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Technologies for Development

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Technologies for Development

From Innovation to Social Impact

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Foreword

The contribution of innovation and technology to sustainable development was at the heart of the 2016 edition of the Conference on Technologies for Development (Tech4Dev), organized by the UNESCO Chair in Technologies for Development at the Ecole Polytechnique Fédérale de Lausanne (EPFL). Beyond the importance of technological innovation for sustainable development, this Conference raised a question that appears crucial to UNESCO in order to respond adequately to today's complex economic, societal, environmental, and cultural challenges: how do we get from innovation to social impact?

In order to maximize the overall positive benefits of science, we need to *incorporate a vision of innovation in Science, Technology and Innovation (STI) policies including other important components, such as the promotion of South–South and North–South–South cooperation, investments at country level into accessible and quality education systems, gender equality, the reinforcement of science–policy–society interfaces and the inclusion of national, regional, and grassroots innovation capacities, as well as of local and indigenous knowledge.* Today, more than ever, we need more science, *better, interconnected, crosscutting science, relevant to people.*

The adoption of the United Nations' 2030 Agenda in September 2015, with its set of 17 Sustainable Development Goals (SDGs), marked a significant step forward in the recognition of the contribution of STI to sustainable development and its three pillars: economic, social, and environmental. The 2030 Agenda also offers immense opportunities to reconnect science to society and to build a new basis for research and development as a key precondition for both science and society to flourish.

As the only UN agency with science in its mandate, UNESCO has a leading role in using and promoting STI as effective tools to contribute to sustainable development. Since its foundation 72 years ago, the Organization has been strongly committed to reinforcing the links between science, policy, and society, and to promoting STI policies that benefit society as a whole. With its network of international scientific programmes, centers of excellence, institutes, and Chairs

worldwide, UNESCO has an important role to play in the common effort to achieve the SDGs.

This publication allows a larger audience to benefit from the high-level researches presented during the 2016 edition of the Conference, in key areas for sustainable development such as energy, disasters risk reduction, medical technologies, urban development, ICT, and humanitarian action.

EPFL is hosting the UNESCO Chair in Technologies for Development since 2007. UNESCO is grateful for its remarkable work in collaboration with partners from emerging and developing countries, which contributes to poverty reduction and sustainable development.

Geneva, Switzerland
2017

Flavia Schlegel United Nation, Education, Scientific and Cultural Organization—UNESCO

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The editors would like to thank the many individuals and organizations who generously contributed their time, insight, and support. We would like to begin with the members of the Scientific Committee and our Session Leaders, who guided the conference preparation.

We would also like to express our thanks to Prof. Philippe Gillet, Vice-President of Academic Affairs at the Ecole Polytechnique Fédérale de Lausanne (EPFL), for his presence at the Conference and unfailing support of the Cooperation & Development Center (CODEV).

Through openly sharing their great expertise and diverse perspectives, the speakers at the UNESCO Conference substantially contributed to its success. Our heartfelt thanks go to Dr. Flavia Schlegel (UNESCO), Dr. María Fernanda Espinosa (United Nations Office), Ms. Barbara Bulc (Global Development), Mr. Yves Daccord (ICRC) and Dr. Ashok Gadgil (University of California, Berkely) for their highly appreciated involvement and support.

This project likewise could not have succeeded without the quality and diversity of the various authors' and researchers' contributions. In response to the call for papers, the Scientific Committee evaluated over 156 papers and ultimately selected 125 to be presented at the Conference. Of these, 17 finalists were chosen based on the following criteria: (1) innovative concept and research questions; (2) potential social impact of the application; (3) contribution to the discipline as whole; and (4) clarity and understandability. We express our appreciation to all of these authors, without who this publication would not have been possible.

In addition, we would like to very warmly thank Mr. Emmanuel Estoppey and his team from the Lavaux UNESCO World Heritage Site, who went out of their way to welcome us for the social event in the charming village of Grandvaux.

Our sincere thanks also go to the Ingénieurs du Monde (IDM) team and our colleagues at CODEV, who contributed extensively to the organization of this conference.

Finally, we are very grateful for the generous patronage of the Swiss Agency for Development and Cooperation (SDC), the Canton de Vaud, the City of Lausanne, the Swiss National Science Foundation (SNSF), the ICRC, and the conference sponsors. Their support and their partnership are critical for bringing us to reflect on how technological innovation can lead to stronger social impact and lead the way toward more suitable development at global level.

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Chapter 11
MiraMap: A Collective Awareness Platform to Support Open Policy-Making and the Integration of the Citizens' Perspective in Urban Planning and Governance

Francesca De Filippi, Cristina Coscia and Roberta Guido

11.1 Introduction

When exploring innovative approaches for a more inclusive and sustainable urban planning and governance using the ICTs, the set up of the methodological framework is particularly relevant in order to address the complexity and dynamics of urban development, and to deal with the interaction of multidisciplinary concepts and contributions, as it will be demonstrated through the case study in Torino (Italy).

MiraMap is an ongoing project led by the Politecnico di Torino (Italy), deeply rooted in a pilot experience named Crowdmapping Mirafiori Sud (CMMS): the aim is to set up a governing tool which integrates citizens' perspective—through their effective engagement—in the design and production of public services and the use of a collaborative platform, which benefits from a social networking and a web-based mapping system.

Thus, the project takes into account both the application of participative methods and techniques, which support the community to identify problems and resources, and the integration of data and development of ICT-governing tools for public stakeholders. Participative planning is then intended as a way to think over the public action, either in the relationship with citizens or in the public space management. Moreover, the integration of eGovernment and social network paradigms is experimented here to enlarge the target of users and, in doing so, fostering citizen engagement and empowerment.

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11.2 International Policies and Action Plans on Civic Engagement and Social Innovation in Urban Development

The rising people's demand to have access and to be involved in decisions dealing with their own urban context led European Union (EU) institutions to consider the role of participation for its policies. Although urban planning is not a specific European policy, competence, actually economic, social and territorial cohesion all have a strong urban dimension: as the vast majority of Europeans live in or depend on cities, their developments cannot be isolated from a wider European policy framework (European Commission, DG Regional Policy 2011b).

The URBACT III Operational Programme 2014–2020 includes among its specific objectives to ensure a participatory approach through the involvement of the relevant stakeholders in the action-planning process (URBACT Study 2015; URBACT II 2015) .

Also at international level, the United Nations Agenda (Transforming our world: the 2030 Agenda for Sustainable Development) includes participation among post-millennial Goals. Indeed, one of them (16) aims to 'Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels'—together with its commitment (16.7) to 'responsive, inclusive, participatory and representative decision-making at all levels'.

Furthermore, it cannot be avoided to consider the arising of platforms, software and applications, often seen as solutions to societal needs: they enable exchange, communication and the creation of a community of citizens and other stakeholders on shared interests and concerns. They are seen as tools to empower citizens, including marginalized groups, improve public services and at the same time ensure equal access to information and promote democracy (European Commission 2015).

For this reason, EU bodies began recognizing the role of ICT to foster new forms of civic engagement in urban planning, as a social innovation and to support social innovations.

Within the *Europe* 2020 *Strategy*, the *Digital Agenda* recognizes the key role of public administrations in creating the condition to foster social innovation, becoming more and more 'open, flexible and collaborative in their relations with citizens' and promoting the 'eGovernment to increase their efficiency and effectiveness and to constantly improve public services in a way that caters for user's different needs'. At a time of highly constrained public resources, ICT is seen as a tool to help the public sector develop innovative ways of delivering its services to citizens while unleashing efficiencies and driving down costs.

Within the *2020 Digital Agenda*, it has been launched the European eGovernment Action Plan 2011–2015—harnessing ICT to promote smart, sustainable and innovative Government [COM(2010) 743 final]. Based on the Malmö Ministerial Declaration of 2009, it sets out the objectives for public administrations to invite third parties to collaborate on the development of eGovernment services, strengthen

the transparency of administrative processes and involve stakeholders in public policy processes.

In particular, its priority *User empowerment* stresses the importance of increasing the capacity of citizens and organizations, promoting the development of services designed around users' needs, and inclusive services, the collaborative production of services, the re-use public sector information, improving transparency and fostering the involvement of citizens and businesses in policy-making processes.

The Action Plan underlines that 'social networking and collaborative tools enable users to play an active role in the design and production of public services' (eGovernment Action Plan 2011–2015, 2.1.2). However, it invites to explore which are the most suitable tools and how best to apply these to effectively engage civil society and individual citizens.

Also, the *European Innovation Partnership on Smart Cities and Communities* (establishing strategic partnerships at the local level and across borders in Europe) recommends new tools of engagement. One of the main actions proposed is to *'implement collaborative, integrated smart city planning and operation, that maximise city-wide data to deliver more agile processes; employing modern multi-criteria simulation and visualisation tools' (EIP Smart Cities and Communities,* Strategic Implementation Plan 2013).

The focus of innovation's needs for Europe was defined in the European research programme Horizon 2020, that also addresses funding to projects that promote platforms to set up more participatory democratic processes and to support grassroots processes and practices to share knowledge. Collective Awareness Platforms are expected to have very concrete impacts to foster open democracy, open policy-making (better decision-making based on open data) or in new collaborative approaches to inclusion (*Horizon 2020 Work Programme 2016–2017, 5.i. Information and Communication Technologies*).

In the report *Cities of Tomorrow—Challenges, visions, ways forward* (European Commission, DG Regional Policy 2011b), the European Commission made the following recommendations for actions: empowering cities to define their own policies related to their context; ensuring transversality of policies and impact of one area on the other; supporting cities but leaving them room for *manoeuvre* in connecting with citizens; letting cities decide on their own priorities.

The Bureau of European Policy Advisors gave a definition of social innovation: 'Innovations that are social in both their ends and in their means. Specifically, we define social innovation as new ideas (products, services and models) that simultaneously meets social needs and creates new social relationships or collaborations. In other words, they are innovations that are not only good for society but also enhance society's capacity to act' (BEPA 2011a, p. 33).

Social innovation is, therefore, considered at the heart of reshaping society: it can be used and developed, both as a means and as an end to city governance. However, the bridge between these diffused initiatives and the ability to catalyze them into inclusive governance is often missing, so, it is solicited a more integrated connection (De Filippi et al. 2017).

11.2.1 Citizens Participation Through the ICTs: The Global Scenario

An increasing demand from citizens to participate and collaborate to the future urban scenarios, especially at local and regional scale, have also challenged democracies all over the world (Held 2006). Public administration of representative democracies have, thus, progressively adopted policy frameworks to become more responsive by taking more participatory elements over and by opening up to the public in many fields. As a result, it has involved a virtuous mechanism by which political framework of public administration drives social innovation by promoting bottom-up approaches to policy-making for better governance and sustainable development (Horita et al. 2015; Davies et al. 2012).

The development of ICTs (especially, user-driven applications) has widely been recognized as a way of encouraging communications between people by transforming the way they interact and they use the Internet (Ratti 2013).

Web-based services are excellent opportunities to improve three broad qualities of good governance like enhance transparency, people participation and public services in a way more cost-effective and accountable for citizens (Innes and Booker 2004).

ICT tools for eGovernment can enhance public engagement and permit a wider percentage of the population to contribute to the public management. ICTs thereby are seen as tools to better enable participation, democracy and more inclusive societies, evolving from traditional top-down hierarchical models towards networked models, to facilitate interactions between urban stakeholders and actors (Silva 2010).

However, a number of critical issues and challenges still need to be tackled. Many of them can be related back to the lack of skills and to the shortcomings of both the ICT-enabled tools; moreover, the digital illiteracy and the digital divide. These effects endure both in the Global North and in the Global South between elders and generations 'born digital' as between urban centres and peripheries or rural areas; the question requires to be put forward concerning the Global South, in which too often applications of urban planning, eGovernment, ICTs only partially address the real challenges facing sustainability (Priti 2006). It is because models are built in and for the North and then transferred to the South, without having been replanned to the specific objectives, but simply adapted (Bolay 2015).

Nevertheless, ICT performance will remain crucial not only in the Global North countries for sustaining long-term development and enhancing governance models, but also in the emerging and developing countries in fostering structural transformations, increasing efficiency as well as reducing the digital, economic, and social divides within their territories (World Commission on Environment and Development 1987; World Conservation Union 2006; WSIS, World Summit on the Information Society 2003).

11.3 Related Work on the Field

The MiraMap project in Torino has a common goal with other systems, offering an online platform which allows citizens to interact with the public administration and to send information (De Filippi et al. 2017b). They all have a transparent interface and are easy to use, and allow to see the warning list and to check the status.

Differently than other projects based on maps such as the successful open-source solution FixMyStreet in UK, a platform where people can send information and discuss local problems about infrastructural issues, or the commercial products ePart and ImproveMyCity, MiraMap focuses also on the proactive part where citizens can report proposals and positive aspects of their neighbourhood. Differently than other proposals such as IRIS Beta in Italy, which have a 'social network' character, it is based on an interactive map, which multiplies the visibility of citizens actions. Other community-aimed solutions such as Streetlife and EveryBlock do not connect citizens with the administration.

Regarding web platforms and applications developed for residents of a neighbourhood or specific locality, we can differentiate three generations of technologies on the basis of their interactivity (De Filippi et al. 2016).

First, we can consider the numerous community portals which list local businesses and services, and are produced often by local residents, such as through user-generated content, ranging from news to event listings (e.g. www.lovecamden.org, http://www.sansalvario.org/, etc.). Even if the content is shown in web pages without the use of maps, the geographical nature of the information shared change, becoming based on specific areas of the cities, such as neighbourhoods. Thus, the general objective is to provide online information to those who are interested in getting to know what happens in a given part of the city.

Second, a recent approach has gone a step beyond information provision by enabling people to have a direct link to others who live around them. Sometimes people are also supported to engage with local businesses, associations and/or governing bodies. Examples of such approaches include the EU-funded MyNeighbourhood platform (www.my-n.eu/da) and the Polly & Bob platform in Germany (blog.pollyandbob.com/). Discussions are enabled by blogs, discussion forums, event calendars, etc. In this case, simple GeoWeb applications enable citizens to map POI and events. The general thrust is to encourage people to get involved within their own neighbourhoods and engage their family and friends to do the same. Data and functionality of existing City Information Apps (e.g., MyCityWay, Foursquare) are combined with tools that connect people locally. My Neigbourhood also experiments with basic gamification techniques to stimulate community building.

Whether in the first case the approach was mainly based on information, here the focus is on facilitating communication between people.

Third, the applications of open-source software in post-emergency situations, such as Ushahidi, that has been adopted—as will be demonstrated—in the pilot Crowdmapping Mirafiori Sud/CMMS in Torino. Ushahidi, developed in Kenya to map in 2008 the violence in the post-electoral period, is an open-source platform,

which allows an easy crowdsourcing of data and the total transparency of their diffusion (Hagen 2011). Ushahidi is nowadays used as a prototype and an example of something that could be done by matching information generated from citizens' reports, media and NGOs into a geographical map.

Finally, map-based services have been used to push the attention at problems or things that have to be changed in the cities. This generation of services has only indirectly involved Local Authorities, since interaction with the platform on the Institution's side is not allowed. It is worth mentioning Infalia—Improve My City and FixMyStreet where problems are reported on a map in order to be addressed by the local Council, but not directly managed. Another example is Changify platform (www.changify.org), which particularly focuses on people who wish to share things they love or would like to see changed in their neighbourhood.

Current online neighbourhood portals are, therefore, primarily directed towards strengthening community life with help of online technologies, thereby engaging citizens to communicate and discuss any issue of interest.

Considering MiraMap functionalities, it can be included within this third generation of technologies as well as FixMyStreet and Improve My City, but differently from them, it focuses also on the propositive part of citizens, who can report proposals and positive aspects of their neighbourhood. It aims at further increasing engagement and at promoting co-production of services by means of the social networking functionalities (Kingston 2007).

11.4 From a Pilot to a Governing Tool: A Case Study in Torino (Italy)

As mentioned in the Introduction, the case study in Torino has been developed in two phases: first, the application of participation techniques on a simplified prototype (Crowdmapping Mirafiori Sud/CMMS) and, second, the development of a more sophisticated IT solution (MiraMap).

The first phase carried out in 2013 in a bound and determined area of the Mirafiori Sud district, has been addressed to investigate if the use of the ICTs could be a means to foster social inclusion.

The second phase, in 2015, implemented in the same reference context but in a wider geographical area, develops a more structured approach both in terms of IT system and governance model. The participatory approach developed during the first phase has been essential to validate and to foster technological benefits.

Fig. 11.1 Public meetings with the engaged stakeholders

11.4.1 The Methodology

Phase 1

The overall goal of the CMMS pilot experience has been to establish strong connections within the territory and institutional relations with the local actors. The crowdmapping process implemented in this phase has been useful not only to sensitize the population and to define the state of the art, but mostly to analyse and share the results together with all the stakeholders engaged (the community, the public administration and the researchers) in order to hypothesize active and participative solutions (Fig. 11.1).

The project involved the academic (including students) and the local community in a participative and inclusive process to identify and report on a web-based map the obstacles/barriers—either them being physical, spatial or cultural—which prevent vulnerable categories to access and use the public space in the neighbourhood. In order to allow an easy crowdsourcing of data and the total transparency of their diffusion, the open-source platform 'Ushahidi' has been adopted and customized. The technological tool provided a free database to gather collective information and show them on a web-based crowdmap (Fig. 11.2).

One of the key elements offered by Crowdmap-Ushahidi is the use of mobile phones as a way to report and receive updates, not needing an Internet connection,

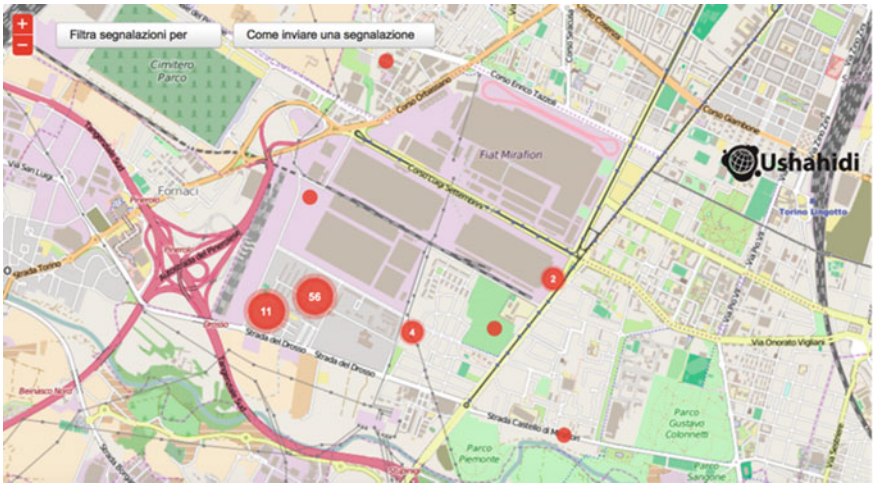

Fig. 11.2 Crowdmapping reports on the web-based map provided by Ushahidi

which might not always be available. That was an essential element for the implementation of the project in order to achieve social inclusiveness by providing the possibility to report from any kind of mobile device. Outcomes of data collection were published to make them accessible to the local authorities. In the meanwhile, an analysis of data was needed, in order to understand the weak points and to further discuss with people, and so a plan of activities, such as traditional meetings to transect walks, was set up (De Filippi et al. 2017a). This process was important to enhance public participation, involving people from the first to the last step (Fig. 11.3).

Phase 2

The results achieved have been essential to move to the next phase. The MiraMap platform has been set up in order to answer requests from citizens and stakeholders. Their positive feedback has been considered as an essential prerequisite to design a proper governing tool facilitating their effective engagement.

The process expects to involve both citizens and the local administration in a report process of critical issues as well as positive trends and resources within the Mirafiori Sud district area, throughout the use of a digital platform made up of a geo-referenced map combined with a BPM—Business Process Management system (De Filippi et al. 2016).

The interactive map is used by citizens to report problems and proposals in the neighbourhood, making them visible to everyone. The BPM is used by the administrative staff to manage the reports and give feedbacks. The map automatically shows the progress of the administrative process as the workflow proceeds in the BPM, and it provides citizens and policymakers with a comprehensive view of problems and opportunities of the neighbourhood (Fig. 11.4).

The regular stakeholder engagement at different stages of the ICTs toolset and development process helped in specifying and validating necessary and common

Fig. 11.3 Data collection with the community (transect walks)

requirements specification. In particular, in order to ensure the tool compliance and integration into the current administrative process, the managing executives and the public officers have been involved in each step in co-creating and testing the technological platform.

At the same time, a monitoring and evaluation process, based on the Community Impact Analysis (CIA) method (Lichfield 1996; Coscia and De Filippi 2016) has been defined and set up.

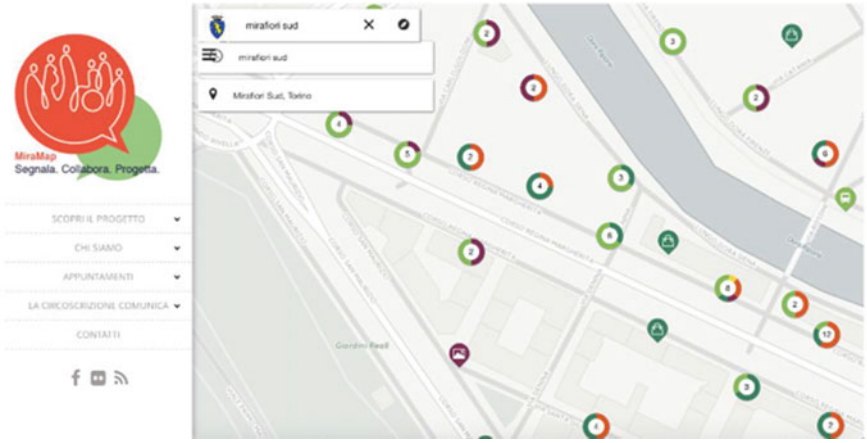

Fig. 11.4 The MiraMap website

11.5 Achievements and Further Research Steps

In the perspective of enhancing strategies, approaches and tools for driving innovation in urban planning, management and governance at different scales and generating social impact through the use of the ICTs, the specific case study aims to give a contribution in terms of lessons learned. In particular, some key issues should be tackled and achieved in the planning process:

1. the design of a collaborative platform and a methodology able to foster social inclusion and innovation, starting from an accurate analysis of residents' needs;
2. the integration of the technology (online) with the participatory process (offline), to enhance social impacts strategies and promote community empowerment;
3. the compliance and integration of the tool into the administrative process (workflow), promoting the openness, the transparency and the accountability of the local government;
4. the capacity building process, involving both public officers, administrators and the community;
5. the setup of a monitoring and evaluation process;
6. the development of a strategic and action plan to support the replication and scale-up of the piloted action.

The tool makes possible for the community to be involved in co-designing and co-producing services (De Filippi et al. 2017b). From the Local Government side, having enabled it to access and produce data, it builds and strengthens its accountability. The workflow management needs to suit as best as possible to features of the administrative process in use and, above all, to become an opportunity to make it more efficient thanks to the methodology adopted to get feedback from administrative staff, that is made by an iteration of testing phases after fast IT developments.

In 2016, Torino was awarded consistent funding by the Italian government in order to implement innovative regeneration projects in 'peripheral' areas. The inclusion of the MiraMap project among the actions of the city opens up further opportunities for work on the platform.

The next step (third phase) regards the replicability of the method and the model in other administrative areas and scalability to the metropolitan scale, with a substantial commitment to expanding interoperability with other administrative tools and in communicating data to citizens. Further analysis will be dedicated to assessing the social impact and the effectiveness of the process.

Collaborative platforms, starting with their experimentation in marginalized areas, can provide a good field for reflection on how the involvement of citizens can be stimulated through innovative public policies which aim to assess the value of common assets and to structure their shared management.

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References

Books

European Commission. (2011a). *Empowering people, driving change: Social innovation in the European Union.* Bureau of European Policy Advisors (BEPA).
European Commission. (2011b). *Cities of tomorrow—Challenges, visions, ways forward*. DG Regional Policy.
European Commission. (2015). *Horizon 2020 work programme 2016–2017, 5.i. Information and Communication Technologies*.
Held, D. (2006). *Models of democracy*. Stanford, Redwood City, CA: Stanford University Press.
Horita, M., et al. (Eds.). (2015). *ICT tools in urban regeneration*. New York: Springer.
Lichfield, N. (1996). *Community impact evaluation*. London: UCL Press.
Ratti, C. (2013). *Smart city, smart citizen. Meet the media guru*. Milano: EGEA.
Silva, C. (2010). *Handbook of research on E-planning: ICTs for urban development and monitoring*. Pennsylvania: IGI Global Snippet.

URBACT Study. (2015). *New concepts and tools for sustainable urban development 2014–2020, synthesis report*.
United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development.*

Journal Articles

Bolay, J. C. (2015). Urban planning in Africa: Which alternative for poor cities? The case of Koudougou in Burkina Faso. *Current Urban Studies, 3,* 413–431.
Coscia, C., & De Filippi, F. (2016). The use of collaborative digital platforms in the perspective of shared administration. The MiraMap project in Turin (EN version). *Territorio Italia, 1,* 61–104.
Davies, R. S., Selin, C., Gano, G., & Pereira, G. Â. (2012). Citizen engagement and urban change: Three case studies of material deliberation. *Cities Elsevier Journal, 29*(6), 351–357.
De Filippi, F., Coscia, C., Boella, G., Antonini, A., Calafiore, A., Guido, R., et al. (2016). MiraMap: A we-government tool for smart peripheries in smart cities. *IEEE Access, 4,* 3824–3843.
De Filippi, F., Coscia, C., & Cocina, G. (2017a). Piattaforme collaborative per progetti di innovazione sociale. Il caso Miramap a Torino, *Techne* n. 14 (2017). Firenze University Press.
De Filippi, F., Coscia, C., & Guido, R. (2017b). How technologies can enhance open policy making and citizen-responsive urban planning: MiraMap—A governing tool for the Mirafiori Sud District in Turin. *International Journal of E-Planning and Research (IJEPR), 6*, https://doi.org/10.4018/ijepr.
Innes, J. E., & Booher, D. E. (2004). Reframing public participation: Strategies for the 21st century. *Planning Theory and Practice, 5*(4), 419–436.
Kingston, R. (2007). Public participation in local policy decision-making: The role of web-based mapping. *The Cartographic Journal, ICA Special Issue, 44*(2), 138–144.
Priti, J. (2006). Empowering Africa's development using ICT in a knowledge management approach. *The Electronic Library, Emerald Group Publishing Limited, 24*(1), 51–67.

Online Publications

Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions of 15 December 2010—The European eGovernment Action Plan 2011–2015—Harnessing ICT to promote smart, sustainable and innovative Government [COM(2010) 743 final]. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52010DC0743. Accessed November 14, 2017.
EUROPE 2020 A strategy for smart, sustainable and inclusive growth [COM(2010)2020 final]. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52010DC2020. Accessed November 14, 2017.
European Innovation Partnership on Smart Cities and Communities—Strategic Implementation Plan. (2013). http://ec.europa.eu/eip/smartcities/files/sip_final_en.pdf. Accessed November 14, 2017.
Hagen, E. (2011). Mapping change: Community information empowerment in Kibera. *Innovations*, *6*(1), 69–94. http://mapkibera.org/wiki/images/4/42/INNOVATIONS-6-1_Hagen.pdf. Accessed November 14, 2017.
URBACT II. (2015). *Capitalisation. State of art, social innovation in cities*. http://urbact.eu/capitalisation2015/catalogue/social/appli.html?summary=complex. Accessed November 14, 2017.

World Commission on Environment and Development. (1987). *Our common future, from one earth to one world.* http://www.un-documents.net/our-common-future.pdf. Accessed November 14, 2017.
World Conservation Union. (2006). *The future of sustainability*, https://www.iucn.org/. Accessed November 14, 2017.
WSIS, World Summit on the Information Society. (2003). http://www.itu.int/net/wsis/. Accessed November 14, 2017.

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