

How to Improve Social Participation of Senior Citizens Thorough ICTs: A Techno-Demographic Challenge for an Effective Smart City



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Abstract Contemporary cities, particularly those in Western societies, are interested in a diffused demographic ageing, and a growing share of older residents is facing the challenges of rapid social, cultural, and technological development. Such processes have a double-sided effect; on the one hand, it represents a potential widening of the digital and cultural gap, utterly reproducing marginalisation and social exclusion for older generations, especially the frailest and secluded elderly profiles, but on the other hand, it provides an opportunity for the new generation of older adults, which is characterised by a higher demand of social participation and self-expression. In this sense, applying technology to the lives of older people becomes an issue for contemporary smart cities that must find and provide potential solutions for assistive technology (e.g., through robotics and telecare services in the area of risk management and assessment), while also recognising the new needs regarding social inclusion and participation of the arising smarter and resourceful baby boomer generation who are more demanding in terms of expression of personal identities and interested in new opportunities for active citizenship and social participation, all of which can be supported by new technologies. From such a perspective, the chapter aims to describe the main issues of how contemporary urban contexts, which are often characterised by difficulties of the ageing in place, can employ new technologies to improve the social participation and inclusion of older residents. It also proposes possible recommendations for how to apply new technological solutions among older users.

Keywords Ageing · Inequalities · Technology · Social inclusion · Participation · Smart cities

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1 Living Older in Contemporary Urban Context: Ageing in Place, Technology, and Heterogeneity Among Older People

Contemporary urbanisation is characterised by several dimensions, in terms of *scale* (considering, for instance, the rise and demographic development of global cities due to globalisation) and *speed of urbanisation* (particularly in developing countries), but especially in terms of *complexity* (for the multifaceted functionality of urban areas as centres of production and consumption, as well as nodes within transnational networks for people and goods) and of *mobility* of population (both due to migration of younger adults from rural areas and declining industrial centres, as well as increasing inequalities deriving from the gentrification of central residential areas that attracts richer and younger high-skilled newcomers and pushes away older and poorer inhabitants).

According to Phillipson (2013), such issues interest older residents of contemporary cities in several ways, but especially because the combination of the aforementioned dimensions reproduce two opposing patterns. On the one hand, they produce the hypermobility of ideas and people, leading major post-industrial cities to become professionalised and polarised along socioeconomic and class lines defined by the interests of upper and middle-class white-collar inner-city gentry mostly composed by younger professionals and dominant productive urban élites (Butler et al., 2008). On the other hand, they produce the ageing in place process, a static form of marginalisation and social exclusion, reproducing what Beck (1998) calls the “architecture of apartheid” in modern cities, which is defined by the physical and symbolic yet extremely impassable barriers separating social and economic life groups such as those affected by disabilities, older age, loneliness, and deprivation (Wiles et al., 2011).

Technology and technological access play a key role in these patterns in both symbolic and concrete ways. Indeed, the impact of technology can reproduce and enlarge a digital divide, widening the gap between the urban élites and the excluded groups. It can also become a tool, however, for giving solutions to the needs of the oldest, frailest, and poorer profiles of elderly populations. Furthermore, it can become an instrument for inclusion and social participation especially for the most resourceful of older people, which, operating as a cultural avant-garde, can also extend benefits to the most marginalised and socially vulnerable profiles.

In this sense, applying technology to the lives of older people from a productive and economic perspective is mostly conceived today according to the typical stereotype of the “deficit model,” essentially referred to as the medicalisation of ageing itself (Fulop et al., 2019). According to such a model, technology is related essentially to the needs of the frailest and less autonomous senior citizens; in terms of assistive technology, for instance, this would apply to the use of robotics and the application of telecare services in the area of risk management and assessment. Far from criticising the usefulness of technology in such dimensions (and considering its positive impact on potentially reducing the rising burden of healthcare), the use of new technologies,

particularly of ICTs, among older people must also be related to other opportunities: above all, those of social inclusion and active participation.

Alas, in such a perspective, the role of older people themselves must also be reconsidered as users and consumers of technology, who hold different attitudes and approaches to technologies due to cultural and socioeconomic differences enlarged by the rising heterogeneity of behaviours within and between different generations of mature citizens. Indeed, older adults as a group are not monolithic with respect to technological usage, particularly regarding internet and its opportunities (McDonough, 2016).

In such a perspective, we have to consider that technology, as a factor of social change, impacts older people differently. Focusing on relevant factors concerning the implications of technology on older populations, McCreadie (2013) refers to stratification, social capital, organisational behaviour, and people's sense of personal and social identity.

Stratification refers to aspects of systematic social division defined by class and status factors, ranging, for instance, from income, property, education, occupation, and social background. Such elements, in turn, intersect with hybridised classless inequality factors like age itself, but also with gender, ethnicity, and overall access to rights (Pakulsky, 2007). Still, technology access remains affected by income in contemporary society, where a larger part of older residents risk exclusion (Jones et al., 2008).

Social capital refers to the ability of individuals to secure benefits from their wider social belonging in terms of family, neighbourhood, friendship, and network, as well as concrete and symbolic forms of membership, which are helpful in defining their lifestyle and overall quality of life. In this sense, access to technology can represent an invaluable tool in terms of promoting or reducing individual social capital of older people.

Organisations represent mostly a structural factor to consider how public and private services interact with older users. From banks to healthcare services, supermarkets, and mobile companies, all of these entities interact with older people, and the speed of automation and use of technology in such interactions affects older users and consumers differently.

Lastly, the sense of personal and social identity, besides referring implicitly to an individual dimension, can be related to a collective perspective if we consider the heterogeneity of older people according to a generational approach. Such a perspective substantially intersects and partially synthesises most of the previously mentioned issues in terms of stratification, social capital, and reaction to organisational change. Indeed, even if far from a strict and rigid typology and taking into considerable account the expectable individual differences, older people can be classified according to three main generations, each with a different passive or active perspective regarding technology. Referring to an almost classic typology according to Howe and Strauss (1991), the oldest old profiles can be understood as pertaining to the so-called Greatest Generation, born in the first decades of the last century and demographically mostly residual. Such generation has generally, even if not necessarily, a passive approach to technology that prevalently refers to technology

assisted healthcare due to the frequency of frail conditions among such age cohorts. A second but much wider social group can be represented by the so-called Silent Generation, born before the end of the Second World War. Here we can encounter a combination of factors, depending both on often lesser health and socioeconomic conditions, but also on differences in terms of cultural approach. Indeed, this generation, having spent most of their childhood between the years of the Great Depression and the end of the Second World War and their early adulthood in the period of the material and social rebuild after the war, is typically defined by a more traditional and conservative approach, aimed to match the institutionalised value system of the industrial society. In this sense, this generation implicitly suffered as a result of the social change and innovation of the globalised society and is consequently severely affected by a wider and diffused digital gap, in addition to a structurally lower access to technology itself. In contrast, the Baby boomer generation, particularly the oldest individuals in this age group, born in the period between 1946 and 1954, currently represents the new frontier of the ageing population. Now in their late occupational or early retirement phase, they grew up from youth to adulthood during the diffused collectivism promoting the Civil Rights Movements in the late sixties and the early individualism and consumerism that diffused across Western society during the later phase of the Cold War. They spent a large part of their occupational life in the affluent stability of the early postindustrial society and they have been adequately involved in the technological changes of the last three decades that have interested both the productive system and society as a whole. Often culturally characterised by a free-spirited, experimental individualism and by a strong sense of self-expression, they often look to technology as a tool and an opportunity for reproducing their sense of exploration and self-discovery and, especially, for their social participation due to their strong sense of social cause orientation (Green, 2006; Leach et al., 2008).

In the following pages, we will examine the aforementioned issues with special regards to the use of technology as an inclusive tool for social participation and to possible issues and recommendations for public policies aimed to effectively realise technologically smart cities for older residents.

2 Ageing, Technology, and Social Participation

Although political participation is an important form of social inclusion, it is sharply decreasing in Western countries. Higher rates of electoral participation among older population have been reported, but the crisis of representative democracy has deepened in the last decades (Tormey, 2015). At the same time, increasingly articulated forms of democratic innovations are emerging, trying to compensate the fall of legitimacy of public institutions and the parties that govern institutions by means of the electoral competition. And there is no evidence that older people are adequately present in these alternative/integrative forms of political participation.

The forms of bottom-up participative democracy have multiplied in recent years, although the question of how much participative processes can attain the deliberative

level (House & Howe, 2000) remains unsolved, as it depends on the role of the participative activities in the formal decisional processes. This role changes according to the interplay between social movements and institutions, as well as the effectiveness of the implemented participatory processes (Richards & Gastil, 2015). A good example in this vein is Tuscany Region, a pioneer in this field with two laws that promote stakeholders' participation in the planning and evaluation of social policies (n. 69/2007 and n. 46/2013).

Here we briefly recall only two important aspects. The first relates to participation in public decision-making, and the second is participation in the design of public policies and interventions. The distinction is important because planning is the responsibility of public institutions, and the less they are legitimised by the representative democracy (elections and deliberations in institutional bodies), the more they must build or implement their legitimacy as much as possible with the consent of citizens. So the diffusion of "top-down" forms of participatory democracy is often a way to gain public legitimacy for decision-making in the public sector. The operational design of public interventions is equally important because it is in the phase of the design that public policies become concrete, and, in this case, the risk of policies adopted is even more marked regardless of the opinions and expectations of the recipients. In fact, a large part of public services assumes that the user activates himself for the enjoyment of their benefits; if this does not happen, because he is not involved in the design, suboptimal choices, when not blatantly incorrect, are taken.

Of course, such problems affect the entire population, albeit in different ways; the elderly may have greater solicitations and better reasons to participate, but fewer opportunities and chances to do so. Hence, the challenge is to use technology to reduce, rather than to enlarge, the democratic and technological gap.

In a previous paper (De Cindio et al., 2014), we pointed out that ICT offers many opportunities for the participation of citizens in decision-making processes, and are necessary for both the integration between online and off-line modalities and the adoption of theoretical and methodological frameworks allowing effective participation.

According to the methodological framework, three main aspects regarding participation must be considered. The first one is the level and type of participation. Referring to the Spectrum of Policy Participation proposed by the International Association for Public Participation (Spectrum_8.5 × 11_Print (ymaws.com)), there are five levels of participation corresponding to five goals and promises to the public—information, consultation, involvement, collaboration, and empowerment—with different types or intensity of the direction of information flow (one-way or two-ways), the relationship between citizens and institutions, and the degree of integration of the results of participation within the formal process of public decision making.¹ Different

¹ The promises to the public grow according to the different levels of participation: from "we will keep you informed" (inform level) to "we will seek your feedback on drafts and proposals (consult level), to "we will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed" (involve level), to "we will work together with you to formulate solutions and incorporate your advice and recommendations into the decisions," and finally to "We will implement what you decide" (empower level). *Source* Spectrum_8.5 × 11_Print (ymaws.com).

kinds and occasions of participation can suggest one or more of these five levels; in other words, by distinguishing between participation “as a mean” and participation “as an end,” we can avoid populist temptations and use the kind of participation that truly fits the purpose. Although it is sometimes possible and also desirable to consider each form of participation as a step toward the last (empowerment), in general cases, if our main aim is to ameliorate public policies by means of participation, we must define what kind of participation can maximise the effectiveness of the policy itself. Therefore, it is not true that the more intense the participation, the better the decision-making process will be. Rather, it is necessary to choose the “right” form of participation, a choice that is also connected with the second dimension, the shape of the policies, or the extension of the area covered by the program. Participating in a local or specific plan can be made using some kind of direct involvement of citizens, unlike participation in bigger plans; this means that the adopted methodology and instruments must be adequate to the extension of the policy design and that there is no methodology that is suitable for all cases (Congiu et al., 2012). There is no room in this chapter for a detailed discussion of the ways to optimise online and off-line participation or the pros and cons of the most used tools for democratic participation; however, the different degrees of power among citizens who will be involved in deliberative processes must be considered. If a significant inequality exists between different groups, greater precautions must be taken. For example, it can be useful to provide separate opportunities for confrontation to avoid marginalising less educated or less informed people at the beginning of participatory processes. Within undifferentiated decision-making arenas, people with more power or social prestige prevail and deliberative democracy ends up reproducing the inequalities that have contributed to making representative democracy inadequate (Karpowitz et al., 2009).

The third dimension is the kind of participant: citizens, informal organisations, and formal organisations. Often the participation of stakeholders “stands for” that of the citizens and in fact helps to exclude them. The crisis of representation is not only affecting political institutions, but rather all forms of representative associations; therefore, the direct participation of citizens does not appear to be completely fungible from that of their organizations. So even a proper dosage of different participation modes for different kinds of subjects becomes necessary (see Palumbo, 2009). Research in this field shows that citizen and stakeholder roles can be separated or combined within a participative process, with different effects on the scope and effectiveness of participation (Kahane et al., 2013).

This means that the problem of participation of older people must be addressed inside the greater one of citizen participation as a whole, while also considering the addition of the aforementioned difficulties specific to old people.

As mentioned previously, the main form of participation in complex society is the co-construction of social policies and public interventions. The decline of the synoptic rationality paradigm in public decision-making (Lindblom & Braybrooke, 1963) has made it clear that public interventions are not programmed in a top-down form, but rather in ways often inspired by the garbage can model (March & Olsen, 1976), which assigns great importance to actors who participate at a given time to the

concrete decision-making process. A few decades later, the convergence of diverse processes, such as the ICT diffusion, the increasing role of the web, globalisation, the diffusion of new forms of relationships between industries, research, and institution, paved the way to the phenomenon of “co-production” or “co-creation” of goods and services. As noted in a previous contribution (Cossetta & Palumbo, 2014), open innovation and social innovation have defined new frontiers in the participation of citizens in the creation of new goods that have become fundamentally importance in the field of public services. The official definition of open innovation, a concept based on the observed fact that useful knowledge today is widely distributed, is that “Open innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively. [This paradigm] assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology” (Chesbrough, 2006, p. 1). Closely linked to this new paradigm is social innovation, or what is known as the citizen’s side of the coin: “A novel solution to a social problem that is more effective, efficient, sustainable, or just than existing solutions and for which the value created accrues primarily to society as a whole rather than private individuals” (Phills et al., 2008, p. 39). According to other influent authors, “We define social innovations as new ideas (products, services and models) that simultaneously meet social needs and create new relationships or collaborations. In other words, they are innovations that are both good for society and enhance society’s capacity to act” (Murray et al., 2010, p. 7).

These definitions reveal the challenges for smart cities for the inclusion of older people. If social innovations “are innovations that are social in both their ends and their means” and “are not only good for society but also enhance individuals’ capacity to act” (European Commission, 2013, p. 6), it is possible to perceive the advantages of participation as a mean and of participation as an end. This can be done by organising real and living opportunities to mix social servants, researchers, service providers, and citizens in “living labs” to find new solutions for new problems in a dynamic and interactive way. “Living Labs (LLs) are defined as user-centered, open innovation ecosystems based on systematic user co-creation approach, integrating research and innovation processes in real life communities and settings.”² It is not by chance that the idea of Living Labs was originally formed to involve city dwellers more actively in urban planning and city design (Mitchell, 2005), and the increasing examples of the use of this methodology are mainly settled at the micro or meso level, i.e., the everyday life level in which older people try to give a meaning to their lives and find a solution to their needs.

² This is the official definition proposed by the European Network of Living Labs (<https://enoll.org/about-us/>).

3 Technology and Ageing Between Care and Participation: From the Deterministic Model to the Social Construction of Technology

The concept of social participation mentioned above includes two different aspects: participation in decision-making processes and participation in the design of interventions, goods, and services. In contemporary societies, technology plays an important role in supporting the participation of older people and introduces involvement in the process of design, testing, and the implementation of technological devices.

Since there is a strong correlation between social participation and technology in the smart city, it is useful to analyse the relationship between older people and technology and the barriers that limit its development in order to design appropriate policies to improve levels of participation.

In analysing the role of technology in the participatory processes of senior citizens, it is necessary to make a distinction between technology-mediated social participation and assistive technology. Technology-mediated social participation refers to modes of participation using technological tools that are expressed on different levels: reading, contributing, collaborating, and leading. The highest level is participation in governance by setting and upholding policies (Preece & Shneiderman, 2009). Assistive technology, on the other hand, relates to the use of technological devices to enhance the participation of people with disabilities and elderly populations (World Health Organization [WHO], 2016).

In the case of technology-mediated social participation, which most often involves active seniors, the process takes the form of the Living Lab; in the design of assistive technology, citizen involvement is less widespread and follows a top-down path with the risk of achieving low rates of acceptance or even rejection (Hurst & Tobias, 2011). Both forms characterise the smart city. The smart city is certainly technological, but it also encompasses changes in social relations, which are fundamental to making the city sustainable and promoting community well-being. Not by chance, social participation is one of the characteristics that describe the smart city in terms of smart people, smart governance, and smart living: participation in public life, participation in decision-making, transparent governance, affinity to lifelong learning, cultural facilities, education facilities, social and ethnic plurality, and social cohesion are all specific indicators of the general concept of participation in the smart city (Giffinger & Gudrun, 2010).

Social participation is strongly connected to one's well-being throughout life: it not only enables older people to maintain a good level of social integration but is also a factor in maintaining health and cognitive functions. Therefore, social participation is crucial in regards to the well-being of older people; however, it is becoming increasingly dependent on technology use.

The literature contains several examples of frameworks or models that describe how people's online behaviour changes over time (Preece & Shneiderman, 2009); however, the relationship with technology depends on both subjective and objective factors. Age connects to the digital divide in at least two ways. First, age is an

independent variable because it influences access to and use of technology; as age increases, familiarity and use of technology diminishes and inequalities are reinforced. Second, age acts as a dependent variable because of geographical disparities regarding access to technology. The diffusion of internet has a geographic variance. According to the urban density theory, the internet follows a pattern of diffusion that first favours urban areas (Forman et al., 2005). From the point of view of population mobility, contemporary urbanisation is characterised by generational mobility that moves older people away from central areas and increases social exclusion and marginalisation (Beck, 1998). The presence of both these factors causes a higher degree of digital divide among older people than in other groups.

Older people have a different relationship with technology than other clusters: they use a smaller number of devices, have a lower frequency of use, and access the internet far more rarely (European Commission & Eurobarometer, 2019, 2020a, b). Furthermore, there are differences in the rural/urban dimension: those living in cities access the internet more often than those living in rural villages (European Commission & Eurobarometer, 2019). This is caused by persistent and growing differences in infrastructure between urban and rural areas. In addition, technology has an economic impact; given that affordability is lower among seniors, the gap between those who will benefit from technological advances and those who will be excluded from them is increasing.

The peculiarities of the relationship between older people and technology do not only concern the possession of devices and the way and frequency of use, but also the perception of aspects of concern, such as the security of data and online transactions and the prospect of someone misusing another's personal data. For this reason, older people believe more than others that public policy intervention is needed to ensure the safety and ethical development of technology, especially in the case of artificial intelligence applications (European Commission & Eurobarometer, 2019, 2020a, b, c).

Although older people present a slightly different approach to technology than other social groups, they are not a homogeneous group when it comes to the use of technology, or the internet in particular (McDonough, 2016). The different generations of older people have a different relationship with technology that depends on how the process of socialisation with technological objects has been realised.

According to technological determinism, technology is the factor that explains the transformation of society but the entry of technology in daily interaction is not a linear process and is patterned by a range of social factors.

As discussed by MacKenzie and Wajcman in the framework of "Social Shaping of technology" (1999), technology and society cooperate in the process of social integration. In a similar manner, the "Social Construction of Technology" approach rewrites the deterministic model based on the unidirectional impact of technology and states that technology is born without a precise characterisation, assuming different conformations based on the comparison between social groups (Bijker et al., 1987). The process of socialisation with technology takes place in four phases: appropriation, objectification, incorporation, and conversion (Silverstone & Hirsch, 1992). The way this process occurs influences the probability of the technological device

being used or, on the contrary, of its abandonment (Operto, 2018). The ultimate aim of this process must be, according to Visvizi and Lytras (2018a, b), the transition from Technology Enablers to Social Awareness because a positive effect of New Technologies must be built and not taken for granted.

It is important to take into account the characteristics of the process of socialisation of older people with technology in order to use all the advantages offered and reduce the barriers that limit development of social participation. The advantages of the diffusion of technology among older people are many, especially in societies characterised by the break-up of the traditional family: reduction of isolation, inclusion, active ageing, maintenance of independence, permanence in one's own home, access to services and information, prevention, and assistance.

In recent years, there has been an acceleration in the development of tele-care/smart homes, pro-active service systems, household robots to robot-assisted therapy, socially assistive robots, wearable technologies for monitoring, and prevention; this acceleration has stimulated studies and publications on the interaction with robotic agents in smart home environments.

Additionally, it is even more important to structure policies aimed at increasing the active use of technology for participation practices and digital citizenship. Working in this direction can help to overcome the typical "deficit model" stereotype, essentially referred to as the medicalisation of ageing itself (Fulop et al., 2019) for less autonomous senior citizens.

The spread of technology among the elderly has macro and micro barriers. The macro barriers are linked to the lack of adequate infrastructure in certain regions and the difficulty of having technological devices for the highest economic fragility. Micro barriers refer to the absence of computer literacy, which may reinforce existing inequalities that increase distrust towards technology.

Older people are more exposed than others to fragility, marginality, exclusion, and economic and cultural poverty. It is necessary to imagine programmes based, above all, on the diffusion of lifelong learning to reduce the digital divide. It is also necessary to integrate strategies because of the presence of social, economic, legal and, last but not least, ethical aspects.

Social capital is a fundamental element for the growth of the smart city; greater integration between the elderly and technology could encourage the growth of forms of cooperation between different social actors to achieve vertical and horizontal forms of e-governance. From the convergence between social capital and technology, a new possibility is thus formed: Socio-Technical Capital, a theoretical construct which provides a framework for describing the technology-mediated forms of social participation (Resnick, 2002).

Because the technological process is rapid and difficult to predict, it will be interesting to observe how the population turnover will contribute to this phenomenon when the younger generations approach the older condition: generation X first, then, in a few decades, generation Y, the cohort of digital natives.

The rapid changes we are witnessing require profound and shared reflection on the relationship between science and governance, as well as the choices and policies that will result to improve citizenship, participation, and human enhancement.

4 Conclusions

The growing literature on smart cities focuses on a few key points that are also relevant in our concluding remarks.

The first point is the impossibility to separate sustainability, the use of technology, and happiness (see, e.g., Visvizi & Lytras, 2020; or, recalling Dahrendorf (1995), to ensure social cohesion, economic development, and political freedom at the same time. This means that positive actions to counter and reduce the gap that the evolution of technology creates between weak and strong groups and among geographical areas in the contemporary world must be activated. And elder people are one of the most important social group to be defended and to be empowered.

The second point is how to ensure political participation, or political freedom. It is a matter of fact that the growing role of IoT on one hand and of AI on the other can expropriate people from the ability to infer from the information of the guidelines of action, which risks the building of a world already thought and decided before and behind human intervention. Moreover, the challenge to use technology in a deliberative, democratic way is very strong, and the ways it can implement, thanks to new technologies, participation in decision-making and technology development are very important for a sustainable smart city (see Visvizi & Lytras, 2018b).

For sure, such issues will become more and more determining factors in the development of effective and efficient smart cities environments, due both to the and new ways of being senior citizens in the diffused demographic ageing process, as well to the continuous advancement of technology-driven lifestyles.

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