Smart Cities: Big Cities, Complex Governance?

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1 Introduction

In the early twenty-first century, the rapid transition to a highly urbanized population has made societies and their governments around the world to be meeting unprecedented challenges regarding key themes such as sustainable development, education, energy and the environment, safety and public services among others. It has lead cities and urban areas to be complex social ecosystems, where ensuring sustainable development and quality of life are important concerns. In addition, the current economic crisis has also forced many cities to cut budgets and set priorities.

In this milieu, the use of information and communication technologies (ICTs) and data has been considered as the means to solve the city's economic, social and environmental challenges (European Parliament 2014; Centre for Cities 2014). In fact, cities should recognize that ICTs are essential to a vibrant social, economic and cultural life of the city. Under this framework, the smart cities concept has gained a lot of attention lately and it will most likely continue to do so in the future. Although there is not a general consensus regarding the concept of "smart city", at its core, the idea of smart cities is rooted in the creation and connection of human capital, social capital and ICTs infrastructure to generate greater and more sustainable economic development and a better quality of life (European Parliament 2014).

In this regard, in the past years, cities are increasingly aware of the concept of "smart city" and actively developing strategies towards the goal of becoming "smart" and manage, more efficiently, city resources and addressing development and inclusion challenges. A recent review by the European Parliament of 240 EU28 cities implementing or proposing smart cities initiatives found that there are smart cities in all EU-28 countries, but these are not evenly distributed (European Parliament 2014). Nonetheless, many of the challenges to be faced by smart cities surpass the capacities, capabilities, and reaches of their traditional institutions and

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their classical processes of governing, and therefore new and innovative forms of governance are needed to meet these challenges.

Therefore, the growth of smart cities is helping the increase of government use of ITCs to improve political participation, implement public policies or provide public sector services. For Hollands (2008), the need for technologies to be smarter is not just in the way they make it possible for cities to be intelligent (as an institutional agent) in generating capital and creating wealth, but in the ways they operate their governments. It is making governments to think the need to advance in the implementation of ICTs to improve the participation of the citizenry in decision-making processes, to make more efficiency the public and social services rendered to stakeholders, to achieve transparent governance and to implement political strategies and perspectives, this is what has been called as "smart governance" (Giffinger et al. 2007).

Nonetheless, little research has been undertaken to know the role and incentives of governments to promoting smart cities. In this regard, this book seeks to contribute to the literature by filling the existing void and expanding knowledge in the field of smart cities. In any case, previous to read the chapters please let me a brief introduction to the debate of the role of governments in smart cities.

2 Governance in Smart Cities

In the past years, cities are becoming smart not only in terms of the way we can automate routine functions serving individual persons, buildings, traffic systems but in ways that enable us to monitor, understand, analyze and plan the city to improve the efficiency, equity and quality of life for its citizens in real time. Indeed, it aims at increasing citizens' quality of life, and improving the efficiency and quality of the services provided by governing entities and businesses.

Although there is no one route to becoming smart, and different cities have adopted different approaches that reflect their particular circumstances, three general principles to guide smart city agendas have included the integration with economic development and public service delivery plans, the pragmatic focus with the bulk of investment going on projects that are practical, achievable and financially viable and, finally, the participation of community representatives, local businesses and residents to ensure projects are relevant to the city's opportunities and challenges (Centre for Cities 2014). To achieve these aims, governments must use ICTs to improve political participation, implement public policies or providing public sector services. If government is to change, citizens will also have to change how they engage with government and what they expect from government (Doody 2013).

Despite previous comments, the current governance structures in most states require little involvement of citizens in decision-making. Further, responsibilities for different services are fragmented across multiple institutions, making the situation even more complex for any citizen. Therefore, the development of efficient and ef-

fective governments is a prerequisite for the development of smart cities and the role played by governments in these cities seems to be essential. In this regard, based on the market-making approach adopted by the government, it involves intervention in three main ways: by playing the role of coordinator and bringing different interests and stakeholders together to establish new platforms for collaboration; by playing the role of funder, which consists of funding infrastructure and demonstrator projects; and by playing the role of regulator, making sure that common standards and regulations are in place (Centre for Cities 2014).

In any case, nowadays, the city needs to be recognized as a network of multiple systems, all of which are closely connected in meeting human needs. This perspective requires an integrated vision of a city and of its infrastructures, in all its components. Indeed, innovation by local authorities requires vision and leadership. It means that the current practice of working in silos needs to be broken down with greater institutional integration, at least in planning and oversight. Indeed, governments should be sure that efforts in smart cities are coordinated rather than isolated. Smart government, hence, has to cope with (a) complexity and (b) uncertainty, and by so doing, has to (c) build competencies and (d) achieve resilience (Scholl and Scholl 2014). Therefore, it is not simply a question of the capability within local authorities to develop smart concepts.

According to European Parliament (2014), factors for successful smart cities include active participation of citizenry to create a sense of ownership and commitment, local level coordination to ensure the integration of solutions across the portfolio of initiatives and participation of local governments in networks to share knowledge and experiences. In brief, smart cities have really become in relational networks of actors— small and midium-sized enterprises (SMEs), schools, housing corporations, non-governmental organizations (NGOs), local governments, local transport, etc.—and the interaction among these urban actors constitute urban governance. Hence, governance is not about what governments do but about the outcomes of interactions between all actors in the public domain.

Nonetheless, local governments are called to be key actors to create an interactive-, participatory- and information-based urban environment with the ultimate aim at producing increasing wealth and public value, achieving higher quality of life for citizens. Therefore, in smart cities, governance should encapsulate collaboration, cooperation, partnership, citizen engagement and participation (Coe et al. 2001).

However, there appears to be a clear difference among cities that: pursue a mix of characteristics through many holistic initiatives; use a differentiated portfolio of specialized initiatives; support only a few holistic (multi-objective) initiatives; and implement a small number of initiatives tightly focused on the most salient characteristics (European Parliament 2014). It could lead to different patterns in governing smart cities. In fact, according to the European Parliament (2014), different patterns of actor roles and relations, policy instruments and implementation methods have been used by European smart cities. Which one is the best, if any? This is a question that is under a lively debate in research and empirical practice. In the next section, we try to contribute to this debate about the governance styles in smart cities.

3 Governance Style in Smart Cities

When considering the need for changing governance models in smart cities, a range of questions can arise: Are the objectives of smart initiatives relevant, appropriate and aligned with broader city development objectives? Does the initiative address problems of importance to the city in question? Is the mix of funding, participation, components and characteristics likely to produce the hoped for outcomes?

These questions make us to wonder other related ways of governing the smart city: Do all governance styles produce the same result in promoting smart initiatives? Do these governance styles allow the same increase of quality of life for all citizens? Is there a governance model better than the others or does it depend on the characteristics of the citizenry, place, …? Many questions remains unsolved up to now.

In this regard, although there are different approaches to the concept of smart city governance in prior research, ranking from institutional conservation (traditional governance of a smart city) to institutional transformation (smart urban governance) (Meijer and Rodríguez Bolívar 2013), none is said to be the best way of governing smart cities. Indeed, the networking environments that characterized smart cities introduce new ways of governance different from traditional bureaucracy, with the use of nonhierarchical, nonmarket forms of organization in the public sector (Considine and Lewis 1999) and are becoming important for public management given that the management of smart cities relies on complex networks of interdependent organizations. These models of governance can range from that in which smart cities may be governed completely by the organizations that comprise the network (self-governance model), to that in which local government acts as a highly centralized network broker, or lead organization, and manages the development of the smart city (bureaucratic model).

For example, to many contemporary government officials, smart cities are essentially networks of sensors strewn across the city, connected to computers managing vast flows of data, optimizing urban flows like mobility, waste, crime and money (Kresin 2013). This technocratic rhetoric could take humans out of the loop and turn them into passive rather than active agents, which could promote the self-governance model of the smart city if politicians share this vision of smart city.

By contrast, on another site of the spectrum of governance models is the bureaucratic model of governance. Under the Bureaucratic model of governance, local governments retain the leading role in the implementation and management of smart initiatives in the city. In addition, the government designs the strategy for the implementation of smart initiatives and manages the interactions among the different actors directly. Finally, the Bureaucratic model is based on government monitoring, and so citizens have less control over smart initiatives and have a more passive role in the smart cities. They are only the receptors of the smart technologies introduced in the city. In summary, this model of governance is the successor to the Weberian bureaucracy model of production, which formerly prevailed as the desirable form of organization for the provision of public services (Tullock 1965;

Downs 1967; Niskanen 1971), especially under the Continental European style of public administration. Nonetheless, some authors indicate that this model is far to exist under smart cities because it is deemed to fail (Mulligan 2013) due to the risk aversion and the incentive structure under which government officials operate (Madriz 2013).

Other governance styles in the medium of the spectrum of interactions and control of local governments and the rest of actors are possible for managing smart cities. Indeed, in smart cities, the power balance seems to have changed and it seems clear that citizens need their governments and governments need the intelligence and the cooperation of their citizens to function well (Kresin 2013). This demands a change in how cities are governed. The strength of this change could not be the same under different environments as noted previously. Therefore, it could be interesting to analyze some empirical experiences in smart cities regarding the role that governments are taking in each one of them as well as the success of these smart initiatives. It could help us to understand factors or drivers for governance models in smart cities. This is the main aim of this book and the following chapters will tackle some issues regarding this subject.

4 Conclusions

Smart cities have introduced many questions unsolved at the moment. One key question is the role of governments in these cities. Must governments take a leading role in smart cities? Do they only have to coordinate smart initiatives facilitating technological infrastructure to make smart initiatives possible? Or do they have to be apart from the smart initiatives using a market approach?

Prior research does not have definitive conclusions about these questions. In fact, experiences in the European Union seem to indicate that each smart city has been developed according to their own characteristics and environment. In these cities, interestingly, there is no single definitive way in which all players behave and work together (Alcatel-Lucen 2012). Therefore, is there a pattern of development to becoming smart? Do we have to enforce local governments to follow some guidelines to achieve these aims?

In any case, prior research has indicated that transforming urban processes will only be achieved with better urban governance (Puppim de Oliveira et al. 2013). Cities are therefore increasingly seen as not only the engines of innovation and economic growth but also the level at which solutions to wicked problems need to be produced (Koppenjan and Klijn 2004). The idea of smart city governance fits well within the public management perspective that highlights solving societal problems is not merely a question of developing good policies but much more a managerial question of organizing strong collaborations between government and other stakeholders (Torfing et al. 2012). Indeed, city authorities play a key role in creating smart and sustainable city initiatives, and in attracting industry players to develop ideas for potential projects, and to act as partners (European Investment

Bank 2012). Also, forms of government are an important direct influence on the approach that communities take to sustainability (Bae and Feiock 2013). In this context, smart governance principles could guide the relatively complex administrative enactment of smart and open government more intelligently than traditional static and inflexible governance approaches could do (Scholl and Scholl 2014).

This debate is even more relevant if citizens are introduced. Governance has been and always will be based on citizens' participation. Therefore, focusing on smart citizens would appear to be a compelling alternative to the technocratic determinism of the smart city model. In this regard, what do citizens want? Have we forgotten to ask them? A smart city, therefore, starts with smart citizens who are asked their opinions and engaged in the process of deciding how they are used (Mulligan 2013).

In conclusion, ICT is not a sufficient condition. For a city to become a "smart city" it needs full engagement of its government and its citizens. As noted by Chourabi et al. (2012), eight critical factors of smart city initiatives to be analyzed in future research are: management and organization, technology, governance, policy context, people and communities, economy, built infrastructure and natural environment. These factors form the basis of an integrative framework that can be used to examine how local governments are envisioning smart city initiatives (Chourabi et al. 2012) and how they are dealing with these concerns. Future research should focus on the role of governments in developing smart cities not only as a producer of content in the smart cities' framework providing intelligent e-services or introducing ICTs to improving transparency in governments but also as a element for organizing and managing the smart initiatives in smart cities.

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