
- **Phase 3:** The online consultation will start in February 2014. All young Eastern Styrians will have the opportunity to vote and comment the results of the youth conference.
- **Phase 4:** All results will be integrated into the seven years' work plan for the region.

The Technical Solution

The outcome of the open space youth conference (Phase 2) will be uploaded to a dedicated participatory decision making platform designed by cbased. The process will be jointly managed by the Regional Youth Management and cbased.

The cbased-platform offers tools for idea generation, crowdsourcing documents and online surveys. Mobile apps for Android and iPhone will be used in this process as well. In this participatory process the document crowdsourcing platform will be used to organise this participatory decision making process.

The technical platform enables the broad discussion of documents (e.g. strategies, reports, recommendations, conclusions) by transforming them into discussion forums at paragraph level. This helps validating arguments contained in paragraphs and identifying controversial issues in the document. Non-controversial paragraphs are obviously accepted by the community. Hence, the discussion focuses on controversial arguments thereby reducing significantly the complexity of the discussion. While this seems obvious, it is hard to predict which arguments are controversial in a document before the crowdsourcing process actually takes place.

In the second phase of the document crowdsourcing process consensual solutions are developed for the controversial issues identified. This can be done either by a survey – a traditional and robust approach – or by the patented cbased consensus algorithm. This algorithm considers the votings on all paragraphs to indicate whether a paragraph should be changed or not.

BRZ provides the technical infrastructure for the procedure and will be involved in a wide range of security measures, from the operation of the internet-application, incl. procedural security during software handling processes, to technical and organisational data security measures. Since 2005 the BRZ developed and operated several eParticipation projects within the program "Participatory eGovernment".

Managing the Process

An important success criterion for crowdsourcing projects is the ability to mobilise participants. This has to be done through all channels at hand by the contracting agency, the contractors and stakeholders, i.e. informing formal and informal networks, social media sites and triggering media coverage. Each process step will be actively managed by first inviting people that have shown interest in participating or have taken part in the youth conference. Additionally flyers, videos, web pages and local media will be used to spread information on the discussion.

Rules for participating in the process and information about the process will be published on the platform. All information produced in the process will be available to all participants. Participants will have to register to vote and comment by choosing a username and a working email address. The discussion itself will be actively managed and moderated with the intent of keeping participants informed about on-going discussions through mails and the build in notification system.

Irrespective of the process design chosen, it is very important to give feedback to participants and to explain why decisions were taken. Adequate feedback carries the momentum over to the implementation phase and keeps the community motivated to contribute to future participative decision making processes.

About the Authors

Marie-Therese Sagl

Marie-Therese Sagl studied Social Work and has been regional manager for youth affairs in the region "Eastern Styria" since 2012.

Hannes Leo

Hannes Leo is co-founder and CEO of cbased.

Alfred Taudes

Alfred Taudes is co-founder of cbased and professor at the Vienna University of Economics and Business.

Carl-Markus Piswanger

Carl-Markus Piswanger has worked as an e-Government and e-Democracy architect at BRZ since 2004.

Werner Rudolf

Werner Rudolf has worked as an IT architect at the BRZ since 2013.

Young People and Politicians Online: Key Findings from the OurSpace Project

Michael Sachs*, Judith Schossböck**

Danube University Krems, Dr.-Karl-Dorrek-Straße 30, 3500 Krems, michael.sachs@donau-uni.ac.at
Danube University Krems, Dr.-Karl-Dorrek-Straße 30, 3500 Krems, judith.schossboeck@donau-uni.ac.at

Abstract: *Utilising the internet for political participation, decision makers and institutions seek to offer citizens the opportunity to express their political views and to engage with politicians in a more direct way via online media. In particular the younger generation is said to prefer online forms of political engagement, and e-participation is seen as an opportunity to help young people to better understand political issues. This article is presenting the case of OurSpace as a large scale e-participation project for youth on a European level. After an introduction into features and functionality of the platform, the authors summarise engagement strategies and the lessons learned on the national and cross-national level.*

Keywords: *E-participation, youth, online deliberation, Europe*

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Introduction

E-participation solutions and elements of direct democracy are discussed in the European Union and its member states as a means to engage citizens in politics. „OurSpace – The Virtual Youth Space“ is a CIP project funded by the European Commission, aiming at providing young people a space for political discussion and bridging the gap between decision makers and citizens. The project started in July 2010 and ended in December 2013, consequently its final evaluation and assessment is ongoing when writing this paper for CEDEM.

User Engagement

The consortium consists of nine partners coming from seven member states of the European Union. Technical partners are the Athens Technology Centre, the National Technical University of Athens and Google. Media and dissemination partners are Foundation Euractiv Politech and Café Babel. Danube University Krems was responsible for the evaluation of the project, the coordination among the partners that operated a pilot and the coordination of a pilot in Austria. Pilots were established in Austria, the Czech Republic, Greece and the United Kingdom.

All pilot operators followed different engagement strategies in their countries related to the different socio-cultural and institutional preconditions. While DUHA in Czech Republic and BYC in the United Kingdom used their strong networks as political youth organisations to engage interested young people in online discussions, Café Babel in Greece relied on a mass media strategy and direct engagement tactics at events, universities and schools. The Austrian pilot focused on engagement through workshops in schools in order to reach out to young citizens that were not initially politically interested. Additionally Austria ran an intense media campaign using mass media and a Mini iPad raffle in the last phase of the project. All nationally based pilots contributed to the discussions on the European level of the platform that was managed by 21c Consultancy that mostly relied on digital campaigns to engage users. In addition to those European topics, national topics were promoted as well. All pilots constantly assessed the impact of their actions. The data sets of the platform and Google Analytics show that using only online campaigns had limited impact on the platform. Targeted offline activities for the promotion of the platform lead to high activity on the platform in terms of posts and votes. Mass media campaigns and digital media campaigns were useful to direct people to the platform but must not necessarily lead to platform activity. Different user behaviour could be observed in the pilot countries, for instance with the Czech users that were rather active and used more thumbing (likes and votes summarised) compared to other countries.

The OurSpace Platform: Features and Functionality

The following figure shows the structure of the OurSpace deliberation model:

Figure 1: OurSpace platform, deliberation model

The core feature of the platform is the moderated deliberation process designed in four stages. Moderation only happens on request, which means that the forums are post-moderated to increase transparency and user satisfaction. In the first stage, users can suggest a topic for further debate. The topic can be promoted by users and the moderator decides to transfer the topic to stage two which is the main discussion phase. In stage two users can write comments or concrete proposals of solutions to the problem. The comments and proposals can be liked or disliked to show their relevance. In stage three of the process, the top proposals are displayed for the final voting stage. Once the voting phase is over, a summary of the discussion and the outcomes are shown in stage four. During this stage the moderator contacts relevant decision makers and representatives of the civil society to comment on the results.

More than 4.100 users wrote about 4.800 posts that were liked or voted more than 6.000 times (thumbing). About 12 % of unique visitors to the platform registered with OurSpace. The average user stayed on the platform for more than 6 minutes and watched more than 6 pages. 45 debates on OurSpace went through all 4 stages of the deliberation process (topic creation – discussion – voting – results as described below).

More than 20 politicians from all pilot countries were engaged in OurSpace, meaning they were present with an account and posting on the platform. On the example of Austria, where decision makers responded well to the offer to create topics on the platform: One third of the Austrian Members of the European Parliament opened a discussion on OurSpace, most of them commented on the results of their discussions and some interacted directly with users or commented on other threads. Also national politicians and civil society organisations contributed to the discussions in the final phase of the deliberation process. In other countries, e.g. Greece, decision makers were more reluctant to post on the platform.

The involvement of decision makers was a crucial aspect for most pilots to attract users as decision makers' presence increased interest and legitimacy. Greece is an exception for this: Despite being the most successful pilot concerning user numbers and platform activity no decision makers visible engaged on the platform. Feedback from decision makers or civil servants was that the project was interesting and they would be generally open to connect with young people on the platform, but they lacked time and would be interested to join the debate at a later time. This might, however, also be related to the readiness of decision makers to foster a participatory culture in the country. In the UK it was also very difficult to get decision makers' responses and feedback due to time restraints, and they didn't participate in the qualitative feedback in form of interviews at the end of the project. However, 4 MEPs started their own debates and each topic was promoted.

The platform was designed as a multi-channel communication tool: A Facebook application and a mobile application for Android allowed easy mobile access to the content and main functionalities. The integration of Google Translate in the platform supported multi-lingual discussion in some debates and included those citizens that were not multilingual and cross-border discussions. However, the quality of translations is different according to language; errors in spelling and casual language cannot be correctly translated by a machine yet. While national debates were held in their respective language, EU-debates where usually conducted in English or the language used when initiating the debate, so language can still be seen as a major obstacle in fostering a cross-national debate. However, occasionally OurSpace displayed multi-lingual

debates, and moderators tried to encourage cross-national discussions by summarising certain contributions in English or promote European topics in all pilot countries.

Registration at the platform was possible with standard submission of personal information such as e-mail, name and nickname. Additionally, users could join via Facebook connect which reduces the registration process to one click only. The demand for registration clearly was a hurdle in the engagement of new users and it is questionable whether it is necessary to register for all actions that a user can perform on the platform. However, in order to keep the registration process low and still be able to count user numbers, the submitted data of users was not explicitly verified, so users could be anonymous.

In general, young citizens are very positive about e-participation and the vast majority sees platforms like OurSpace as a good means to get involved or more interested in politics (75 % on the basis of 420 responses to the user questionnaire). The users found the topics on the platform appropriate and credited the project a lot of potential. However, moving on from liking the idea to engaging in a discussion is another big step, and most users were indifferent about the actual impact of the platform and deliberation results as was stated in the interviews conducted with young users at the end of the project.

Qualitative participation in deliberation processes takes long time which contrasts the speed of the internet and social networks. The project showed that online campaigns do not necessarily lead to engagement per se, but need accompanying measures, for instance with a dedicated workshop that offers time and guidance offline. Other options to produce young peoples' interest may be via dedicated topic campaigns or to provide further guidance on otherwise complicated topics like European legislation.

OurSpace tried to support users in formulating arguments or encourage them to do more research on a topic by using controversial topics that were promoted on specific online banners that were promoted in social media channels and other networks.

Figure 2: Dedicated topic campaign, online banner

OurSpace integrated blogs and Twitter at a later stage but these features never became a relevant aspect of the platform. The platform itself has always been at the centre of promotion and consequently got by far the most traffic. Future e-participation projects might want to put more emphasis in promoting multi-channel communication tools or mobile applications, as these are becoming more widely adopted recently. OurSpace was designed just at the beginning of the

Facebook boom, but the user requirements have changed severely since social networks and social media became main stream. Users consequently requested dedicated networking features, a better implementation of digital media and better navigation throughout the project period and in the final evaluation. However, improvements and updates of the technical solution were made continuously, for instance regarding the request for an easier communication of the functionality which was responded to with an integrated explanatory tool on the platform.

Results and Lessons Learned

For the evaluation of the platform, a four stages evaluation model comprising a political level (relevance of topics and degree of influence), technical level (platform functionality and suitability), social level (connections between users on the platform) and methodological level (effectiveness of user engagement and dissemination activities) was designed. Summarising the preliminary results, users wanted more participation of decision makers and were indifferent about the actual impact of the platform, even though they were very positive about e-participation and the purpose of the platform in general. Future e-participation projects are advised to build on social features that users already know from social networking sites and other online media. Discussions on the OurSpace platform followed a friendly tone and displayed some cross-country debates. However, language can still be seen as major obstacle in this process, and international debates were, despite the integration of a Google Translate tool, still held in English.

Another learning factor was that while moderation of content was kept low, moderation regarding the process and sometimes translation of moderators was necessary to get the topics through all 4 stages of the deliberation model. While users gave positive feedback about the design and functionality of the 4 stages deliberation process, the ratio of proposals to posts was not satisfying, as users did not come up with their own proposals as often as expected. This might be due to two reasons: The participation threshold for formulating your own solution to a political problem is too high for the average user, or not all users understood the proposal-functionality of the platform. It is thus crucial to promote all stages of the deliberation process and to offer participation opportunities with a lower participation level or threshold, such as liking or thumbing, where users can express their opinion by just promoting comments or proposals with a single click. The same applies to the participation threshold at the registration process: Retrospectively, e-participation, especially in a political context, should not require registration at all levels of participation.

Engaging decision makers on the platform was one of the major success factors and users expressed their wish to see more politicians on the platform. Topic creation by those decision makers who participated was well received by young users and motivated them to participate. Getting a commitment from official institutions or decision makers should thus be priority and decision makers should be engaged from an as early stage as possible in designing e-participation projects. The OurSpace project indicated that politicians and civil society organisations seem to be increasingly interested to participate in online discussion processes.

Regarding engagement tactics and targeting user group, the most important lesson learned was that offline events and direct campaigns as well as dedicated topic campaigns were most successful, whereas regular and more traditional means of marketing (like advertisements in magazines or distribution of leaflets) had little or very poor outcome. The transition from offline

media to online participation is extremely difficult. It is thus not possible to promote an e-participation project via online engagement tactics only and to expect those online measures to "go viral". Engaging users in all stages of the deliberation process that lasts several weeks required very active communication strategies from the pilot operators.

The OurSpace consortium made good progress in establishing an e-participation environment with a modular design and an interested, young and politically diverse community. Interest from mainly pan-European organisations in further uptake of the platform has already been announced.

About the Authors

Judith Schoßböck

is a research fellow at the Centre for E-Governance at Danube University Krems, Austria. She is managing editor of the open access e-journal JeDEM (jedem.org) and member of the interdisciplinary internet research group of the University Vienna. Her research interests are eDemocracy, eParticipation, Open Government and digital activism.

Michael Sachs

is a research fellow at the Centre for E-Governance, Danube University Krems. He studied at the University of Vienna and the University of Nottingham and received a master degree (magister philosophiae) in English and American Studies as well as in History and Political Education including secondary modern school accreditation in 2008. In 2009 he joined Danube University Krems where he works as project manager, researcher and tutor.

Citizen Engagement and Participation in Indian E-Governance with an Architectural Perspective: Case of Sahaj e-Village

Harekrishna Misra*, Sanjay Kumar Panigrahi**

*Professor, IT & Systems Group, Institute of Rural Management Anand, hkmishra@irma.ac.in
**Chief Executive Officer, Sahaj e-Village Limited, Kolkata, India, panigrahi@sahaj.co.in

Abstract: *Globally various nations are embedding e-governance services with web 2.0 and service oriented architecture (SoA) features to enhance e-participation to establish engagement among all stakeholders including citizen, government, business and civil society etc. Contemporary e-governance with a focus on e-participation, e-collaboration and e-citizens deals with citizen centric services and providing the backbone for demand driven citizen engagement with web 2.0 and SoA enabled technologies, tools and services. However, such transitions and policies do have challenges especially in the developing countries grappling with digital divides. In the Indian context, the situation is quite complex because of overarching effects of the digital divide. It is argued that e-learning interventions will provide desired effects on augmenting e-governance services through increased e-participation and e-collaboration. In this article, while discussing architectural perspectives for better citizen engagement, one case is discussed to present effects of e-learning in e-collaboration and e-participation leading to better e-governance.*

Keywords: *E-Governance, Web 2.0, Service oriented Architecture, E-Participation, Citizen Engagement, E-Learning*

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Introduction

Globally e-governance efforts are concentrated on citizen centered services. The advent of web 2.0 technologies have paved the way for enhancing citizen engagement and fostering innovations in information and communication technology (ICT) enabled services with convergence between entities including business, civil society, government and citizens. Evidently, contributions of web 2.0 oriented architectures have shown effective methods to bind people, process and technology for better participation, interaction and user orientation. with its main focus on citizen centric services and providing backbones for demand driven citizen engagement with the government, E-governance has the potential to embrace web 2.0 enabled technologies, tools and services. Millennium Development Goals (MDGs) argue that E-Governance through its

efforts to foster E-Collaboration and E-Participation has the potential to engage citizens in managing their own development and the society at large (Misra, 2103). In Indian context, this approach is essential through the situation is quite complex because of overarching effects of digital divide. Despite continued efforts of the national and state governments under National e-Governance Plan (NeGP) and citizen centric information technology policies (NTP), there are various challenges in implementing them (DIT,2011). Effort of Sahaj e-Village Limited (SeVL), one of the state level agencies under NeGP is noteworthy. SeVL has promoted e-learning as a tool that engages citizens in acquiring e-skills, orchestrates E-Government services and meets the demand of citizens.

Organization of this article is as follows. In the following section an overview of architectural study on e-governance, web 2.0, service oriented architecture (SoA), e-governance and e-learning is presented. SoA and its usefulness in garnering synergy between e-governance, e-learning and web 2.0 are discussed in this section through a framework. Discussions on NeGP and its deliveries are included in subsequent section to appreciate role of web 2.0, SoA, through a proposed framework. In the next section case of e-learning service presenting the process of e-participation and citizen engagement is discussed. This case refers to NeGP mandates and is being implemented through SeVL. This case based discussion aims to assess the way NeGP services are oriented and the scope for their support to promote web 2.0 and SoA based services. This discussion is expected to explain the citizen orientation and their engagement with NeGP through web 2.0 and SoA services. Following section includes analyses of the case and validates the proposed architectural principles through this case.

Architectural Study - Web 2.0, SoA, E-Governance, and E-Learning

Global efforts in e-governance have delivered mixed results. Some countries (depending on size, socio-political complexity, and government) have been able to derive appreciable results out of this exercise. United Nations (UN), European Union (EU), and other global entities have embraced e-governance practices and have given importance to citizen-centered services (EU, 2007; UN, 2010; UN,2011). It has been recognized that e-governance efforts need to bridge the digital divide, create digital inclusion opportunities and should be devoid of technology focus. Architectural perspectives, especially in systems, provide insights to building strategic roadmaps (Garlan and Shaw, 1994). E-governance being strategic in nature involving complex relationships among stakeholders needs architectural treatment. Close look at e-governance architecture suggests that SoA, web 2.0 and e-governance have similarity related to user service orientations. E-Governance is understood to be effective through e-participation and e-collaborations and these attributes are part of the web 2.0 architecture (West, 2008; OECD, 2003).

Socializing and enabling users to interact on demand led to evolution of web 2.0. User centred designs (UCD) in software engineering advocates in this direction for better and effective use of software. In the context of SoA, participation and collaboration among stakeholders (i.e. service user, service broker and service provider) are essential (Governor et al, 2009; Chang and Kannan, 2008, West2008). SoA is expected to provide 'universal service identifier' in the system so that desired service can be identified 'on demand' raised by service user with least transaction cost and time, and independent of spatial constraints. Service provider needs to design services and coordinate with service broker with service descriptions so that desired service is mined from the warehouse (Heeks and Molla, 2009; Mehdi, 2005) and served to the user. Due to the benefits of

SoA and web 2.0 architectures, there is scope to combine their strengths in taking e-governance architecture forward at the enterprise level as presented in Figure 1 with the help of e-learning.

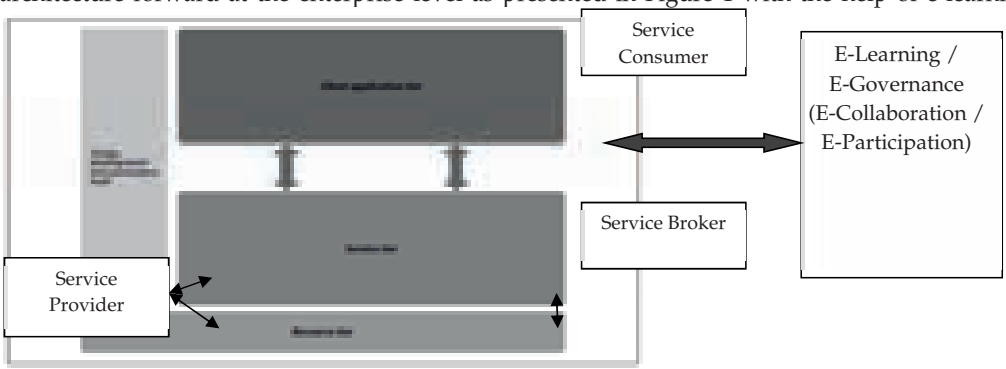

Figure 1: Architectural Description of Web 2.0, SoA, E-Governance and E-Learning (Adopted from Governor et al., 2009)

Millennium Development Goals (MDGs) recognize uses of information technology enabled services (ITeS) including e-participation, e-collaboration which are major attributes of e-governance (UN,2011, EU, 2007; SESRIC, 2010). Linking e-learning to e-governance through an architectural perspective provides scope to examine whether a) e-learning will enhance e-participation and b) e-learning will enhance e-collaboration. It is further argued that while examining this cause and effect relationships between e-learning and e-governance it will be useful to assess whether e-governance case studies reveal such policy driven interventions leading to better citizen engagement. In Table 1, SoA and Web 2.0 attributes are presented along with their relevance to e-collaboration and e-participation. In e-governance paradigm orchestration is absolutely essential. Orchestration needs to happen through the service broker as presented in Figure 1. In this framework e-learning is seen as an intervening process that aims at enabling citizens to not only equips them in augmenting livelihood opportunities, but to enhance their capabilities to effectively collaborate and participate. This environment is expected to improve upon the e-readiness leading to better e-engagement of citizens. The framework suggests that parameters like e-readiness, availability of content, connectivity and capital would critically influence the uptakes and impact of e-governance services. However, the framework also considers the citizens' demand to be local and household specific.

Table 1: Proposed Pathway for Indian e-Governance Architecture

SOA Attributes	**Web 2.0 Attributes**	**Possible Effects through e-Learning**	**e-Governance**	
			e-Collaboration	**e-Participation**
Service Demand	Participation-Collaboration	Citizen Perception to use and raise demand	Required	Required
Service Aggregation, Orientation	Asynchronous Particle Update (the pattern behind AJAX); Collaborative Tagging	Enhancing capabilities of portal specific deliverables	Required	Not Essential
Service Orchestration	Structured Information (Micro formats); Declarative Living and Tag Gardening	Assigning roles and accountabilities to websites under the portal	Not Essential	Required
Service Agency Collaboration	The Synchronized Web; Software as a Service	Service providers will be encouraged to add services for synchronization and orchestration	Required	Required

Case of Sahaj e-Village Limited

SeVL has taken up the task of bridging the digital divide, under NeGP (National e-Governance Plan) of Government of India. SeVL has been mandated to roll out 28,000 plus Common Service Centers (CSCs) across six states (Uttar Pradesh, Bihar, Orissa, Assam, Tamil Nadu & West Bengal in 107 districts) in India. SeVL has rolled out 26066 CSCs till date. Each CSC is owned and managed by Village Level Entrepreneur (VLE). VLE is an enterprising individual from the same locality and is selected through a rigorous process. The CSCs offer all G2C & B2C services to rural citizens / consumers in the cluster of 3-5 villages comprising of sub 10000 populations. These CSCs are controlled by State Teams through Regional Coordination Centers (RCCs) at the district level. The organization manages these CSCs through a centralized data centre. Major services rendered include collection of electricity bills from consumers of various state level electricity distribution companies, Railway reservation services of Indian Railways, e-learning with Micro Soft Products, Facilitation of Life Insurance and General Insurance products and other services co-created with the VLEs. Every CSC has been equipped with laptop, web cam, printer, copier, digital camera, VSAT for connectivity, UPS and other power backup systems which provide Online and Offline B2C and G2C services including "e-Siksha" – e-learning services. Every CSC is connected to SeVL's Level 3 data center situated in Kolkata. Historically, SeVL has been investing heavily on IT infrastructure and connectivity as technology is one of the Key Success factors in an e-Governance System. SeVL has three portals, balanced by world class ERP at back-end and well supported by Level 3 Data Center and the VLEs are connected to the SeVL portal through broad band connectivity (Fixed and/or mobile/VSAT). This infrastructure brings quick development of online products and brings more transparency to the integral part of the human network of VLEs. The basic objective of this service is to spread awareness of computer literacy in rural areas and encouraging rural citizens (especially youth) to leverage computer education for their career advancements. It may be noted that e-participation has enabled the environment for the citizens to get access to services rendered by stakeholders. The uniqueness of e-Siksha is that it supports instructor led e-learning for the rural citizens online. Realizing the fact that normally citizen would require an instructor to guide, SeVL introduced courses on line and provided scope for clarifying doubts. SeVL realized that e-learning courses have better acceptability and it has created an enabling environment for the citizens to engage in e-governance. This instructor led intervention generated "trust" in e-learning and extended the value that VLE was seeking to achieve.

Analysis of Sahaj e-Village Cases

Analysis of the case on Sahaj e-Village is based on the available website, its backend architecture for administering the process envisaged in the policy document and discussions with VLEs and citizens under one of the CSC in the state of Uttar Pradesh. It may be noted that VLEs work in homogenous environment and thus two VLEs are chosen randomly. VLE in case-1, a woman (an undergraduate), is engaged by SeVL since last six months. The primary revenue earning of this VLE is through provisioning of e-government services including issue of certificates on birth and death, income, citizenship and other related services like land registration. E-learning services are introduced lately, but have been well accepted by students in the locality, unemployed youth and women. Their motivation is mostly due to the woman VLE who has been able to impress upon these consumers through her interpersonal traits and SeVL brand image. This VLE caters to local

population of 8000. The process includes providing a workstation connected to the VLE local area network and the SeVL server serves the clients in the network through web based downloads of various modules on payment basis. At times CDs are also provided in the VLE premise. Modules are self guiding, multi-media enabled (voice in local language whereas texts are in english language) and the VLE has limited online access on course progression of the students but VLE himself tend to involve in this process and on successful completion of the course till the learner passes the on-line examination. Certificates to the learners are issued immediately after passing as VLE is able to download the certificate. In case -2 VLE is a woman having graduate degree in computer applications. She is supported by a person having specialization in networking and hardware services. SeVL sponsored e-learning service module called "e-Siksha" is launched here. This VLE provides theoretical sessions to the learners before these learners embark on self guided modules as per their choice. Theoretical sessions include English language orientation, exposure to basics of operating systems, networks, and MS Office. Learners include local students, unemployed youth, school and college teachers, and women. Besides, government services including issue of certificates on birth and death, income, citizenship and other related services like land registration are also rendered through this VLE. The population this VLE deals with is 25,000.

It is seen from the case studies that SeVL has made efforts to make the services SoA compliant through e-learning software having multi-media interface (audio in local language and the texts are in English). But software is user friendly but sometime it leads to some deficiencies in making the software UCD deficient to users. Self learning tool is sequential and repetitive providing monotony in the learning process. Learner-to-learner innovations and creativity are not feasible in either case since such processes are not in place. Thus demand influencers are mostly passive. As regards orchestration, VLEs do not have any scope to talk and share their expertise to each other to render unified services to learners. However, VLE in case-II performs better in the e-learning environment. VLE in case-II is proactive in rendering services related to learner-to-expert services which VLE-I does not have. Overall, there is scope for enhancing e-engagement services. In the area of e-participation, except for managing innovations in which SeVL is periodically engaging itself in the process, there is scope for overall effort to address the shortfall. Especially designing user centered services, creation of forum for VLEs, learners and incorporating learner viewpoints in e-learning services need attention.

Table 2: Case of SeVL

SOA Attributes	**Web 2.0 Attributes**	**Possible Effects through e-Learning**	**e-Governance**	
			e-Collaboration	**e-Participation**
Service Demand	Participation-Collaboration	Citizen Perception to use and raise demand	Existent	Non-Existent
Service Aggregation, Orientation	Asynchronous Particle Update (the pattern behind AJAX); Collaborative Tagging	Enhancing capabilities of portal specific deliverables	Non-Existent	Non-Existent
Service Orchestration	Structured Information (Micro formats); Declarative Living and Tag Gardening	Assigning roles and accountabilities to websites under the portal	Existent	Non-Existent
Service Agency Collaboration	The Synchronized Web; Software as a Service	Service providers will be encouraged to add services for synchronization and orchestration	Existent	Non-Existent

In Table 2 the results of SeVL cases are presented. It may be seen that e-governance services are yet to extend policy supported architecture for better e-participation whereas, SeVL has provided

the scope for e-collaboration in service demand creation, service orchestration and agency collaboration. Therefore, it is essential for the e-governance planners in India to leverage the presence of agencies like SeVL and provide better citizen centered services.

Conclusion

SeVL through its e-learning service provisioning portfolio has been successful in extending services to rural youth. However, there is scope to improve upon SoA and web 2.0 based engagement. The efforts are now mostly passive in nature with respect to SoA, Web 2.0 and e-governance architectures. This indicates existence of policy level gaps in the NeGP architecture to spur e-engagement and e-participation of citizens. This case however, amply indicates presence of motivated demand orchestrators like SeVL that innovates and VLEs who strives for better citizen centric services. As regards the research questions raised in this article, it is worth mentioning that e-governance has partially achieved the goals of e-collaboration and has not been able to garner benefits of e-participation. Interventions of SeVL through e-learning have showcased the accrued benefits of e-governance services, but SeVL has not been able to relate the effects of e-learning on increased e-governance services holistically. However, it is important to note that MDG – 1 (income generation and poverty reduction) has been addressed by SeVL to certain extent through this e-learning interventions. Due to this benefit citizen engagement have gone up considerably along with the trustworthiness of the citizens for the VLEs.

Future research aims to conduct in-depth survey on the effects of e-learning in e-governance services by involving all stakeholders in the service chain to validate the architectural fitness showcased in this article.

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About the Authors

Harekrishna Misra

Harekrishna Misra holds a doctorate degree from Utkal University, Bhubaneswar, India in the area of Information Systems Management. He has around 33 years of experience in industry and academia in the fields of IT infrastructure management, database management, and communication systems and networks. His current research interests include software engineering (process modelling), e-governance, information systems management in development organizations, e-Business for rural enterprises and ICT enabled value chain in rural enterprises. He is a member of IEEE, Association of Computing Machinery (ACM) and Association of Information Systems, USA.

Sanjay Kumar Panigrahi

Sanjay Kumar Panigrahi is an MBA in Marketing from the first batch (80-82), of the Institute of Rural Management, Anand (IRMA) and is a National Merit Certificate holder. He has over 28 years of rich and diverse experience in marketing, sales, distribution, new business development and organisation development across geographies and industries. Mr. Panigrahi successfully led Marketing and Sales functions of leading brands like Amul, Fevicol, M Seal, Fevikwik, Dr Fix-it etc. He has been a champion in the area of Total Quality Management, Change Management and Competency Mapping. He spearheaded Quality Management Initiatives at AMUL, which led to their achieving the Nation's highest Quality award i.e. Rajiv Gandhi Quality Award under his leadership. Currently, Mr. Panigrahi heads Sahaj E-village Limited, Kolkata, India as their CEO, an organisation which has set up an IT enabled highway in Rural India

with 28000+ ICT Kiosks offering various B2C and G2C services under the NeGP through a Public- Private partnership.

E-Governance and E-Participation Services: An Analysis of Discussions in Russian Social Media

Lyudmila Bershadskaya*, Andrei Chugunov*,Olga Filatova**, Dmitrii Trutnev*

*ITMO University, Kronverkskiy 49, St. Petersburg, Russia
analytics@egov-center.ru; chugunov@egov-center.ru; trutnev@egov-center.ru
** St. Petersburg State University, Universitetskaya nab 7/9, St. Petersburg, Russia
filatovo@gmail.com

Abstract: *The objective of this article is to highlight the status of social media discussions, their role in civil society in Russia and the growing intensity of their use for the purposes of the development of the Information Society. Obviously, the use of social media by both citizens and the government will make the interaction between them more transparent and efficient. However, these positive effects may be foregone in the case of misuse of these innovative instruments due to conscious deviations from the goals of the Information Society or because of an insufficient level of digital inclusion of citizens or civil servants. This study was undertaken for the first time in Russia in order to identify current trends in the debate on the creation of e-government and e-participation tools in social media and draws on its results to provide support to Russian policy-makers.*

Keywords: *E-governance, E-participation services.*

Introduction

In international practice, the development of e-participation mechanisms in public life for citizens and political decision-makers are no longer considered new research topics. In Russia, the electronic portal intended for citizens' applications was launched in 2013. Therefore it is only now possible to ascertain the first trends in how the process is advancing in Russia.

The comparative execution of research becomes particularly relevant due to the fact that the indicators of "Strategy for Information Society Development in Russia" implementation include items relating to the position of Russia in major international e-development indexes. For example, dynamic actions towards the development of e-services and e-participation provision allowed Russia to grow from 59th in 2011 to 27th in 2012 in the E-Government Index and to enter the list of promising regions.

In early 2013, in Russia, this topic became the subject of discussions within the State and among the scientific, educational and professional communities. Russia's intention to join the Open Government Partnership has led to an interest in comparative research in e-participation in Russia and other countries.

Analysis of discussions in social networks and their dynamics is a way of obtaining knowledge about the public perception of the various issues that are important for good governance and policy making. This article presents some results of research into social network discussions conducted in Russia by eGov-Center. These results allow us to better understand the demand for new e-gov and e-participation services, users' attitudes to these services and the size of the interested audience.

Research Methodology and Instruments

E-governance, online services and e-participation aiming to become the obligatory forms of interaction between government and society are gradually becoming institutionalized in contemporary society. There are many examples of e-government development analysis in research practice.

At the present stage of social networks' development, the blogosphere and other social media researchers use them as a source of information on citizens' attitudes to government and their demand for e-government services. In particular, Sobkovitz et al. (2012) used the method of social media automated content analysis to identify new trends in inclinations, moods, attitudes and expectations of interested groups or of society as a whole. As a result, they have presented a model of the formation of public opinion through social media. They explored the online community and social networking of immigrants moving to the Netherlands and in need of assistance in obtaining such public services as residence registration, receipt of state allowance, admission to an educational institution, etc. The study confirmed the relationship between Internet discussions and the progress of real social processes.

Rainie et al. (2012) conducted a study of the impact of social media communication on citizens' political activity in the USA. Kavanaugh et al. (2012) have studied various social media and online services, such as Twitter, Facebook, Flickr and YouTube, in order to identify citizens' problems in real time and to respond to threats to public safety. D. Linders (2012), in his research, also appeals to social media, evaluating the role of the citizen as a partner and producer and not just as passive consumer of information about government services. S. Hong and D. Nadler (2012) explored the use of social media by presidential candidates. In particular, they analysed the number of mentions of a candidates on the microblog site, Twitter. The study showed that with the advent of social media the number of channels for broadcasting information to an audience is increased, but also that the high level of activity candidates in social media, as a result, has minimal impact on the level of public attention. Methods of studying the dissemination of information in social networks are based largely on the use of content analysis tools. In this regard, studies made by Papacharissi (2007), Herring (2013) and Zhang et al. (2012) are of particular interest. Also, it is important to take into account the specificity of discourse analysis, including drawing on the works of Van Dijk (2006).

The majority of surveys on e-government development in Russia are oriented toward analysing websites (web-monitoring), statistical survey conduction, etc. At the same time such important aspects as citizens' perceptions and demands for new services remain unexplored.

Social media, being a popular and active field of mass communication, can be the subject of research and a source of information, including information about the demand for online

government services. The eGovernment Center conducted a specialized survey in June-August 2013.

Today, there are more than 30 computer-aided tools for searching and analysing information from social networks. The social media monitoring service IQBuzz (http://iqbuzz.ru/) was selected as a research instrument. This commercial tool provides social media monitoring, including web crawling such resources as LiveInternet, LiveJournal, Facebook, Twitter, VKontakte, Yandex.Blogs and the video hosting services RuTube and YouTube, as well as various news, entertainment, specialist, topical and regional portals.

During the monitoring process, the keywords on a set of topics relating to the sphere of e-government and online services were selected by the authors. As a result, a list of eight rubrics comprising 35 topics of key requests was made. After that the web crawler started working. Based on manual analysis of the collected posts and documents, two rubrics with non-relevant documents were excluded, but three more rubrics with additional key requests were added. The monitoring was conducted on the following topics: e-government, online services, multi-functional centres, public services, governors' blogs, authorities' web-sites, e-petition portals, e-cards and e-signatures.

Discussions of the Russian E-participation Portal on Social Media

The Russian Public Initiative (RPI - https://www.roi.ru) appeared in April 2013. This e-petition portal is operated by the Foundation for Information Democracy, a non-profit organization led by former RF Deputy Minister of Communication. This portal RPI had become the subject of discussion among Internet users even before its opening, from its inception in 2013. Particular interest in this subject was due to the relatively recent emergence of similar portals in other countries, the experience of which was studied by the authors previously (Bershadskaya et al., 2013).

The timeframe of the monitoring was the period 01.01.2013 - 31.07.2013. 19,200 documents on these portal topics were found as a result of the research. The audience for these topics was formed from readers and subscribers of news portals as well as Russian oppositionists' posts.

The main information bursts in the discussion relating to the RPI are correlated with the following events in 2013:

- The Foundation for Information Democracy became executor of the RPI project (March 5-6);
- Dmitry Medvedev issued orders on RPI portal creation (March 16-17);
- Start of voting on RPI portal (April 12-13);
- Head of the Foundation for Information Democracy responded to the charge of an illegal increase in the number of votes against A. Navalny's initiative (May 29-30);
- Discussion of "100,000 votes collected, what will happen next?" (July 5-6);
- Discussion of the initiative to repeal the law on arbitrary blocking of Internet resources № 187-FZ (July 10-11).

The number of documents published on the topic of "Russian Public Initiative" on Russian social media is shown in Figure 1.

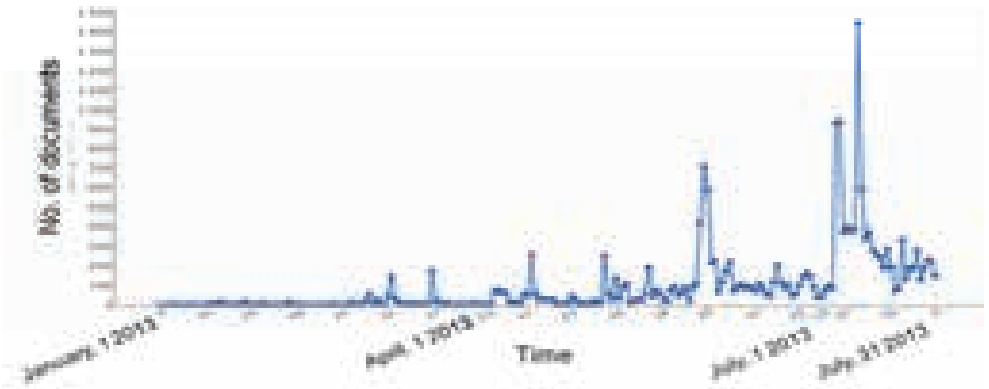

Figure 1: Discussions on the topic "e-participation" on Russian social media (1.01. - 31.07.2013, IQBuzz)

Mostly discussions were of the publication with reference to specific initiatives with a proposal to vote for them. Publications of the Russian oppositionist, A. Navalny, placed on the portal on his own initiative, in conjunction with publications on the work of the RPI portal in general, have been discussed by more than 380,000 people. Also, most of the audience interested in this topic were acquainted with publications on resources such as, "Interesting news", "RIA Novosti" and "Actual News". This news was mainly focused on emerging discussion about A. Navalny's suspicion that the portal RPI provided "cheat" votes, as well as the desire of the public to oppose the adoption of the anti-piracy law. It should be noted that the 16-35 year-old group, are most interested in RPI discussions.

As a result of analysis, we can conclude that the Internet community has been actively interested in the RPI portal from the very beginning of its work and furthermore it is possible to discuss specific initiatives placed on the portal in relation to the growing interest.

Conclusions

The research results showed the scale of discussions on social media on e-petition topics, retrospective flashes of discussions and the demand in this information field among Russian citizens.

Social media users are interested in the projects connected with e-government but the general theme of the discussions concerns not only the demand for online services but also other important topics. The Internet community actively discusses the process of obtaining public services, various ways of providing servicing via the Internet and websites of government and public bodies. The recently instituted Russian e-petition portal accounted for the greatest proportion of the discussion audience (6,700,000 people) in comparison with other topics.

Social media users discuss official news about e-government projects and oppositional posts. As a rule, these discussions are not long-lasting. Internet users even started publishing jokes on these topics. The subscriber audience of these humorous stories can be up to 900,000 people. Generally, male audiences' main interests relate to political topics, discussions, voting for petitions, etc. Internet users from the 26-35 year-old age group dominate among the authors of posts in all rubrics.

The results of this study demonstrated the suitability of using social media as a source of knowledge about the attitude of citizens to the most important issues for them. Such knowledge is vital for good governance and policy making.

The research revealed the necessity to improve the process of text tonality identification and to engage the involvement of experts in linguistics in the research. The researched topics are closely connected with political decisions and discussions of law adoption, which provide emotive aspects, i.e., approval or disapproval of any type of law. This circumstance hinders the computer-aided assessment of text tonality.

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About the Authors

Lyudmila Bershadskaya

Lyudmila Bershadskaya is an analyst at the eGovernment Center, ITMO University (St. Petersburg National Research University of Information Technologies, Mechanics and Optics, Russia). She received her PhD in sociological science in 2013. Since 2009, she has been engaged in more than 20 research projects. She has received three personal grants from Saint Petersburg Administration for sociological researches in the field of e-government development in Russia and in the CIS. Affiliation: ITMO University, eGovCenter, St. Petersburg, Russia, analytics@egov-center.ru

Andrei Chugunov

Andrei Chugunov is the director of eGovernment Center ITMO University. He received his PhD in political science in 2000. Mr. Chugunov has published more than 100 papers dedicated to information society development, educational information services creating and eGovernment technologies implementation. He has been a team leader for more than 15 years (being director and deputy director) in ICT research and development sphere. Affiliation: ITMO University, eGovCenter, St.Petersburg, Russia, chugunov@egov-center.ru

Olga Filatova

Olga Filatova works as an associate professor at the Department of Public Relations in Politics and Public Administration at the St. Petersburg State University. Dr Filatova has authored more than 130 scientific, educational and methodological published works. Affiliation: St. Petersburg State University, St. Petersburg, Russia, filatovo@gmail.com

Dmitrii Trutnev

Dmitrii Trutnev is the deputy director of the eGovernment Center, ITMO University and a Certified Information Systems Auditor (CISA). Dmitrii has more than 20 years' experience in consulting and teaching in the areas of "E-Governance" and "Information System Management". Since 2002, he has participated in over 30 local and more than 10 international projects in the area. Affiliation: ITMO University, eGovCenter, St. Petersburg, Russia, trutnev@egov-center.ru

Open Access and Database Anonymization an Open Source Procedure Based on an Italian Case Study

Luca Leschiutta*, Giuseppe Futia**

*Nexa Center for Internet & Society - DAUIN - Politecnico di Torino, Italia, luca.leschiutta@polito.it
**Nexa Center for Internet & Society - DAUIN - Politecnico di Torino, Italia, giuseppe.futia@polito.it

Abstract: *The only method, believed to be compliant to privacy laws, to open a database that contains personal data is anonymization. This work is focused on a car accident database case study and on the Italian DP law. Database anonymization is described from a procedural point of view and it is explained how it is possible to complete the whole process relying solely on widespread open-source software applications. The proposed approach is empirical and is founded on the letter of the Italian privacy law.*

Keywords: *Open-Access, Open-Source, Data-Base, Case-Study*

Acknowledgement: *The authors would like to thank the CSI-Piemonte (the Piedmont Consortium for ICT System) for sharing with us the structure of the TWIST database that is the object of our case study.*

Introduction

Data protection laws are one of the biggest impediments to grant open access to databases that belong to Public Administrations. Particularly in Italy, taking into account the Personal Data Protection Code with respect to data dissemination, such concerns are completely justified given the pecuniary and custodial penalties foreseen for incorrect personal data processing.

We don't have enough room here to go into the details of the Italian Data Protection Code nor to analyze other relevant European laws but the general assumption is that, in most cases, it is forbidden to share with the public databases containing personal data. One important deviation from what is stated above comes from Legislative Decree no. 33 of 14 March 2013 about Public Administrations' transparency in which is foreseen that PAs must publish several data such as organigrams and costs.

Notwithstanding the a.m. decree, the principal way to openly share a database is to remove all data that could lead to the identification of the involved subjects. This operation, also known as Database Anonymization, is object of this work. We will face the problem from a very procedural point of view and we'll show how, under certain conditions, all the involved operations can be performed using solely widespread open-source software applications.

This work was developed in the framework of the Open-DAI[1] project. Open-DAI is "Opening Data Architectures and Infrastructures" for European Public Administrations. It is a project funded under the ICT Policy Support Programme as part of the Competitiveness and Innovation framework Programme (CIP) Call 2011.

Our study is based on a real case in which a data base consisting of 352 data fields of car accidents related data (TWIST) needs to be open accessed.

TWIST is owned by Piedmont Region and managed, provided and maintained by CSI[2]

Within the Open-DAI project it is foreseen to open the data base (integrated with other sources) in order to create an application that will use statistical road accident and traffic data to propose better paths to the end user.

Database Anonymization

Hereafter we'll describe a procedure on how to process and anonymize a collection of data that includes personal, sensitive and judicial data. It is worth mentioning that anonymizing a database does not mean to simply throw away the most sensitive information but, in most cases, it is mandatory to retain the capability to restore the removed data at a later time.

The procedure is general purpose and implemented relying solely on common open-source software applications. The actual instructions to operate both on Windows and Linux operating systems are sketched.

An Easy Data-Set Anonymization.

Let's suppose that our data-set is in a single table named *NonAnonymousData.csv* and that the various items have no correlation. Let's proceed with the well-known *Libre Office* suite. In the first step the Identification Data (ID) are grouped on the left of the table and the Non Identification Data (NID) are grouped on the right.

Table 1: Ordered NonAnonymousData.csv

ID1	ID2	ID3	ID4	NID1	NID2	NID3	NID4
Item 1							
Item 2							
Item N							

In the second step: a column containing Anonymous ID (AID) is added. AIDs are numeric strings extracted from a list of 10*N random generated numbers (see below) and saved in *NonAnonymousData.csv*

Table 2: Ordered NonAnonymousData.csv including Anonymous IDs

ID1	ID2	ID3	ID4	AID	NID1	NID2	NID3	NID4
Item 1				1053				
Item 2				1001				
				1057				
Item N				1133				

In the third step the table is stripped of the NIDs and saved as *AnonymousData.csv*

[1] http://www.open-dai.eu/
[2] CSI-Piemonte il Consorzio per il Sistema Informativo piemontese: http://www.csipiemonte.it/en/

Table 3: AnonymousData.csv

AID	NID1	NID2	NID3	NID4
1053				
1001				
1057				
1133				

Depending on the conditions and on the legislation the *NonAnonymousData.csv* file shall be either completely destroyed or kept hidden and safe for a very long time

The operation in which you safely destroy some data is called "*data wiping*" and consists of several passes in which the desired portion of hard disk is overwritten with random data. To perform these operations, On Windows you can use the open source program *Eraser*[3]. On Linux you can use the following commands:

> *shred NonAnonymousData.csv*

> *rm NonAnonymousData.csv*

If you have to keep the data hidden and safe for a very long time, you must:

1. Cryptograph[4] the file on Windows. This can be achieved by using the open source 7zip[5] program that allows to achieve a strong AES-256 encryption. On Linux you can use the following command:

   > *gpg -c NonAnonymousData.csv*

   In both cases, the non-encrypted *NonAnonymousData.csv* file must then be destroyed using the above mentioned procedure and the password must be chosen and preserved with the usual due diligence.
2. The encrypted file must then be backed up to a safe location e.g. a non-rewritable DVD or a WORM (Write Once Read Many) tape

Random AIDs Generation

Hereafter is described an easy procedure to generate N (for simplicity sake we'll assume N=100) unique AIDs with LibreOffice. This procedure might not be the most efficient but does not require any dedicated software nor any high level IT skill:

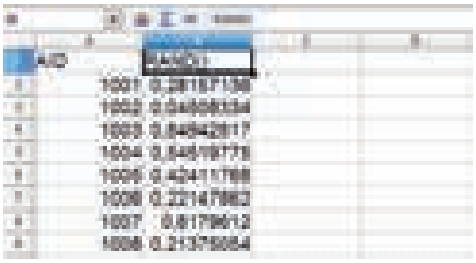

Figure 1: random number generation

Open a new Calc spreadsheet and write into column A the subsequent number within 1000 and 1999

1. In column B generate as many random numbers by means of the RAND() function
2. Reorder according to Column B
3. Copy the first 100 AIDs into the relevant dataset column (see Table 3. above).

[3] http://eraser.heidi.ie

[4] A cryptographic software shall have the following specifications:

1. Standard file format and cryptography algorithm so that the file will always be recoverable
2. Open source to assure the highest reliability

[5] http://www.7-zip.org/

Advanced Techniques: Repeating Ids

The above mentioned technique works well for a very simple database in which all IDs are unique but, in real cases, is quite common the situation depicted in the ID3 column of the following figure (e.g. in our case study we have repeating hospitals. We do not want to put this information in clear – it would be too easy to track the guilty driver hospital location given the crash location – but we do not want to lose entirely the information)

In this case, should we apply the above described technique, we would lose some correlational information. The solution consist in anonymize and keep the ID3 column using the same ID for repeating data (e.g. in the following figure AID3 is 1015 every time "Lorem Ipsum" is encountered in column ID3)

Figure 2: NonUniqueIDs.csv

In this case, the *Libreoffice* formula

IF(ISNA(VLOOKUP(C4;C$1:C3;1;));AID.A8;VLOOKUP(C4;C$1:F3;4;))

is more complex and some explanations are due: For each ID in column ID3 the formula looks in the above IDs to detect any repetition. If the ID is not a repetition, a new AID is inserted in column AID3, otherwise the same AID used before is inserted in column AID3.

Even more complex is the case described in the following table in which we have cross-correlation between various columns.

Table 4: NonUniqueIDsInMultipleCells.csv

ID1	ID2	ID3	ID4	NID	NID	NID3	NID4
Item 1		Lorem ipsum					
Item 2							
		Lorem ipsum					
Item N			Lorem ipsum				

In this case a variation of the above mentioned technique can be used but, since *Libreoffice* is not capable of multidimensional lookups, some code should be written according to the following pseudo-code snippet:

```
flag=false;
for (i=0; i<n: i++){
  for (j=0; j<m: j++){
        if(ID_Matrix[i][j]==ID_Matrix[n][m]{
              AID_Matrix[n][m] = AID_Matrix[i][j];
              flag=true;
              break;
        }
  }
}
```

```
if (flag==false){
  AID_Matrix[n][m]=Next_Availabe_AID(k);
  k++;
}
```

Advanced Techniques: Data Degradation

In some cases, we might wish to retain some information but we do not feel confident that the database, in this way, will have the desired level of anonymization. In these cases data degradation might be performed. No general purpose technique comes to our mind w.r.t. data degradation, but our case study can provide some insight:

- In our database the accident location is provided with extreme accuracy thanks to GPS longitude and latitude data that have the precision of the second of degree (e.g. 45° 03.866′ N) which lets individuate a location with the accuracy of a few meters. If we round up this numbers to the tenth of a minute of a degree (e.g. 45° 03.9′ N), we obtain an accuracy of roughly 10 km
- In our database the accident time is given exactly to the minute (e.g. 10:45 of the 12th of November 2012) . In this case we could drop the information relevant to the minute, the day of the month and we could degrade the month to the season of the year (e.g 10 o'clock, winter 2012).

The De-anonymization Test

Finally we tried a little de-anonymization experiment on our test case: working on a data-set in which obvious fields such as vehicle registration plates, driving license numbers, people's names had been removed, we found out that it is quite easy to find the complete name of involved people (especially if deceased after the accident) relaying on other fields such as:

- Accident location (actually we are dealing with several fields that consent to locate quite precisely where the crash took place)
- Accident time
- Number of injured people
- Number of losses

The trick consists simply to use "*name of the street*", "*date of the accident*" and "*accident*" as search parameters in google to gather several informative piece of news from local papers. In this example the data degradation, described above, would guarantee a much better anonymization.

Conclusions

The analysis of the Italian Personal Data Protection Code would show how daunting is the road that leads to databases open access for a PA. We believe that similar considerations can be extended to other European jurisdictions given the ongoing effort to harmonize the various privacy laws

The only viable solution to this problem is database anonymization and we have provided a step by step procedure that we consider straightforward and cost-effective. The use of open-source software, besides the economic considerations, is also important for the cryptographic point of view.

We have barely addressed the more difficult problem that is how to test if the anonymization level of the database is sufficient. In our test case, we found out that removing all personal data is not enough because with "*reasonable means*" we were able to counteract the anonymization.

The solution of the "de-anonymization party" working on several test cases to break the anonymization effort, if well documented, seems to us in line with the law requirements ("*the means possibly required to effect identification are to be considered disproportionate compared with the damage resulting*").

Several aspects remain open to questioning especially in cases, such as the one we analyzed into this work, in which sensitive and judicial data are involved.

One important question is whether a database of sensitive and judicial data, even if cleaned of any reference to personal information, is still object of the DP code?

Furthermore, should the above be true, opening the database, having in mind that someone might be able to exploit the data for some unforeseen application or service that does not fall in the category of statistical and scientific purposes, is it not contradictory to the provisions that ask to have the consent from the subject for each specific treatment?

About the Authors

Luca Leschiutta

Luca Leschiutta is the IT manager of the Nexa Center for Internet & Society of the Politecnico di Torino. After graduating in Electronic Engineering, he pursued a PhD in Information Technology at the Internet Media Group of the Politecnico di Torino. His fields of study have been image compression and wireless networking. He also taught programming and networking courses. In the past he worked as a reliability engineer at Alenia Spazio in the ISS project. Since 2010 he also works in a similar position at the Human Genetics Foundation of Torino.

Giuseppe Futia

Giuseppe Futia is the communication manager of the Nexa Center for Internet & Society of the Politecnico di Torino. He holds a Master Degree in Cinema and Media Engineering and since 2008 he collaborates regularly with La Stampa daily. At the Center he is in charge of communication and press office. More specifically, Giuseppe's main responsibilities consist of keeping contact with media and following Nexa's Image.

Spatial Information and GIS for Smart City

Maria Nikolova

New Bulgarian University, Sofia, nikolovamaria@hotmail.com

Abstract: *The process of cities' growth leads to new dimensions in city management. Smart city is an approach for better management of megacities when the city infrastructure in all its dimensions is well developed using modern information and communication technologies. Spatial information is useful and important for better management of modern cities. Local government will announce the benefits of spatial information for citizens as a tool to increase transparency in city governance and a possibility for citizens to participate in decision-making process. Geographic Information System is a powerful tool for various types of analysis, which is a key point in the next steps for city management.*

Keywords: *smart city, spatial information, GIS*

Introduction

Management of growing cities demands to apply new approaches and technologies that transform the city to smart city. It is illustrated how geographic information systems (GIS) are efficient to the local government.

> *"Geo-information technology is a social intervention in a policy and organizational network influencing the position, interests, values and domains of the actors involved" (Bekkers & Homburg, 2007).*

Megacities and Smart Cities

Different authors define "city" from the perspective of a geographic place, where people and buildings are situated, to modern conception as:

> *"virtual city, city of bits, event city, cyber city, global city, network city, and renewable city" (Zardini, 2006, p.352)*

In Castells (1996) is derived another definition and he describes:

> *"global city is not a place, but a process'". "…as a spatial system of advanced service activities, and advanced step is that "information and communication networks constitute the modern social morphology of our societies in the informational age—as opposed to the industrial age" (Castells, 1996, p.135).*

Mitchell (1996) presented that the future city will be

"unrooted to any definite spot on the surface of the earth; shaped by connectivity and bandwidth constraints rather than by accessibility and land values; largely asynchronous in its operation and inhabited by disembodies and fragmented subjects who exist as a collection of aliases and agents" (Mitchell, 1996, p.24).

The tendency is more people to inhabit cities in the future. According the research of United Nations, the rise in the percentage of population in cities is vast:

"…from slightly more than 50% in 1950 to more than 75% of EU population being located in urban areas in the year 2010, and a forecast of about 85% within the next 40 years". (United Nations, 2013).

Megacities require large-scale project for governance. Local government will take care for living conditions of citizens, including housing, jobs, infrastructure and public safety. A topic of great importance is active communication between citizens and city governance, also the inclusion of citizens in the government decisions. Citizens in megacities should be engaged in dialog for the future city development, for decisions of problems of living there. The most important points of city development are support of instant communication and feedback with local government, transparency of governmental decisions and access of citizens to the policy-making process.

"A megacity is a metropolitan area with a total population in excess of 10 million. It can be a single metropolitan area or two or more metropolitan areas that converge. It is difficult to define the outer limits and accurately estimate the population of megacities" (Ericsson AB, 2012, p.3).

According Giffinger (2007):

"A smart city is a city performing well in a forward-looking way in six characteristics, built on the "smart" combination of endowments and activities of self-decisive, independent and aware citizens"(Giffinger, 2007, p.11).

Smart city concepts are realized and are not only theory in research papers. The definition "smart" for city associates with intelligent solutions allowing modern cities to prosper in every sense, as higher productivity and higher quality.

The analysis of the characteristics of a smart city leads to the conclusion that all of them are strongly dependant of the growth and application of information and communication technologies (ICTs). According Hollands (2008)

"…the validity of any city's claim to be smart has to be based on something more than its use of ICTs". (Hollands, 2008, p.302).

This observation is made because cities all over the world are beginning to claim that they are "smart" because they employ ICTs in their operations.

The new city infrastructures include also modern communication infrastructures represent platforms or accelerators for transition to the new form of the city – smart city.

"ICT infrastructures, sustained by a new generation of mobile technologies, connected devices, network platforms and associated software also hold a central position in this landscape" (Allwinkle, 2011, p.15).

Obviously ICTs are basic for the development of all these infrastructures; also they are of critical importance.

"They "undergird" all of these networks and single them out as the common denominator lying at the core of the smart-er city"(Hollands, 2008, p.302).

ICTs that are basic for networked infrastructures include mobile and wire phones, remote sensors, sensing Webs, city's cameras, satellite TVs, computer networks, VANs, MANs, Extranets, Intranets, electronic data interchange, electronic commerce and Internet services. All these local, state and interstate infrastructures are important because they are basic necessity to start the process of development of smarter cities. They may sustain the progress of social, environmental, and cultural development in a city.

ICTs are the modern communication instrument. Using ICTs citizens can be connected in a network to share knowledge, comments, to debate public policy and to be engaged in the process of governance. That way the city community will move to the path of democracy. The smart city requires smart communication as a tool all members of the society to have capabilities taking part in the process of forming policy about their own environment.

This is only possible when the community is able:

"to create a real shift in the balance of power between the use of information technology by business, government, communities, and ordinary people who live in cities, as well as seek to balance economic growth with sustainability... In a word, the "real" smart city might use IT to enhance democratic debates about the kind of city it wants to be and what kind of city people want to live in". (Hollands, 2008, p.302).

The future technological trends that will reflect to city's change are mobility and transition to cloud services. As these technologies are rapidly entering in business and life of citizens, they will be integrated in city infrastructure and will support data sharing across members of the city transformation. The concept of Government Cloud (G-Cloud) is a driver for introduction the architecture of e-governance in the countries. After G-Cloud is realized the next step is to build a "cloud of clouds". The biggest advantage of the cloud is that is not based on specific location. It is cross-bordered, easy to establish, does not require logistics in terms of infrastructure and hardware. G-Cloud initiation is a geopolitical decision.

ICT also has an important role to improve access, quality and efficiency of learning throughout life. A high level of ICT maturity helps to improve collaboration between citizen and government. The better collaboration gets more benefits for the growth of democracy and enlargement of transparency.

Spatial Information and GIS Applications for City Government

Many cities have problems with unclear and overlapping responsibilities among public institutions, agencies and private companies, concerning governance of the city. The presence of one and the same responsibilities of two or more government organizations, separately information gathering and processing in each organization, the rights to issue certificates and documents based on the information in concrete organization lead to violation in city administration work. The development, application and use of GIS help public authorities for better management of city infrastructure.

The most important challenge for research is the link between public and spatial data.

> *"Spatial data makes possible to put together data from different sources and objects on the surface of the Earth as a result" (Nikolova, 2010, p.135).*

Spatial Information Benefits for cities

The importance of spatial information increases. Gathering and processing spatial information with the use of more efficient techniques will provide city government with diverse and actual information.

Megacities need new tools, techniques and policies for management. Spatial information may be used for a fundamental and for integration the social, economic and environmental factors in megacity management. Part of management activities in city government like monitoring the growth and change of the city, forecast the possible areas of risk, may be accomplished in real time and for shorter time comparing with the application of other old management tools. The spatial information can be used in new management tools for traditional city management activities. Moreover, these new tools will contribute for interoperability and integration within the city. Integrated spatial information will help to city management to take unified decisions that are timely. Also decision making process using spatial information allows insufficient resources to be prioritized because to handle with most emergency and risk problems in a megacity.

In the recent years citizens actively can collect and manage urban information with sensors activated from them. The term "urban sensing"

> *"…means a wide variety of sources including cellular phones, Radio Frequency Identification (RFID) tagged items, GIS related technologies, Web 2.0 and crowdsourcing to support the creation of a public infrastructure, data, that will enable the citizen to participate more effectively in politics, civics, aesthetics and science" (FIG, 2010, p.14).*

Spatial information is gathered and shared with citizens. It is important local government to announce the benefits of spatial information for citizens as a tool to increase transparency in city governance and as a possibility for citizens to participate in decision-making process.

Further Research on City Government

The city will gain more benefits for management of its functionality from spatial data.

> *"The implementation of data collection through the voluntary use of mobile phones as a passive sensors, that silently collect, exchange and process information continuously is a variant" (FIG, 2010, p.12).*

Spatial data and information are base to establish integrated information systems for city management. Applications such management of lighting, water infrastructure, public transport are good examples. All information for the megacity would be integrated, stored in a central database and used from many institutions. For example cadastre information and property boundaries are placed usually in the local authorities and further are used from other companies like water supply, electricity and other communication companies. That way the access to this information could be given by the local authority.

Mobile devices are channels for citizens to contribute for pollution incidents, traffic congestion etc. There are weak points in this approach: the volume of data coming from different sensors for

processing and management increases significantly (as named Big Data); the observation of location where people are, isn't it a violation of their rights?

> *"The convergence of location based services and social networking providing real time social interactions has triggered the controlled sharing of location information with designated people participating voluntarily" (FIG, 2010, p.11).*

In megacities when citizens participate voluntary in collecting data, it can help in reducing transport costs, travel times or road tax.

In recent years there are many natural disasters in the world and the adequate preparations for emergencies and crisis management are increasingly important.

GIS for Better City Government

GIS is a basic tool that supports decision making in city management. Considering a city as a closed system in which different processes (social, economic, demographic etc.) occur, GIS could play a major role in all phases of the design process. All these processes may be described and analysed with set in different layers and combining different types of information. A specific feature of GIS is that they work when are supplied with enough and most reliable information only.

Another main feature is that using GIS the different sources of information can be combined easily and relatively quickly, examples are cadastre for underground and land, infrastructure, population data, economic activity data and other.

GIS is a powerful tool for various types of analysis, which is a key point in the next steps for changing the emphasis of the territory. For example, when the database with demographic potential of a territory is well built, the needs of the population in this territory can be forecasted as planning the needed social, sport, cultural and other projects.

Key points in city planning are transportation and communication decisions. GIS handle various methods for network analysis. On that base may be investigated all aspects of transport and communication systems of a certain territory. GIS allows using different models of transport accessibility, affordability and citizens' satisfaction from green environment in the city, cultural, social and economic projects. GIS provides an ability to develop and implement predictive models. Using these models different scenarios can be developed for allocation of the territory or building infrastructure projects crucial to urban development or to territory of a city. For urban planning this is essential.

GIS assist in deciding a major problem at institutional level - to collect and join information with different nature. The problem arises because institutions that are duty to provide certain type reliable information do not provide it or the information is unusable in many cases.

Planning is a process in which a territorial unit is analysed and classified in order to confer with as the most appropriate function to determine the way of long term usage. The plan for urban development plan of a city is a tool which solves serious infrastructure problems and socio-economic activities besides the needs of the population associated with urban life. Planning itself requires a set of heterogeneous analytical tools that provide a clear vision for the status of concrete city area and the processes occurring in it. GIS is the most powerful tool for processing many different types of data.

Summarizing the facts, the conclusion is that GIS can perform a role of a processing platform. Citizens contribute individually to gather geospatial information, then the collected information is processed and integrated. The information is useful to local community also – for planning their city, to overcome natural disasters.

Conclusions

City management needs spatial information and GIS for many activities.

In frequent cases multiple agencies hold non-accessible spatial information or overlapping information. It causes troubles in normal functionality of decision making process in the city. Responsibilities and obligations of agencies are usually clear but integration and high effectiveness in operating process, more effective levels of cooperation and information sharing is needed.

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About the Author

Maria Nikolova

Maria Nikolova is Associate Professor in Information Technologies at New Bulgarian University, Department of Public Administration, Sofia. Her research interest are in e-government, in particular ICT in public administration.

III. Workshops

E-Governance Across the Globe

Peter Sonntagbauer*, Joshua Mulandi Maviti**

**Cellent AG, Lassallestr 7b, A-1020 Vienna, Austria Peter.sonntagbauer@cellent.at*
***UN-HABITAT, P.O. Box 30030, GPO,Nairobi, 00100, Kenya Joshua.mulandi@unhabitat.org,*

Abstract: *The purpose of this workshop is to outline the FUPOL model, an advanced e-governance approach and its application in various cultures worldwide. The FUPOL Policy Model is divided into main tasks and subtasks which provide links to various technical features in the domain of policy modelling to guarantee the support of the whole policy lifecycle.Experiences gained during implementation in Africa, Eastern and Western Europe, China will be illustrated in the workshop. Critical success factors of e-governance in different cultures as well as the results obtained so far will be outlined.*

Keywords: *FUPOL (Future Policy Modelling), eGovernance, eParticipation, Policy Lifecycle, Policy Modelling*

Acknowledgement: *I would like to express my very great appreciation to the FUPOL team members for their enthusiastic efforts to design and devolp the FUPOL features, especially*

- Mr. Miquel Angel Piera (Policy Models),
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- Mrs. Silvana Tomic Rotim for the leadership of the demonstration workpackage and her supervison of the testing in Zagreb (Croatia),
- Boyong Wang for the management of the pilot testing activities in Yantai (China),
- Mr. Haris Neophytou for the management of the pilot activities in Pegeia (Cyprus),
- Mr. Shaun Topham and Mr. Gary Simpson for the coordination of the pilot testing activities in Barnsley (United Kingdom),
- Prof. Marjan Gusev for the management of the pilot activities in Skopje (Macedonia) and
- Mrs. Kerstin Sommer and Mr. Albert Padros for the management activities in Mtwapa (Kenya)

Topic

It is well known that governments take decisions for their citizens primarily based on their policy concept and the current economic and social development. All these decisions originate in a lot of analysis, discussions with all relevant stakeholders, such as companies, NGO´s, governmental organisations, citizens, unions, organizations representing commerce and industry, etc. Most of the decisions are empirical and are based on previous experiences in the specific policy domain.

In a rapidly changing world a very cautious and deliberate policy making, based on the country specific requirements, cultures and traditions is required and routinely decisions might be dangerous, because circumstances and framework conditions alter quickly. Likewise available data as well as the technologies to support policy design and implementation are evolving quickly.

This gives to the policy decisions the opportunity to be fact based, although the final decisions are likely to be still influenced by political and ideological considerations.

Therefore it is very important to approach the policy lifecycle in a systematic way, which means describing all steps in high detail. Such a detailed description is also required to provide a complete picture, which technologies can support the policy design and implementation.

The topic of the workshop is the design and the worldwide implementation of a novel governance model supporting the whole policy lifecycle by various IT-features.

Description and Objectives of the Workshop

The main objectives of the workshop are:

- Overview of the FUPOL project itself (facts and figures)
- Demonstration of the research method which outlines FUPOL as an "Integrated Technology Solution", supporting the whole policy life cycle beginning from the agenda setting phase to the monitoring phase.
- Presentation of the implementation of the FUPOL projects in the different pilot sites (Barnsley, Mtwapa, Pegeia, Skopje, Yantai, Zagreb).
- Summarization of the Experiences gained in different cultues and governance models.

Relevance of the Workshop to the CeDEM

CeDEM (Conference for E-Democracy and Open Government), organized by the Centre for E-Governance at the Danube University is an international conference for experts working in the fields eParticipation, eGovernance and Open Government.

FUPOL is an FP7 project which aims at developing a new governance model for cities, municipalities and for policy makers on the national level. That is why the dealing with FUPOL, its implementation and the discussion of the worlswiede experiences is fully in line with the aims and the agenda of the conference.

Questions to be addressed during the Workshop

The main questions to be addressed in the workshop are the following:

- The FUPOL egovernance model and its enhanced policy lifecycle process
- Explanation of the FUPOL features
- Research methodology – conceptual and technical integration
- Presentation and discussion of success factors in different cultures
- Experiences gained in Africa, Eastern and Western Europe and China. (Barnsley, Mtwapa, Pegeia, Skopje, Yantai, Zagreb)
- Evaluation of the results

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About the Organisers

Peter Sonntagbauer

Peter Sonntagbauer is a Senior Project Director in Cellent AG (AT) with extensive project management skills combined with 30 years of practical experience. He graduated in 1979 (PhD) in applied statistics and informatics. On top of his academic education he holds many advanced certificates including IPMA, PRINCE2 Practitioner, ITIL and COBIT. He was working as a consultant for international organizations, large corporations and managed large scale IT projects both in the private as well as in the public sector in Europe, Africa and Asia for more than 20 years. Since 2011 he is project director of the research project "Future Policy Modeling" (FUPOL). FUPOL is an FP7 research project with 17 partners and 9 Mio Euro budget.

Joshua Maviti

Joshua Maviti is Human Settlement Officer at the Housing and Slum Upgrading Branch of the UN-Habitat in Nairobi. He is a Geographical Information Systems (GIS) speccialist providing the PSUP Country Teams with technical backup to utilise spatial analysis in the slum upgrading and urban planning activities. He is a Masters of Science Graduate from Manchester Metropolitan University (UK) and hods a Bachelors Degree from Kenyatta University, Kenya, in Environmental Science. Joshua has worked in different capacities in Africa within the larger field of data management and more specifically spatial data management by implementing GIS proejcts in urban and rural sectors. He is coordinating the implementation of PSUP in Mtwapa and overseeing day-to-day activities of the project including the eParticipation project in

colloboration with FUPOL and the Ministry of Land, Housing and Urban Development and the Kilifi County Government.

E-Participation in Slum Upgrading in Mtwapa (Kenya)

Joshua Mulandi Maviti*, Albert Padros*, Peter Sonntagbauer**

*UN-HABITAT, P.O. Box 30030, GPO,Nairobi, 00100, Kenya Joshua.mulandi@unhabitat.org, albert.padros@unhabitat.org
**Cellent AG, Lassallestr 7b, A-1020 Vienna, Austria Peter.sonntagbauer@cellent.at

Abstract: *The workshop focuses on an e-participation pilot project in Mtwapa which is embedded in the Participatory Slum Upgrading Programme (PSUP) and the FUPOL Project. Mtwapa is a township within the fringes of Mombasa on the Kenyan east coast. The Mtwapa slum upgrading project targets to address 5 deprivations that include improvement of sewerage, sanitation, access to drinking water, sufficient living area, durable housing and security of tenure. The PSUP principle is cantered on community participation by offering forums for slum communities to engage with central and local. The community participation in the PSUP is based on the E-Participation tools of the FUPOL project, which is used to guide the slum upgrading by providing a platform to gather public inputs, judge consensus, offer 2-way discussions between residents and authorities and develop projects. The project is financed by the Europe Commission (EUROPEAID) with political backing of the Africa, Caribbean and Pacific (ACP) Group of States Secretariat.*

Keywords: *FUPOL (Future Policy Modelling), eGovernance, eParticipation, Participatory Slum Upgrading Programme*

Acknowledgement: *We are particularly grateful for the assistance given by*

- Ms.Kerstin Sommer, Programme Manager, The PSUP, Housing and Slum Upgrading Branch, UN-Habitat for Management of PSUP activities
- George Gachie, UN-Habitat, for Mtwapa eParticipation and PSUP Community coordination
- Mr.Isaac Mungania, Ministry of Land, Housing and Urban Development, Kenya, for PSUP Mtwapa Project coordination
- Rael Ruto, Ministry of Land, Housing and Urban Development, Kenya, eParticipation Techical support to Mtwapa Project

Topic

The principal item of the workshop is the PSUP (Participatory Slum Upgrading Programme) project, which aims at improving living standards of slum dwellers in Mtwapa by addressing the five depravations of slums namely the lack of access to safe drinking water,

access to improved sanitation, overcrowding, permanency of living structures, and security of tenure. It was initiated by UN Habitat and the FUPOL leadership.

Currently, there are 34 countries and 150 cities across Africa, Caribbean and Pacific States (ACP) participating in the programme. The programme's purpose is to strengthen capacity of local, central and regional institutions and key stakeholders' in settlement and slum improvement through the use of good governance and management approaches, pilot projects and contributing, where needed, to the policy development, and the implementation of institutional, legislative, financial, and normative and implementation frameworks.

Mtwapa is located in Kenya's Kilifi County in the vicinity of Mombasa City. Its population was estimated to be about 50,000 people in the 2009 through the Kenya National census, and half of them live in the informal settlements and slums. The approximate locations of these disadvantaged areas are marked in red in the map below.

Figure -1 Map of Mtwapa Slum Area

The overall objective is to improve the standard of life of people living in informal settlements in Mtwapa town by regularizing all informal settlements, improving infrastructure services, and encouraging housing improvements by the owners resulting in a Slum Free Mtwapa.

This major objective should be driven by extensive e-Participation of the population in Mtwapa. To avoid social exclusion comprehensive support is provided by an excellent social framework and a moderated approach.

Description and Objectives of the Workshop

The main objectives of the workshop are:

- Brief overview of the Mtwapa pilot site (facts and figures about Mtwapa)
- Background information about the Participatory Slum Upgrading Programme (PSUP) in Mtwapa
- Social and political setting as for instance
    - Project Management Structure
    - Country Team
    - Steering Committee
    - Social Aspects and Processes to avoid exclusiton (training, etc.)

- Definition of the methodology that is going to be used, as for instance
  - Evaluation Approach, questionnaires
  - Evaluation Tools
  - Key Performance Indicators
- Presentation of the piloting activities
- Summarization of the results

Relevance of the Workshop to the CeDEM

CeDEM (Conference for E-Democracy and Open Government) is an international conference which provides a platform for experts in the fields of e-participation, e-democracy and open government and is organized by the Centre for E-Governance at the Danube University.

The Mtwapa project is a slum upgrading project, which uses eparticipation to a great extent by its citizens to guide the slum upgrading in the affected area. Specific information, training and guidance to avoid exclusion from eparticipation are provided. Hence the discussion of the Mtwapa project is fully in line with the ideas and the agenda of CEDEM 2014 and of specific value for the audience of the conference.

Questions to be addressed during the Workshop

The major questions to be addressed in the workshop are the following:

- How is the Mtwapa pilot embedded in the FUPOL project and the Mtwapa PSUP project?
- What are the main objectives of the Mtwapa Participatory Slum Upgrading Programme?
- How is the the whole slum upgrading process supported by eparticipation?
- Can social exclusion be avoided in the eparticipation process?
- What are the main political priorities in the Mtwapa piloting actions?
- Which are the major features of the moderated approach?
- Which tools are available for the evaluation of the project?
- What are the key success factors?
- Which pilot dissemination channels are used?

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About the Organisers

Albert Padros

Albert Padrós is a Human Settlements Officer at the Local Government and Decentralization Unit of UN-Habitat. He holds a B.A. on Political Science and Administration from Universidad Autónoma de Barcelona and a Master's degree on European Affairs from l'Institut d'Etudes Politiques de Paris. He is a co-founder in 2004 of Cafebabel.com Barcelona as part of an innovative pan-European non-profit organisation that helped pioneer participatory journalism and positioned it at the forefront of the revolution of citizen participation in online media. Albert is specialised in urban governance and project management. He currently focuses his work on urban governance and ICT, youth and governance working together with a varied number of international partners.

Joshua Maviti

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CitizensForum – Methodology and Software Going Open Source

Hans Hagedorn, Hannes Rudzik

www.demos-deutschland.de

Abstract: *CitizensForum (German, "BürgerForum") describes both a software and a methodology for engaging with a large number of people on a specific matter of public interest. This method consists of a sequence of one-day face-to-face events and facilitated online work-spaces that extend over several weeks. The field-tested software and methodology guides will be made available under an open source licence. Our CeDEM Workshop is meant to be a hands-on both the methodology and the software. Participants will learn about the different ways to use the CitizensForum from the perspectives of public administration, NGO, or participation service provider. Furthermore, we hope to initiate the exchange of ideas to further improve the CitizensForum. Organisations and software developers are encouraged to refine the tools and to improve its funktionality and to widen its scope.*

Keywords: *(maximum 5 words) CitizensForum, Free and Open Source Software, Free and Open Source Methodology, E-Participation*

Acknowledgement: *The CitizensForum is maintained by the Bertelsmann Foundation and the Heinz Nixdorf Foundation.*

Topic

CitizensForum – "BürgerForum" in German – was initially introduced in 2008 by the Bertelsmann Foundation, the Heinz Nixdorf Foundation and the Ludwig-Erhard-Foundation. 350 participants discussed the German social market economy and elaborated on its future. This was followed by the CitizensForum 2009 about the European Union and its evolution. The third CitizensForum in 2011, initiated by the President of the Federal Republic of Germany, adopted both a local and a large-scale approach: In 25 local committees all around Germany, with 400 participants each, social topics such as participation, education and family were discussed. The results were consolidated into a national political agenda, consisting of six recommendations with broad public support.

The CitizensForum describes both a peice of software and a methodology for engaging with a large number of people on a specific matter of public interest. It is designed to produce feasible proposals with broad public support to forward to political decision makers. It follows a sequence of one-day face-to-face events and an online discussion that extends over several weeks. The initial event is based on the "World Café" method and acts both as a social get-together and a kick-off for the drafting process. It applies to a number of up to 400 participants who are chosen in advance

utilizing a distribution ratio that reflects the demographic and socio-economic structure of society as well as possible. After that, the drafts from the kick-off workshop are transfered to the online discussion. In order to maximise public involvement, registration on the platform is also possible for a wider audience. The discussion is structured and supported by a number of citizen editors, who are elected in the course of the initial event. After three weeks of online discussion and a step-by-step refinement, the proposals are voted upon. The top proposals will make it to the final selection, which we call the "BürgerProgramm" – engl. "Citizens' Agenda". This text is presented at the closing event to all the stakeholders, who discuss with participants about steps to integrate the agenda into the political discourse.

A CitizensForum can be deployed on different administrative or organisational levels, such as local, regional or national. However, during the development of the most recent software and methodology release, special attention was given to the local approach. NGOs or political parties might just as well have proper use cases for a CitizensForum.

The Bertelsmann Foundation worked together with several commercial (e-)participation service providers, academic and public institutions in Germany to develop the methodology. The original software framework "discource machine" was deployed in all three CitizensForum projects alongside with a large number of different e-participation projects in Germany and Europe. For the new release of the CitizensForum an open source strategy was adopted. The software is currently being refactored and updated to modern web technology standards on a "Drupal" basis. It is expected to be released under a free and open source licence in spring 2014.

The Bertelsmann Foundation, who is the initiator and publisher of the CitizensForum resources, decided to publish the training resources under an open licence.

The bottom line: With the new Drupal-based software release and the methodology guides, five years of continuous improvement will be available for public use. We want the CitizensForum to become an e-participation framework that is widely-used and continously improved.

Description and Objectives of the Workshop

- We are going to present the CitizensForum methodology and will elaborate on its evolution over the last years.
- The software system and copies of the manual will be available.
- We will discuss different (topical and methodical) use cases as well as demonstrate how "business models" for different "players" emerge, such as (e-)participation service providers and software developers .
- There will be room for Q&A.

Relevance of the Workshop to the CeDEM

- The insights from three large scale e-participation use cases and 5 years of development by the Bertelsmann Foundation and its partners are certainly valuable for e-participation practitioners and researchers.
- Seamless combination of online work-spaces and face-to-face workshops

- At the same time, the CitizensForum and its initiators will benefit from the input forthcoming from the community. The CeDEM is a great occasion for this.
- Together we can make the CitizensForum a major free and open source format for e-participation.

Questions to be addressed during the Workshop

- How can different "players" (e.g., public administration, NGOs etc.) adopt the CitizensForum for their own purposes? What kind of "business models" are emerging for (e-)participation service providers and software developers?
- Is the Software able to handle multiple languages? How does the manual translate into different languages?
- What about customizability of the software?
- E-participation after Snowden? Are people losing trust in online services? How should we as e-participation experts and enthusiasts react to the public debate? What measures are needed to temper our software products?

Format of the Workshop

- Practical Presentation with Q&A
- Group discussion

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About the Organisers

Hans Hagedorn

Hans Hagedorn is a director of DEMOS Gesellschaft für E-Partizipation mbH, an e-participation and e-government service provider based in Hamburg and Berlin. Hans has 15 years of experience in the field of e-participation. He accompanied the CitizensForum from the start and developed all three CitizensForum projects.

Hannes Rudzik

Hannes Rudzik works as an interaction designer and project manager at DEMOS Gesellschaft für E-Partizipation mbH. He has a background in information architecture and political science and has co-developed the latest release of the CitizensForum software and manual.

Maximizing the Public Value of Open Government: A Workshop on CTG's Strategic Planning Approach

Meghan E. Cook

Center for Technology in Government, University at Albany, State University of New York, 187 Wolf Road, Suite 301, Albany, NY 12205 USA, mcook@ctg.albany.edu

Abstract: *Governments and civil society organizations are working diligently to open government but the majority of analytical tools in use do not yeild the informatioon needed to assess and plan open government efforts. Many traditional methods have evolved enough to offer the insights needed for this new domain. Using the Center for Technology in Government's unique tool and approach, governments are learning how to identify and maximize the public value of their open government efforts in order to generate the most value for society. This thought-leadership workshop will link both research and practice and guide participants in an interactive approach in open government planning and assesment.*

Keywords: *public value, stakeholder, open government, strategic planning, decision making*

Topic

As governments continue to work towards opening government, many have matured in both their planning and assessment processes. They have a better understanding of what it takes to develop and implement open government efforts as well as identify and assess the impacts. Still, even the most mature and evolved organizations are challenged by these processes and have employed a range of analytical tools to assist in their efforts.

A leading analytical approach, developed by the Center for Technology in Government (CTG), at the University at Albany applies a public value lens to opening government initiatives for the purposes of investment decision making and strategic planning. Taking the principles of opening government (transparency, participation and collaboration), and the foundation of a public value framework, CTG developed the *Portfolio Public Value Assessment Tool* (PVAT) as a way for governments to plan for and assess open government efforts. In using CTG's public value approach, government organizations have used the information generated through this analytical process to develop a range of deliverables including open government plans and roadmaps, open data plans and portfolios, communication strategies, business cases, and change management plans.

Using this approach, many governments have realized both direct and indirect benefits of using a public value approach including the ability to generate information needed to refine the design and development of their current efforts, informing organizational capital planning decision making, fostering organizational buy-in and support for their open government efforts, and providing a platform for information sharing and collaboration.

Description and Objectives of the Workshop

CTG's public value approach assists governments in answering questions by looking closely at each open government initiative and identifying the stakeholders who will be served and the specific value they will realize. It also allows governments to assess individual initiatives against a set of public value impacts so that they can inform and meet their overall goals.

This workshop is designed to provide both conceptual and practical information specifically aimed at:

- familiarizing participants with the concept of public value
- addressing the importance of stakeholder identification
- presenting and discussing the general logic of a public value planning process (see below)
- providing opportunity for particpants to apply a public value approach to their own efforts through guided exercises
- offering insights in how the public value approach has been used in real government organizations
- discussing the intended and unintended benefits of a public value approach

CTG's public value logic is presented in *Figure 1*. The workshop is designed to take particpants through each step of this model, so that particpants can explore the public value of their open government effort.

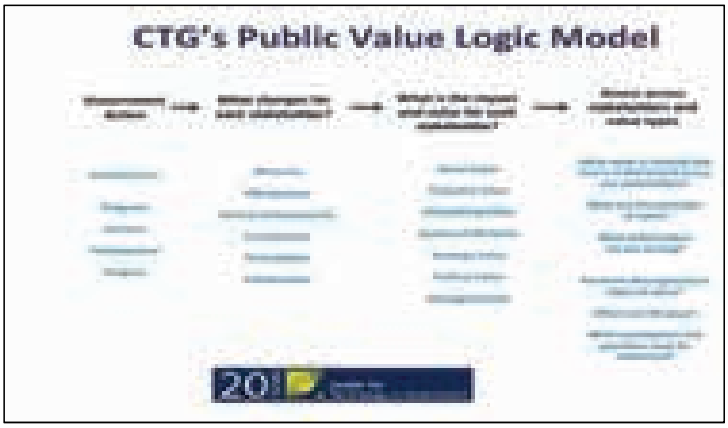

Figure 1: A Diagram of the Public Value Logic Model

Relevance of the Workshop to the CeDEM

The focus of CeDEM lies in the intersection of edemocracy, and open government and aims generate new knowledge while bridging the gap between research and practice. This workshop brings together the theoretical foundations of public value with current practical public management processes. It presents a successful model of guided open government planning and offers real cases for illustration. Geared for academic and practitioner participants, this workshop links conceptual public value thinking to practical planning processes for public managers. It sets

forth the research and practice ideals of the conference in an interactive and collaborative structure.

Questions to be addressed during the Workshop

Using both prepared cases and efforts identified by the participants, the workshop will work to lead participants through a process to address the following set of questions:

- What is public value? The concept of public value, the value proposition, and examining the ways public value is created.
- How does public value connect to Open Government? Goals of open government initiatives in relation to public value. The problem of comparing diverse initiatives.
- Why stakeholder centered analysis? The importance of stakeholders and methods of stakeholder analysis. How to deal with the competing interests and values.
- How does CTG's Public Value Approach work ? How does the PVAT play a role in the planning process.
- What are the individual and organizational capabilities needed to conduct a public value planning process?
- How do I use the results of this analysis in investment decision making and strategic planning?

What are some examples of a public value assessment and initiatives and a portfolio & demonstration and practice with the PVAT tool?

Format of the Workshop

The format of the workshop will consist of several methods for information sharing and engagement including slideshow presentations, moderated discussions, and large group and small group facilitation. The workshop introduces current open government and public value information as a primer for the overall planning process. Using CTG's Open Government Public Value Assessment Tool (PVAT) as a framework, particpants will work in small groups where they will identify stakeholders and interests, then assess the projected public value of their open government effort. Participants will works through the steps of the public value logic and consider the relationships between open goverment efforts and types of public value to a set of stakeholders in order to consider a portfolio of initiatives that both meet the government's mission priorities and generate value for society.

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About the Organiser

Meghan E. Cook

Meghan E. Cook, Program Director at the Center for Technology in Government at the University at Albany, is a leading expert in innovation in the public sector. With over 20 years' experience, Meghan leads multidisciplinary and multi sector initiatives focusing on the policy, management, and technology factors that influence and shape government transformation. She has experience and expertise in opening government, strategic IT planning, intergovernmental information management, public value planning and assessment, mobile government, and building smarter cities. She holds an MPA and MS from the University at Albany, State University of New York.

Making All Voices Count

Chris Underwood

Hivos Postnet Suite 515, Private Bag X113, Melville 2109, Johannesburg, South Africa

Abstract: *A workshop to bring potential participants together with a global initiative that supports innovation, scaling, and research to deepen existing innovations and help harness new technologies to enable citizen engagement and government responsiveness.This grand challenge focuses global attention on creative and cutting-edge solutions, including those using mobile and web technology, ensuring voices of all citizens are heard and that governments have the capacity, as well as incentive, to listen and respond.The initiative brings researchers, civil society, governments and others together to harness the potential of technology to address both sides of the governance debate: accountability and responsiveness. Many participants at CeDEM14 are likely to be potential participants, or have an interest in the programmes outcomes. Therefore the aim is to introduce the programme, to debate its theories of change and approaches in-country and within the global policy debates on governance internationally, and to facillitate follow-on partnernerships.*

Keywords: *Governance, democracy, Accountability, Citizen, Participation*

Acknowledgement: *Making All Voices Count is supported by the U.K Department for International Development (DFID), U.S. Agency for International Development (USAID), Swedish International Development Cooperation Agency, Open Society Foundations (OSF) and Omidyar Network (ON), and is implemented by a consortium consisting of Hivos (lead organisation), theInstitute of Development Studies (IDS) and Ushahidi.*

Topic

Democratic systems in the 21st century continue to be inhibited by 19th century timescales, with only occasional opportunities for citizens to express their views formally, such as during elections. In this century, many citizens have access to numerous tools that enable them to express their views – and measure government performance – in real time.

For example, online reporting platforms enable citizens to monitor the election process by reporting intimidation, vote buying, bias and misinformation; access to mobile technology allows citizens to update water suppliers on gaps in service delivery; crisis information can be crowdsourced via eyewitness reports of violence, as reported by email and sms.

The rise of mobile communication, the installation of broadband and the fast-growing availability of open data, offer tremendous opportunities for data journalism and new media channels. They can inspire governments to develop new ways to fight corruption and respond to citizens efficiently, effectively and fairly. In short, developments in technology and innovation mean that government and citizens can interact like never before.

Making All Voices Count is about seizing this moment to strengthen our commitments to promote transparency, fight corruption, empower citizens, and harness the power of new technologies to make government more effective and accountable.

The programme specifically aims to address the following barriers that weaken the link between governments and citizens:

- **Citizens lack incentives**: Citizens may not have the necessary incentives to express their feedback on government performance – due to a sense of powerlessness, distrust in the government, fear of retribution, or lack of reliable information
- **Governments lack incentives**: At the same time, governments need incentives to respond to citizen input whenever possible and to leverage citizen participation. The government's response to citizens should be reinforced by proactive, public communication. This initiative will help create incentives for government to respond. Where government responds effectively, citizens' confidence in government performance and approval ratings are likely to increase
- **Governments lack the ability to translate citizen feedback into action**: This could be due to anything from political constraints to a lack of skills and systems. Governments need better tools to effectively analyze and translate citizen input into information that will lead to solutions and shape resource allocation. Once captured, citizens' feedback (on their experiences with government performance) must be communicated so as to engage both the government and the broader public in finding a solution.
- **Citizens lack meaningful opportunities**: Citizens need greater access to better tools and know-how to easily engage with government in a way that results in government action and citizen empowerment

Description and Objectives of the Workshop

The workshop will be preceded by a paper outlining the theory of change behind the programme which will be made available to participants ahead of time. This will be the substantive topic of debate.

The workshop itself will be in two parts: an opening section to introduce the four components of the programme (innovation, scaling, research & global action) while the second period will be structured around the questions listed below. These are not intended to be prescriptive, however, as participants may wish to raise other questions prompted either by the paper or what they have heard in the opening part of the workshop.

The workshop will be facillitated by Chris Underwood, Director of Global Action, and involve at least two of the lead organisations co-ordinating the programme.

Relevance of the Workshop to the CeDEM

CeDEM started in 2011, which corresponds with the growing sense that open government and governance more generally was an essential – yet missing – element of the global development framework. The World Development Report of the same year, for example, made that case very powerfully when it linked "jobs" inextricably with "justice", and demonstrated the inherent flaw with a development approach which largely ignored questions of politics, power and participation in favour of technical targets best represented by the MDGs.

In parallel with this growing body of evidence of what doesn't work, came a groundswell of citizen led voices calling for greater openness and participation in governance, best expressed in the UN Task Team Thematic Consultations of 2012 which fed into the post 2015 debate at the UN General Assembly in 2013. In addition consultations led by the High Level Panel established by the UN Secretary General found open governance to be among the highest priorities among civil society while the ongoing MyWorld Survey continues to rank governance among the top three issues among participants.

We know, therefore, that not responding either to the evidence or to popular demand is likely to continue to stymie global development. What we do not know, because it hasn't been tried yet on a large enough scale, is how to make it work effectively. Making All Voices Count is the first global attempt to address that question through action, research and policy engagement. As such we feel that the programme, and the dialogue we hope to stimulate with participants, is of direct relevance to CeDEM.

Questions to be addressed during the Workshop

We know that open government is essential to economic and social progress. But to address it can raise sensitivities on the ground. How do we harness the potential of technology and citizen led innovation in a way that minimises risk and maximises government responsiveness?

Theory of change:

- How do we know that innovation on this scale could work?
- What is known about scaling as a transformative strategy and how does it apply in this field?
- How to foster the contexts and conditions conducive to tech-based innovation related to governance?
- Do no harm: how do we maximise the potential good while minimising potential harm?
- Which social differences or exclusions are narrowed by technologies, which are exacerbated and which are unaffected?

Format of the Workshop

- Opening remarks and introductions
- Presentation of Making All Voices Count (2 speakers)
- Questions and Answers on presentation
- Substantive debate
    - Policy relevance
    - Theory of change (based on paper)
    - Research questions raised
    - Suggestions from participants on both
- Close

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High Level Panel report, 2013 http://www.post2015hlp.org/

MyWorld Survey, ongoing, http://www.myworld2015.org

About the Organisers

Chris Underwood

Chris Underwood is Director of Global Action for Making All Voices Count. In this capacity he holds responsibility for Policy, Learning and Communications. Prior to joining the programme he was Senior Policy Advisor for the international peacebuilding NGO International Alert, leading their work on shaping the post 2015 global development agenda to replace the Millennium Development Goals. He co-ordinated the global civil society coalition Beyond2015's policy position on conflict, fragility and disaster resilience during the UN Task Team Consultations in 2012. A central element of that work was the relationship between States and their Citizens, political institutions and questions of governance. In this vein he also led Alert's work on the New Deal for Engagement with Fragile States agreed between donors and the G7+ group of countries, and recently completed academic research on the political dynamics of post conflict states to be published in 2014. He recently completed an MSc in Global Governance and Public Policy from the University of London.

Marjan Besuijen

Marjan Besuijen is Director of Making All Voices Count, end responsible for the overall programme. For the last 10 years, she is has been working for the international NGO Hivos in different capacities. Prior to becoming the Director of Making All Voices Count, she was the Senior Advisor ICT & Media, she also founded and directed the Tanzania Media Fund. For the last 10 years she has been working the field of technology for social change with a strong focus on transparency & accountability.

IV. PhD Colloquium

Designing for Citizen Engagement to Frame Complex Problems in Cities

Veronica Bluguermann

DESMA – Copenhagen, veronica@desmanetwork.eu

Abstract: *Today, about half of the world's population lives in cities, driving local governments to face problems of increasing complexity, such as ageing population, global warming, poverty and education. When tackling these urban and social challenges, a special attention has to be given at identifying and defining the problems.This article reports about the ongoing research on the use of a design approach for framing complex challenges in cities, followed by a framework which will guide the future design experiments for exploring, generating and evaluating concepts.*

Keywords: *Wicked Problems, Problem Framing, Citizen Engagement, Design Methods*

Acknowledgement: *The author would like to thank Anna Rylander for her valuable comments, and Jakob Rasmussen and Sascha Haselmayer for their support and inspiration.*

Background and Theoretical Positioning

The focus of this research is based on exploring means for identification and definition of social and urban problems in cities. The nature of these problems has changed in the last decades. During the industrial age, planning was dominated by the pervasive idea of efficiency; a process of designing problem-solutions that might be installed and operated cheaply. It was fairly easy to get a consensus on the nature of problems, so we were reliant upon a efficiency expert to diagnose a problem and then solve it (Webber & Rittel, 1973). However, today municipal governments are facing challenges of increasing complexity, such as globalization, an ageing population, or climate change. These so-called "Wicked problems", are a "class of social system problems which are ill-formulated. In these problems the information is often confusing and there are many clients and decision makers with conflicting values. Additionally, the ramifications in the whole system are thoroughly confusing."(Rittel, 1967)

In the process of tackling wicked problems, one of the most intractable problems is that of defining problems (of knowing what distinguishes an observed condition from a desired condition) and of locating problems (finding where in the complex causal networks the trouble really lies) (Webber & Rittel, 1973). Dorst (2006) pointed this out as an amusing description of what confronts designers in every new situation in the process of "approaching a design problem" or "dealing with a problematic situation". There is a uniqueness of the design approach for problem-solving. Hatchuel (2002) identifies three main characteristics of this approach: 1) design situation includes the (unexpected) expansion of the initial concepts in which the situation is

initially framed 2) the design situation requires the design and use of "learning devices" in order to get to a solution. This can include experiments and simulation techniques. Finally, 3) in designing, the understanding and designing of the social interactions is part of the design process itself. As Louis Bucciarelli (REF), states: "Design is fundamentally a social process" reflecting the strong approach in design towards involving users or stakeholders in the design process.

This research has a Participatory Design (PD) approach for engaging several actors. PD is a practice that involves different non-designers in various co-design activities throughout the design process (Sanders, Brandt, & Binder, 2010). By non-designers we refer to potential users, other external stakeholders and/or people on the development team who are from disciplines other than design such as those in marketing, engineering, and sales. However, PD lacks methods for large scale projects, as required in the Public sector. In order to address this challenge, online platforms are seen as potential tools to reach out to the critical mass and engage them in new ways of creation.

This new model of collaborative creation has appeared under many names, including peer production, user-powered systems, user-generated content, collaborative systems, community systems, social systems, social search, social media, collective intelligence, wikinomics, crowd wisdom, smart mobs, crowdsourcing, and human computation (Doan, Ramakrishnan, & Halevy, 2010). Collaborative creation is a form of collective action that occurs when large numbers of people work independently on a single project and is often modular in its nature. Such projects typically take place on the Internet using social software and computer-supported collaboration tools such as wiki technologies. Thus, this research aims at addressing the following research question: How can Design Methods facilitate collaboration in identifying and framing city challenges with online platforms?

Research Setting, Method and Next Steps

This research is hosted at Citymart[1], a social enterprise which provides an innovative approach to accelerate the process of solving urban and social challenges. Since 2009, they run a program to connect solution providers with decision-makers in cities around the world. According to the company, the benefit of this open process is that cities are able to acquire business intelligence which reduces the cost of research and development needed to develop a solution from scratch. This open process also often helps to prevent cities from re-inventing a solution that may have been implemented somewhere else.

Collaborating with Citymart gives me the opportunity to conduct this project based on action research, which is understood as research embedded within the process of design. Swann (2002) describes it as a practical research methodology that requires three conditions to be met. Firstly, its subject matter normally is situated in a social practice that needs to be changed; second, it is a participatory activity where the researchers work in equitable collaboration; and third, the project proceeds through a spiral of cycles of planning, acting, observing, and reflecting in a systematic and documented study.

The first cycle of the action research process was meant to explore the research context with an ethnographic approach in order to reflect and frame the research problem. Below is a summary of

[1] www.citymart.com

the key activities conducted in this period followed by a framework for identifying and framing challenges which will guide the future design experiments.

1 - Empathizing

I started with an ethnographic approach to gain understanding on Citymart services and processes for creating and delivering the services. I spent five months working with the development team in charge of creating the online platforms and three months working along with the sales representative team in charge of engaging cities in the Citymart program. In addition, I conducted individual interviews with Citymart team members to unveil their experiences in offering services and and to gain insights of their opinions of the program.

2- Exploring research topic areas with Design Methods

I facilitated two sessions with the researcher team to explore collaboration in their research process using a diverse range of online platforms. In addition, one of the sessions was aimed at exploring a user-centered perspective on their process. This experience led me to reflect on the possibly of collaboration for identifying and defining the cities' problems, one of the fundamental steps in the Citymart process. For further understanding, I conducted a design experiment based on online collaboration for mind-mapping the problem of "finding a job in Copenhagen".

3- Framework

The first loop of the action research process concludes with a challenge framework (see Figure 1). This is a model that will be used to guide the future design experiments. The top row of the framework describes the steps of problem framing. The left column shows a description of different participation models based on grouping network of stakeholders. The Closed group is formed only by city officials; the Limited group refers to teams of experts (juries, organizations and Citymart employees); and finally the Open group involves citizens.

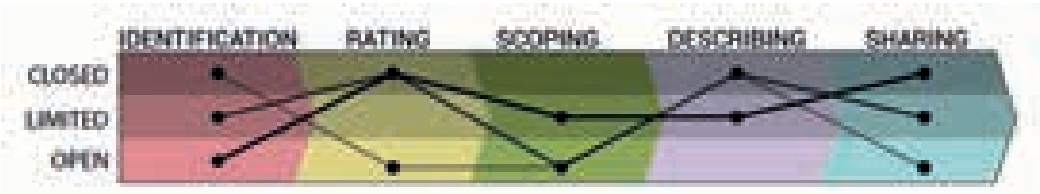

Figure 1: Framework for challenge framing

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About the Author

Veronica Bluguermann

Veronica Bluguermann is an Early Stage Researcher from DESMA, an Initial Training Network in the area of Design Management funded by the European Commission's Marie Curie Actions (FP7). She received an MA in Industrial and Strategic Design from Aalto University in 2012 for a thesis entitled: 'Service Design in the Age of Collaboration'. Her research focuses on cities challenges, citizen engagement, digital platforms, and design methods.

The Conference for E-Democracy and Open Government (CeDEM) brings together experts from academia, public authorities, developers and practitioners.

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