POLITECNICO DI TORINO
Repository ISTITUZIONALE

Smart environment for the self-sufficient elder users

Original
Smart environment for the self-sufficient elder users / Peretti, Gabriella; Thiebat, Francesca; Cocina, GRAZIA GIULIA. - ELETTRONICO. - 3:(2017), pp. 4701-4708. (Intervento presentato al convegno Plea 2017 Conference - Design to thrive tenutosi a Edinburgh nel 3-5 luglio 2017).

Availability:
This version is available at: 11583/2702007 since: 2019-05-03T14:51:59Z

Publisher:
NCEUB

Published
DOI:

Terms of use:

This article is made available under terms and conditions as specified in the corresponding bibliographic description in the repository

Publisher copyright

(Article begins on next page)

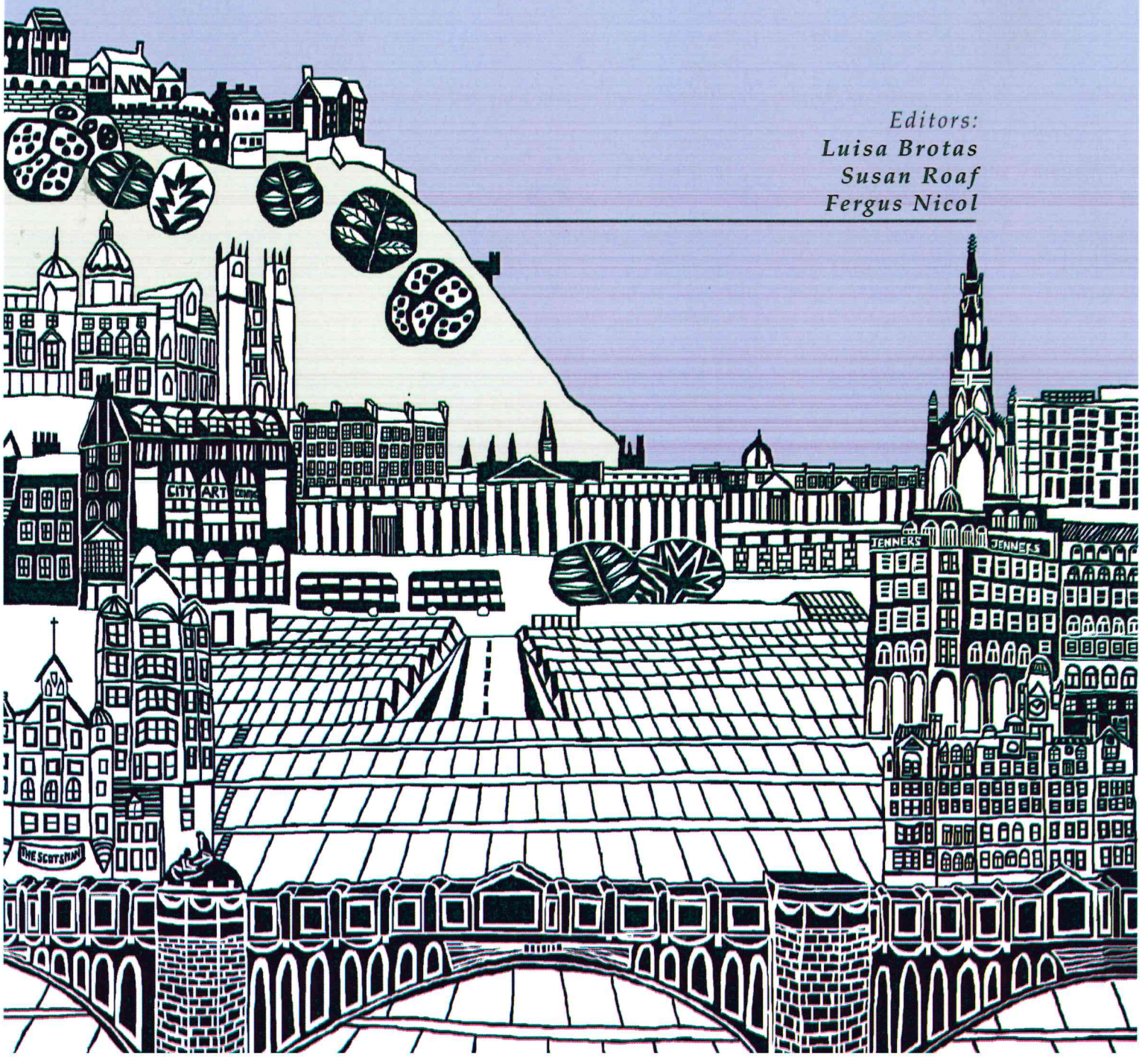
17 April 2024

PLEA
EDINBURGH 2017

DESIGN TO THRIVE

Proceedings
Volume III

PLEA 2017 Conference



Editors:
Luisa Brotas
Susan Roaf
Fergus Nicol

PLEA
EDINBURGH 2017

Design to Thrive - PLEA 2017

Proceedings of 33rd PLEA International Conference
Design to Thrive
Edinburgh, 2th-5th July 2017
PLEA 2017 Conference www.plea2017.net

Published by NCEUB 2017
Network for Comfort and Energy Use in Buildings http://nceub.org.uk
to download go online to www.nceub.org.uk

Copyright in the contents, the cover, the design and the typographical arrangement of this publication rests with the NCEUB unless otherwise stated. Copyright of the individual papers remains with the Authors. The Editors do not accept any responsibility for the content of the papers herein published. The contents of this publication may be reproduced free of charge in any format or medium for the purposes of private research and study or for internal circulation within an organisation.

This is subject
to the contents being reproduced accurately and not in a way that implies official status. The reproduced material must be acknowledged as NCEUB Copyright and the title of the publication specified. Any other use of the contents of this publication would require a copyright licence or written authorisation by the Authors.

All contributions to the 2017 PLEA Conference included herein were independently peer reviewed as a full paper, prior to publication.

ISBN 978-0-9928957-5-4
Copyright © NCEUB 2017

A Social Survey (2016-2017) on How the Economic Crisis Affects Peoples' Attitudes Towards the Environmental Subjects 4587
Panos Kosmopoulos, Athina Kantzioura, Ioannis Kosmopoulos, Konstantinos Kleskas, Andreas-Michael Kosmopoulos

System relevant Applications for Battery Storage Systems 4595
Kurt Leonhartsberger, Marcus Meisel, Mario Pichler, Susanne Schidler, Lampros Fotiadis, Evangelia Xypolytou and Andrea Werner

Engineering applications of solar energy – the most potent renewable Resource 4603
Professor Tariq Muneer

Investigating Optimal BIPV Energy Yield in consideration of Daylight and Thermal Performance in Residential Buildings 4611
Bao Quan Ong, Dr Abel Tablada

Solar energy in the urban vertical fabric 4619
Harald N. Røstvik

Towards an Eco-City Future: A Renewable Energy Supply and Smart Mobility Symbiosis 4627
Olivia Zara, Eugenio Morello and Vanessa Gomes

Resilience, Aging and Adapting to Change 4635

Elderly Support To Inspired Ageing (ESTIA) 4636
Leonidas Bourikas, Nick Allott, AbuBakr Bahaj, John Connelly, Stephanie Gauthier, Patrick James

Resilience and older people: My home my life 4644
Catherine Bridge

Designing Housing Decision-support Tools for Resilient Older People 4652
Bev James and Kay Saville-Smith

Sustainability and Resilient Homes for the Older People in Natural Adverse Events 4660
Roman Jaques and Kay Saville-Smith

Population Ageing, Housing and Resilience in Australia 4668
Bruce Judd

Developing Resilience, Independence and Well-being in Older Adults through Interactive Outdoor Spaces 4676
Chelsea Kershaw, Joelle Lim, Jacqueline McIntosh, Jon Cornwall, Bruno Marques

Models of care and physical environments of current housing for the elderly: the possibilities of the rental housing for the dependent elderly in New Zealand 4684
Yukiko Kuboshima, Jacqueline McIntosh, Geoff Thomas

An Analysis Tool to match Home environmental Interventions to the specific Needs of People with Dementia 4693
Christine Naumann, Ulrike Höhmann and Uta Pottgiesser

Smart environment for the self-sufficient elder users 4701
Gabriella Peretti, Francesca Thiebat and Grazia Cocina

The Almshouse Reimagined: challenging students in creating community 4709
Alison Pooley and Annabel Brown

Living with dementia condition in modern cities. Does urban renewal help vulnerable ageing population today? 4717
Eleni Tracada

Co-production and Resilience in a Brazilian Social Housing: the case of Shopping Park Neighbourhood 4725
Simone Barbosa Villa, Fernando Garrefa, Fionn Stevenson, Karen Bortoli

Sound 4733

Soundscape assessment of a water feature used in an open-plan office 4734
Zanyar Abdalrahman and Laurent Galbrun

Design of passive devices with natural ventilation and sound attenuation 4742
Yoshiaki Ando, Aníbal Figueroa and Silvia de Schiller

PLEA 2017 EDINBURGH
Design to Thrive

Smart environment for the self-sufficient elder users

Gabriella Peretti[1], Francesca Thiebat[1] and Grazia Cocina[1]

[1] Dipartimento di Architettura e Design, Politecnico di Torino, Turin, Italy. Corrispondence email francesca.thiebat@polito.it;

Abstract: In an increasingly demographic and technological transition that is set to radically transform lifestyles and the way living environments are structured, it is necessary that all actors work together and interact with each other, migrating from the concept of a single person to the concept of community. Our proposal, intended to make people's elderly lives easier, aims to bridge the gap between self-sufficient older adults, that do not need constant medical help, and those that need continuous support. Through appropriate technology use, the project aims to integrate and manage the information related to the user, his environment and his health devices. A kind of invisible "smart care network", supported by ICT, unites the places of their everyday lives enabling independent elders to simplify their way of life and avoid being a burden to their relatives. The technological care network must cover three different environments used by the elderly: home, community and the city. The main goal of the research proposed is to redefine the home environment by designing it on the basis of lifestyles habits, the degree of autonomy of the individual and personal needs. The home is connected both to the neighbourhood and to the city providing a link with a community of other users with similar problems and needs, with health and social care infrastructures, local medical clinical centres, recreational activities and various other services.

Keywords: Care network, self-sufficient elderly, smart house, smart city, senior living

Introduction

The ageing population is one of the most important social and economic phenomena both at a national, European and worldwide level. The latest statistical estimations reveal that the population over 60 will represent 1/5 of the world population in 2050, against the current ninth. In Europe, the demographic old-age dependency ratio (people aged 65 or above, compared to those aged 15-64) is estimated to increase from 27.8% to 50.1% in the EU in 2060 (European Commission, 2015).

The ageing phenomenon, regarding the general improvement of the health and independence of older people, brings out the specific requirements, which are different from those of the young and working population. The older adults at this stage of their life have to adapt to living alone in a process of transition that can be painful for those who were used to living with their family or other people.

It is necessary, however, to distinguish between two types of ageing people, those self-sufficient, for whom it is important to provide for integration policies at various levels (city, home, neighbourhood) and those not self-sufficient for whom continuous assistance from caregivers is required. In this paper, we will consider the needs of the self-sufficient elders falling within the state of "active ageing", defined by the World Health Organization "*a process to optimize opportunities related to health, participation and security in order to*

improve the quality of life of older people" (WHO, 2002). With this intention, WHO has outlined a strategy with the aim of creating and strengthening the conditions for an "active ageing", which is based on three fundamental pillars: Health, Participation and Security. The goal is to foster the transition from policies, based on the needs of older people considered as passive subjects, to policies that recognize every person his right and responsibility to take an active role and participate in community life in every stage of life, including old age. This strategy requires major changes in health, social and environmental systems, in order to improve their effectiveness and efficiency.

The proposal presented in this paper, therefore, is to provide "smart care networks" that simplify and improve the lives of this category of users starting from the redefinition of the home environment and connecting it with the neighbourhood and the rest of the city through the use of ICT technologies.

State of the art: environment for self-sufficient elders

In order to respond to the older people's needs in a more extensive manner and to improve their autonomy and quality of life, it is increasingly important to find solutions through both "passive and active technologies" (Zallio and Casiddu, 2016). The "passive technologies" collect all the architectural characteristics that an environment must have, to meet the needs of a constantly growing population; the "actives" refer to the technological devices that can help the ageing population to live a safer and more connected life.

The following are examples for both cases: the most common housing typologies currently in use for the self-sufficient elderly and some international examples of smart technologies, tested in pilot projects, able to connect the house with the city.

Current housing typologies for the self-sufficient elderly

The residential options for self-sufficient people are currently the following:

- Collective housing managed by companies.
  They are exclusively residential complexes for the elderly in which the services are centralized and managed by the responsible company. Often in these contexts, both due to the high concentration of marginal situations in which the elderly find themselves, and for the lack of active life, problems of loneliness and physical and mental decay are accentuated.
- Houses in residential complex integrated with services (cohousing).
  These typologies represent an independent and voluntary choice of a way of life within a small community, preserving autonomy and remaining inside a partially protected environment. The integrated residential complexes have already been designed to offer mixed housing, suitable for both the elderly and other users (young people, students, etc.).
  Essential conditions for a co-housing are:

- it must be designed and built on the basis of a project shared with the future users in order to meet their needs (participatory design);
- it must have collective spaces for functional activities to develop a sense of community and stimulate relationships among residents;
- it must be organized and managed according to a set program of activities shared by the residents themselves.

Co-housing then allows to have an individual life in private accommodation enjoying the same advantages of community life, thanks to equipment enabling collective life and a fully shared daily management system.

This typology is very common in the USA and the North of Europe, however it is not traditionally recognised in other countries, such as Italy.

- Living alone or with a family

The elderly who are still in good health can live alone. However, reduced abilities often require older people to make changes in their living environments moving to a more supportive location, or to their family.

Smart applications for the elderly: some examples

Many studies reported that the use of information and communication technologies (ICT), such as computerized health device, home computers, Internet and other communication devices could help elderly people to improve their quality of life, as well as facilitate cost-effective care by both formal and informal caregivers (Heart and Kalderon, 2013). The ICT – based solutions can help old people to participate actively in community activities and to reduce social isolation. Therefore, ICT can be useful to improve the existing housing models, based exclusively on the passive technologies, converting them into smart housing.

Some examples of new applications for smart devices planned for the elderly are:

VINCLES Barcelona Care Net[1]: the project of the Barcelona City Council that won the first European edition of Mayors Challenge. The project is an application for mobile devices that will help elderly people to keep in touch with their circle of relations and with social or health care services. Family, friends, public sector employees and volunteers will be connected with each other and with the user, who will be able to select who they want in their network. The system will be available to elderly people who live alone, and to people who have some physical or mental limitations. Given the user profile, a very simple design has been selected that is easy to understand. *Vincles BCN* will extend the network of municipal support for the elderly. The programme's main innovation is that it combines public and personal care.

SOCIALIZE[2]: a hardware/software platform able to put the elder users in close contact with the community they live in through the use of new technology implemented in the elderly day by day context. The platform offers information and entertainment content geared to the needs and interests of elderly people. This contents will be provided in a barrier-free and user friendly way tailored to the age group and to different SOCIALIZE devices.

STIMULATE[3]: a platform which enables seniors to specify their assistance needs, to plan a trip, to optimise transport means and itineraries, to be provided with personal assistance while on the move, as well as to obtain local shopping recommendations and assistance. Advanced knowledge based on GIS technologies will be used for processing and personalising seniors' travel and shopping requests, optimising transport itineraries, providing travel assistance and securing health care support.

Smart houses for the elderly: some examples

The term "smart house" is generally used to refer to a modern house that combine innovative housing typologies with smart devices. A number of researchers have stated that the main

---

1 http://www.ub.edu/senesciencia/noticia/1503/

2 http://www.aal-europe.eu/projects/socialize/

3 http://www.aal-europe.eu/projects/stimulate/

focus of smart housing design should be the development and the application of embedded advanced technologies in order to improve the quality of life, autonomy and a sense of security for the elderly and the disabled (Chan et al., 2009). Many examples of worldwide case studies, mostly experimental laboratories, take on the challenge of integrating ICT systems with the design of the house in a very high-tech approach (GhaffarianHoseini AH., 2013). In most cases, experimental and monitoring projects improve the comfort, communication, safety and health control of occupants through the analysis of their needs. Furthermore, some examples also focus on the social aspect, using ICT to connect the house with the community as shown below.

The Aware House (USA) is a living lab created by The Georgia Tech Broadband Institute Residential Laboratory based on the human-centered design approach. The promoters believe that *"the development and careful placement of appropriate technological support that can empower older adults to continue living in their own homes longer. They specifically focus on the effects of declining cognitive abilities on independent living, and the role information technology can play in augmenting those capabilities"*[4]. The principle of the house starts from the idea that living environments must be 'aware' of their inhabitant's needs and activities. It is based on ubiquitous computing that senses and recognizes potential crisis of users. Likewise, the University of Florida develops an intelligent lab-house, The Gator Tech House[5], to assist users with special needs and the elderly to enhance their quality of life. Many smart furniture and devices designed for comfort and energy efficiency, safety and security, activity monitoring, reminder/prompting technologies, fall detection systems, communication devices and biometric technologies (weight, temperature), create an environment that can assist and support the users. Several projects aim to maximize the use of active technology for assisting and monitoring the elderly at home. Infrared sensors can be associated with one or more activities: working in an area, having a meal, etc.

Some most recent examples based in the USA and the North of Europe have expanded the smart concept to the whole building and even to the outdoor environment enhancing the social aspect of life. For instance, in several UK, Dutch and Sweden residential housing settlements, the relationship between private and common spaces is one of the main goals of the project enhancing the quality of life of old adults.

From the state of the art analysis, the use of smart houses involves different benefits reducing the number of adverse incidents, providing support for conditions such as chronical illness and compensating individual's functional limitations. The main advantage of the smart house is that it allows the elderly to stay in a familiar and comfortable environment, realizing the goal of aging in place. However, if by one hand smart home technology can reduce social isolation due to the sense of security from having someone monitoring one's status, by the other hand can contribute to disconnect people from society. *"In trying to promote autonomy, we may end up promoting isolation. In keeping people in their homes past the point where they can interact with the community, we've essentially put them under house arrest"*.[6]

From these considerations, our research question arises: how can smart homes solve the problems of elderly disconnection from society? We tried to answer the question through the proposal of a "smart care network".

---

[4] AAAI Technical Report WS-02-02. (www.aaai.org)

[5] http://www.cise.ufl.edu/~helal/gt.htm#1

[6] U.S. Society: Census and Demographics, U.S. DIPLOMATIC MISSION TO GERMANY, http://usa.usembassy.de/society-demographics.htm

The "smart care network": a proposal for the elderly of 2030

A kind of invisible "smart care network", supported by ICT, unites the places of their everyday lives in a physical and virtual manner, enabling independent elders to simplify their way of life and avoid being a burden to their relatives. It would ensure services of autonomy and personal safety, as well as the physical and psycho-emotional wellness in a Smart Living Environment. The "smart care network" covers the two different dimensions of house/building and neighbourhood/city, and should permit the elderly modern technologies and services to enable them to lead an independent, up to date, but simple lifestyle.

In the last two decades, ICT has revolutionized our lives in term of access to information. However for elderly people the "digital barrier" still remain. Many researches has demonstrated that nowadays most of the "over 65" are not yet ready to take advantage of what the digital world offers (Warschauer, 2004). This "digital divide" will be solved in the next decades as the future older people will be grown in the digital era. Our "smart care network" is thought for this category of users.

The aim of the proposal is to design, implement and validate an innovative way of considering the elderly of the future (people born from the 1960s) and their needs.

The idea is to redefine the living environment by designing it on the basis of lifestyle habits, the degree of autonomy of the individual and personal needs. The home is connected both to the neighbourhood and to the city providing a link with: the community of other users with similar problems and needs, the health and social care infrastructures, local medical clinical centres, recreational activities and various other services. Fig. 1 shows how the innovative elderly living model can work. The elderly's space is not only limited to the 'home' which, even if highly smart, can cause isolation. However, the interaction between "passive" and "active" technologies helps to break physical boundaries extending the 'home' to the whole city. Thus, physical distance is reduced by active technologies, prolonging ageing in place, where the 'place' includes the whole community.

The main needs of the elderly, as the literature shows, can be divided into three categories:

- psychological and physical well-being
- social interaction and self-sufficiency
- safety, security and accessibility.

Psychological and physical well-being are closely related, and the link becomes more important at the older ages with the increasing of chronic illness. As life expectancy increases and treatments for life-threatening diseases become more effective, the issue of maintaining well-being at advanced ages is growing in importance. There is an increasing research literature which suggest that psychological well-being may even be a protective factor in health, reducing the risk of chronic physical illness and promoting longevity. It has also been argued that psychological well-being should be addressed in measures of health valuation, and be considered in health care resource allocation.

Social interaction plays an important role in elderly people's life and new technology can help older people to maintain social contact, interact in new ways with family and friends, engage actively in their communities and share learning, skills and experience with others. The integration of ICT in the home and the urban environment can improve the social inclusion which helps older adults to maintain good physical and emotional health and cognitive function.

With regards to the safety and security needs, it is recognized that older adults are more susceptible to accidents and injuries than younger adults because of internal and external factors. Internal factors include the normal physiologic changes with ageing, increased

incidence of chronic disease, increased use of medications, and cognitive or emotional changes. External factors include a variety of environmental aspects that present hazards to older adults. For these reasons, it is important to make homes and cities safer, through customized services and the use of new technologies.

Our "smart care network" try to satisfy those needs through the use of the active technology (upper part of the diagram of fig. 1), the passive one (lower part of the diagram of fig. 1) or by combining the two. For instance, a smart application can be used to do activities outside the house or to connect the user with other places/people whilst staying home.

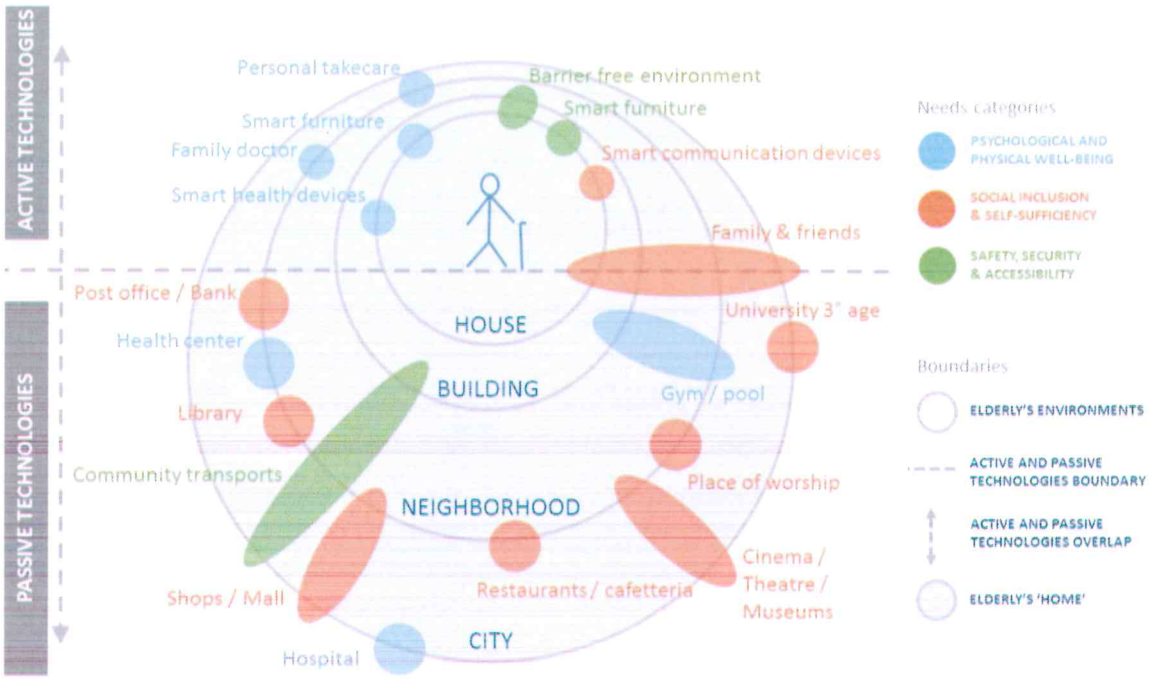


Figure 1. "Smart Care Network": an innovative senior residential model based on the integration of active and passive technology to fulfil the elderly needs and requirements.

The "smart care network" at the house/building level

A residential model for the ageing society based on the "smart care network" represents an alternative model to the elderly independent living often subordinate to the family's structure and needs and very common in countries like Italy and Asia. The experimental task of the proposal consists of an apartment for 5-10 older people aimed to improve their self-sufficiency. Users can make use of private spaces (room, toilet, kitchenette), semi-private spaces (living room, kitchen, dining room, laundry room, sickroom, outdoor green space) and semi-public spaces open to non-residents too (gym, coffee shop, playroom, place of worship, garden, terrace, etc.). Table 1 shows how the residential model aims to fulfil the three main elderly needs at the house/building level.

Table 1. Needs and strategies of the residential model based on the "smart care network" (house/building level)

NEEDS CATEGORIES	STRATEGIES AT HOUSE/BUILDING LEVEL
psychological and physical well-being	• smart furniture connected with the family doctor to monitor and support the elderly (ex. activity monitoring floor or mirror, infrared sensors); • smart devices such as a personal trainer board or wearable ICT objects for fitness and games which can stimulate mind and body; • specific applications for smart phones which help people monitor individual health problems;

	• the presence of a fitted outdoor space enhancing the quality of life and health benefits.
social interaction and self-sufficiency	• smart devices such as a personal trainer board or wearable ICT objects can help daily planning to encourage the elderly independency; • specific applications for smart phones allow the elderly to share special information, activities and events present in the apartment/building with a small group of friends and relatives;
safety, security and accessibility	• conventional house furniture is designed to satisfy elderly needs in ergonomic, flexibility, simplicity and safety terms from a shape, colour and material point of view; • the addition of smart furniture can optimize the home safety and accessibility (ex. activity assisting floor or mirror, infrared sensors).

The "smart care network" at the neighbourhood/city level

Users can join activities offered in the neighbourhood and the city from their home with the support of cooperatives, the municipality or other social agencies. In the same way, the three main elderly needs are taken into account at the neighbourhood/city level as shown in Table 2.

Table 2. Needs and strategies of the residential model based on the "smart care network" (neighbourhood/city level)

NEEDS CATEGORIES	STRATEGIES AT NEIGHBOURHOOD/CITY LEVEL
psychological and physical well-being	• smart street furniture for fitness and games can stimulate mind and body; • the proximity of a garden enhances quality of life and health benefit;
social interaction and self-sufficiency	• specific applications for smart phones allow the elderly to share special information, activities and events present in the neighbourhood/city with a small group of friends and relatives; • a small group of users can share useful collective services such as minibuses, concierge services, food delivery, private laundry, dog sitters, etc.
safety, security and accessibility	• the amount of economic intervention required by the city and social associations is less than in conventional assisted living situation.

Outlook and discussion

Our proposal aims to create a connection between smart homes, neighbourhoods and cities through ICT use, in order to answer to the specific needs of the ageing population to support independent elderly living. Understanding the needs of users is therefore crucial in order to offer the most appropriate service. However, elderly users are not a homogenous group and their needs vary significantly according to socio-demographic characteristics, gender, socio-economic differences or cultural area. In order to fill these gaps, one of our next objectives will be to make a more complete and detailed study of the user's profile which could help to create a needs-oriented approach for service development.

Further developments of the project require the collaboration between the property owners, the associations dedicated to helping the elderly, the older adults' communities and the industrial/research partners in order to define a complete framework of requirements and recommendations. The humanization principles as well as testing the functional, technological and economic adequacy of spaces are top priorities.

Conclusions

The new elderly living model aims to identify opportunities for experimentation in housing models as a valid alternative to health care residences and cohousing. The new objective becomes defining a new lifestyle model for senior people in a non-intrusive, customizable, adaptive and sustainable way. The proposal, mainly addressed to the elderly grown in the

digital era, should start from pilot case studies to develop, as ultimate aim, a widespread model for the next future (i.e. from 2030).

The proposal could also be an excellent solution for many older adults who do not wish to leave their accommodation, which could therefore be shared with friends, relatives or other people interested looking for a place to live. It can also be a dwelling situated in a traditional building, which would be renovated in order to be fully accessible and equipped with home automation systems and special assistive technologies.

Users lead an independent life, which can be supported at distance, through technological monitoring, or directly, through periodic visits, by private operators or active volunteers participating in the personalized care plan. These solutions can also have a great impact on reducing health care costs in the medium to long term, as they reduce the institutionalized hospitalization.

Hence, the aim of the proposal is to ease and improve the elderly's quality of life, giving solutions by connecting different environmental dimensions (house/building and neighbourhood/city) and combining active and passive technologies, in order to promote aging in place and avoid social isolation.

References

Andersson, J.E. (2011). Architecture for the silver generation: Exploring the meaning of appropriate space for aging in a Swedish municipality. *Health & Place*, 17, pp. 572-587

Chan M., Campo E., Esteve D., Fourniols J.Y, (2009). Smart homes – Current features and future perspectives. *Maturitas*, 64, pp.90-97. Elsevier

European Commission, (2015). The 2015 ageing report: economic and budgetary projections for the 28 EU Member States (2013-2060). Brussels: European Economy 3 European Commission, (2006). User needs in ICT research for Independent Living with a focus on health aspects. Seville: Technical Report series

GhaffarianHoseini, AH., Dahlan, ND., Berardi, U., GhaffarianHoseini, A., Makaremi N. (2013). The essence of future smart houses: From embedding ICT to adapting to sustainability principles. *Renewable and Sustainable Energy Reviews*, 24, pp. 593-607.

Heart T, Kalderon E., (2013). Older adults: are they ready to adopt health-related ICT?. *International Journal of medical informatics,* 82, pp.e209-e231. Elsevier

Skoubu, K. E., Kivimäki, A., Haukipuro, L., Lynggaard P., Iwona, W., (2014). Smart cities and the ageing population, Outlook, *Wireless world,* 12

Steptoe A., Deaton A., Stone A.A., (2015). Psycological wellbeing, health and ageing, Lancet

U.S. Society: Census and Demographics, U.S. DIPLOMATIC MISSION TO GERMANY, http://usa.usembassy.de/society-demographics.htm

Warschauer VM (2004). Technology and social inclusion: Rethinking the digital divide. MIT press.

Wijayanti, Setioko, B., Pandelaki, E., (2016). Spaces of the elderly based on the living arrangement (case study: Banyumanik Public Housing). *CITIES 2015 International Conference, Intelligent Planning Towords Smart Cities*, Surabaya, Indonesia, 3-4 November 2015. In: Procedia - Social and Behavioral Sciences, vol. 227, pp. 568-573. Elsevier

World Health Organization, (2002). Active Ageing – A Policy Framework, Geneva: WHO

World Health Organization, (2007). Global age-friendly cities: a guide, Geneva: WHO

Zallio, M., Casiddu, N., (2016). Life long Housing Design: User Feedback Evaluation Of Smart Objects and Accessible Houses for Healty Ageing. In: *9th ACM Intenational Conference on Pervasive Technologies Related to Assistive Environments*. Corfù, Greece 2016.