

# Governing technology-based urbanism

## Technocratic governance or progressive planning?

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### Introduction

Literature on ‘smart urbanism’ has broadly underlined how the utopian idea of a smart city paved the way for an apolitical understanding of good governance, in which cities are organized, developed and governed for a better future. Verrest and Pfeffer (2018) outline the emerging academic topic of ‘smart urbanism’ and underline how its policies drive contemporary cities. They also add how, under the label of smart urbanism, a series of ‘technocratic solutions to urgent urban problems’ (Verrest and Pfeffer, 2018, p. 2) are adopted, without taking into consideration different political responses ‘to political conflicts that reflect discourses on what urban problems are, what appropriate solutions are and what urban development is desired’ (ibid.). Wiig (2015) notes how smart urbanism has been integrated with a technologically driven governance model, where cities use as a strategy to ‘sell’ themselves in a globalized world. In this context, the city is seen as a promising location for multinational corporations and foreign investment, instead of recognizing the intrinsic and extrinsic benefits for the residents (Wiig, 2015, p. 260). McFarlane and Söderström (2017, p. 2) establish that smart urbanism is not pure rhetoric and has real impacts on ‘both in the urban policies of national governments and municipalities and in the grass-roots initiatives and social movements that disturb, resist or create their versions of smart urbanism’.

Many cities aspire to solve everyday urban problems, with a combination of the integration of information and communication technology (ICT) and an acknowledgment of the characteristics that make it unique, such as its geographical position, history and culture. Different cities are therefore developing strategies that may derive inspiration from other contexts but are as unique and specific as the city itself, even if often, the literature identifies digital and technology-driven focus approaches as a universal solution in different cities (Verrest and Pfeffer, 2018). To achieve these goals, the literature indicates that the sub-dimensions of governance (Garau *et al.*, 2015; Giffinger *et al.*, 2007; Rodrigues and Franco,

2019) and ICT (Caragliu *et al.*, 2011; Ferro *et al.*, 2013; Sepasgozar *et al.*, 2019) are a fundamental pillar in the smart cities paradigm. However, as underlined by Akter *et al.* (2019), efficient and good governance requires not only the latest technologies (multi-source big data, real-time processing for complex data, sensors and so on), transparency of processes, networks, security, communication policy regulations and strategic planning in order to improve the efficiency of cities, but also a 'long-term perspective on what is needed for sustainable development and how to achieve the goals of such development' (Akter *et al.*, 2019, p. 37).

These new dynamics inside cities make the close relationship between ICTs and the smart dimension perceptible, and in so doing can reveal different strategies and procedures in the governance process (Nel *et al.*, 2018). Nevertheless, the benefits and externalities provided by ICT are visible, as well as the challenges and opportunities of initiatives in technology-driven smart cities, in terms of synergies between all public and private actors (Angelidou, 2014; Valencia *et al.*, 2019); network integration (Internet of Data, Internet of Things (IoT), Internet of Services and Internet of People); flexibility and open attitudes in governance networks of all actors involved (Sol *et al.*, 2018); inter- and intra-city transfer and share of knowledge, and easier access to information (Rodrigues and Franco, 2019).

The mission to be a smart city has been seen as technocratic, due to a focus on technological solutions and business interests that promote the empty rhetoric of 'citizen-centered approaches' and 'user-generated data' (Cardullo and Kitchin, 2019; Greenfield, 2013). These criticisms advance the view that smart city initiatives promote forms of algorithmic governance that control and regulate citizens, and are driven by choices guided by market-led solutions and individual autonomy. The justification for these smart initiatives is made by a simplification in management practices (for city users) and a civic paternalism (for smart cities marketeers who want to do the best for citizens) promulgated by the political class. These put the city, as a common good with its civil, social and political rights, in second place (Cardullo and Kitchin, 2019).

Taking this approach, the chapter aims to offer an overview of how urban governance is changed within the paradigm of smart cities, by providing theoretical conceptualizations of difference governance models and linking these to an analysis of a series of smart city projects. It seeks to understand smart governance by addressing a series of questions. Firstly, we focus on the theoretical transition from smart cities 1.0 to smart cities 2.0 by answering to the question; 'Which aspects of the smart city influence smart governance?' Secondly, we will translate this theoretical discourse to an analysis of local-level initiatives in a selection of Italian cities by answering to the question 'What is smart governance in the context of Italian cities?' Finally, the chapter discusses risks, challenges and future research by responding to the question 'Do smart cities represent technocratic governance or progressive planning?'

## **From smart cities 1.0 to smart cities 2.0: what about the governance?**

Critical reviews of literature on the first generation of smart cities, which has been termed 'smart cities 1.0' (Trencher, 2019), focus on the importance of the technological aspects of a smart city for urban innovation in order to solve problems associated with rapid urbanization. In smart cities 1.0, the literature identifies smart governance as not only closely associated with the use of ICTs, but also as one of the key pillars of a smart city with the

components of smart economy, smart mobility, smart environment, smart people and smart living (Azzari *et al.*, 2018; Caragliu *et al.*, 2011; Giffinger *et al.*, 2007; Mistretta and Garau, 2013). Other elements of smart governance in this first generation include extensive use of technologies, improvement in intra-governmental coordination (Willke, 2007), increased participation in decision-making (Giffinger *et al.*, 2007), renewal of organizational structures, the widespread use of open big data (Clarke and Margetts, 2014), and a city focused on single-issue technical agendas such as transport and energy (Trencher, 2019).

However, the governance framework of smart cities and its structural correlations with ICTs and ICT policy are still underdeveloped (Cardullo and Kitchin, 2019; Nam and Pardo, 2011; Pereira *et al.*, 2018). In this first phase of the smart cities paradigm (smart cities 1.0), Hollands outlines how cities sought to define themselves as smart cities, whilst often lacking a holistic understanding of the governance reorganization required in a smart context (Hollands, 2008).

The second-generation of smart cities, so-called 'smart cities 2.0', has led to further development of smart cities, and is characterized by a focus on smart governance frameworks with a people-centric and decentralized approach. These initiatives move beyond the techno-economic objectives of smart cities 1.0, in order to use technologies in an efficient and effective manner to address social problems, serve citizen needs and measure and enhance the effectiveness of urban governance and policy-making (Šiugždinienė *et al.*, 2017; Broccardo *et al.*, 2019; Trencher, 2019). This second-generation approach has a broader perspective in the way in which smart governance influences and, simultaneously, is influenced by the tools, people, principles and capacities appropriate to the urban context. This constantly evolving understanding of what constitutes smart governance challenges the widely accepted definition of the term, and reflects a range of critical issues in defining the meaning of a smart city.

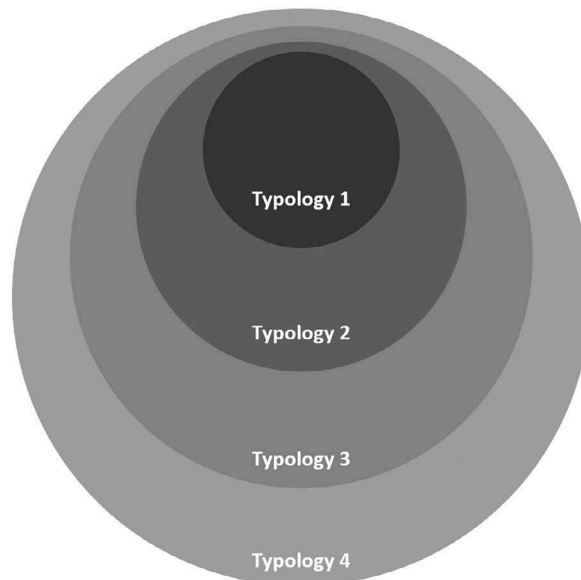
To understand the typologies of smart city governance, the governance frameworks and the degree of government and societal transformation in smart cities, we undertook an analysis of the literature on the governance of smart cities through well-known databases (Google Scholar; Science Direct; ISI Web of Science; IEEE Xplore; Scopus; SpringerLink) from 2007 until to 2019. This research initially produced 652 results, which we subsequently refined to 18 research papers that we categorized as most relevant to the topic of smart governance. As a result, we identified a number of different distinct conceptualizations of smart city governance in the so-called smart cities 2.0 as follows:

1. Traditional government: this conceptualization of smart city governance sees existing governance as a form of advocacy of the smartness of a city and does not require transformations or changes (Meijer and Bolívar, 2016).
2. Informing urban governance (Acuto *et al.*, 2019): this conceptualization is based on governing the city through the power of technology rather than the restructuring of organizations: big data, sensors, IoT, Internet of Everything (IoE) for monitoring, controlling and managing urban developments, recourses, urban infrastructures, risks and people. All of these appear in city dashboards, sensor networks or centralized control rooms. In this case, urban governance is part of a data-driven urbanism and the expected changes are exclusively in decision-making processes.
3. Electronic governance for smart public administration (Bolívar, 2019; Edelenbos *et al.*, 2018): this conceptualization focuses on the capacity for change of the public administrators. In fact, governing through this way can be potentially modifiable because the

administrators are aware that citizens cannot accept these new experiments and for this reason the strategies can be addressed in new creative forms of smart urbanism.

4. Collaborative smart governance (Pereira *et al.*, 2017): this conceptualization reaffirms the central role of citizens and focuses on smart interactions between various stakeholders in the different contexts of smart city initiatives. Specifically, Bartenberger and Grubmuller-Regent (2014) analyzed the more restrictive concept of collaborative governance to distinguish the concept of ‘smart city governance’ from the broader concept of participatory democracy. Pereira *et al.* (2017) analyzed the same concept as a key factor with the central role of citizens and with ICT, for supporting smart cities initiatives. Verrest and Pfeffer (2018) underline the importance of ICT strongly associated with non-technical and bottom-up initiatives. Such initiatives, also labelled as collaborative smart governance in a smart urbanism, ‘mobilize technology as enabler in the knowledge production process recognizing varieties of knowledge or operate without ICT at all, highlighting creativity, social learning or alternative ways to achieve’ (Verrest and Pfeffer, 2018, p. 6).

Although the four approaches above are all found within the smart cities 2.0 generation, we argue that the second is the evolution of the first and so on, and consequently the ‘collaborative smart governance’ is the most developed conceptualization (Figure 12.1).



*Figure 12.1* Conceptualizations of smart city governance in the smart cities 2.0: traditional governance (Typology 1); informing urban governance (Typology 2); electronic governance for smart public administrators (Typology 3); collaborative smart governance; (Typology 4)

Source: Chapter author(s)

However, there is still a mismatch between urban governance structures (with its regulatory processes) and civil society governance initiatives (where a city's inhabitants have the ability to equip themselves with shared tools and methods for its overall management). In the next section we will apply this conceptualization framework to an analysis of a series of smart city governance initiatives. It focuses on the Italian smart city and, through a comparative analysis of smart city projects, seeks to identify which of the four smart governance types the initiatives belong to.

## Research methodology on comparative analysis of Italian smart cities initiatives

### *Why Italian smart city projects?*

The decision to analyze Italian cities in this chapter is based on evidence from the European Parliament (2014) that identifies Italy as one of the leading European countries in smart governance and with the largest number of smart cities involved in implementing smart governance projects (Vázquez and Vicente, 2019, p. 164). In addition, the National Association of Italian Municipalities (ANCI)—with its Smart City National Observatory founded in 2012—highlights how smart strategies and actions succeed in spreading not only in the largest Italian cities, but also in the smaller ones (Testa, 2016).

According to the latest data from the Italian National Institute of Statistics (ISTAT, 2018), Italy is a country where only two cities have more than 1 million inhabitants (Rome 2,872,800 and Milan 1,366,180), and there are 5,497 municipalities with under 5,000 inhabitants (which represents 69.45% of the total number of 7,915 Italian municipalities). In Italy, the city governments of the smallest municipalities are partially decentralized because the areas of influence of a single urban center tend to extend beyond the administrative limits of a single municipality (Garau *et al.*, 2015; Verrest and Pfeffer, 2018). Therefore, the governance of smaller municipalities typically extends into a wider geographical area and includes several smaller municipalities and their territories, where decentralization prevails. Typically, larger Italian cities, as well as metropolitan cities, are organized with a multi-level governance structure, with a range of powers and competences devolved from the central government to local administrative bodies (Zamperlin and Garau, 2017).

This phenomenon has consolidated the formation of widespread urban polarities and—despite it being difficult to see and define the boundaries between neighboring cities and between built and rural spaces—it has not led to the definition of national smart systemic initiatives. This is despite the fact that a shared theoretical idea of smartness has been acknowledged in the Italian context, since the paradigm of smart cities appeared. In addition, the Italian model of decentralized territorial and administrative organization has led to the development of a bottom-up approach in the smart urbanism paradigm. This is in part due to funding mechanisms supporting Italian smart cities, since each city has tried to plan and execute its own smart program, through applying for European Union funding, in order to circumvent central government funding. In the next section we discuss this further.

### *Methodological approach and application to Italian smart city projects*

As mentioned above, Italian cities have typically not adopted a unified national program that defines smart initiatives priorities, and consequently the goals that have guided funding in

the various cities varied from city to city. The Italian Urban Agenda's platform, which is organized and promoted by the National Association of Italian Municipalities (Associazione Nazionale dei Comuni italiani, ANCI<sup>1</sup>) and by the Institute for Finance and Local Economy (L'Istituto per la Finanza e l'Economia Locale, IFEL<sup>2</sup>), gives an overview of the distribution of the different municipalities involved. It categorizes projects by the total funding invested and correlates projects in relation to the different pillars or sectors of smart cities programmes (living, energy, environment, people, planning, economy, mobility, government). Table 12.1 shows the current implementation phase for a total of 157 Italian municipalities, 1,314 projects and total invested funding of €3,809,120,361.00, subdivided in different sectors. Table 12.1 indicates that the largest proportion of funding (26.7%) was allocated to the planning sector, however, this involves the smallest number of total municipalities (29.3%) and funded projects (8.0%). Conversely, the governance sector, with a minimum investment (3.1%) involves about 32% of the total of municipalities, for almost 13% of projects.

After identifying the smart city initiatives in Italy, we focused on an analysis of governance projects, by considering the projects under the 'government' sector (170 projects) and under the sub-sector of 'planning' (22 projects). These were selected because they represent the most relevant sectors to be included globally as examples of smart governance in Italian cities. The result produced a detailed analysis of 180 projects,<sup>3</sup> summarized in Table 12.2. This analysis was useful to obtain a first schematization of the complete framework of the smart cities initiatives under smart governance sectors present in Italy and also to identify for each municipality involved the number of projects, the recipients and the type of innovation brought by the project (Table 12.2).

Subsequently, we focused on the cities with the highest national ranking in Italy (Smart City Index, 2018), particularly those belonging to the first band (national ranking between 1 and 39) in the 'positioning of cities in the rankings by strata and fields' (Smart City Index, 2018, p. 13). The results obtained for each selected city enabled an analysis based on the identification of:

*Table 12.1* Analysis of funding for Italian smart city initiatives divided by the smart cities sectors: living, energy, environment, people, planning, economy, mobility, government

<i>Total funding:</i> €3,809,120,361		<i>Total municipalities</i> <i>involved: 157</i>		<i>Total number of</i> <i>projects: 1314</i>		
<i>Sector</i>	<i>Funding €</i>	<i>% funding</i>	<i>No. municipalities</i>	<i>% municipalities</i>	<i>No. projects</i>	<i>% projects</i>
Living	309,584,287	8.1%	51	32.5%	170	12.9%
Energy	644,341,700	16.9%	58	36.9%	143	10.9%
Environment	286,828,706	7.5%	68	43.3%	191	14.5%
People	161,973,421	4.3%	54	34.4%	183	13.9%
Planning	1,017,653,753	26.7%	46	29.3%	105	8.0%
Economy	464,101,497	12.2%	51	32.5%	116	8.8%
Mobility	805,927,115	21.2%	56	35.7%	236	18.0%
Government	118,709,882	3.1%	50	31.8%	170	12.9%

Source: <http://agendaurbana.it/>

Table 12.2 Smart cities initiatives in the smart governance sector in Italian cities

<i>Municipalities</i>	<i>No. projects</i>	<i>Projects recipients</i>	<i>Type of innovation</i>
Campagna*	4	Administrations, Companies, Municipal structure, Citizens, City user, Third sector	Technological, of service, organizational/business
Cinisello Balsamo	4	Administrations, Companies, Municipal structure, Citizens, City user	Procedural, technological, of service
Brescia	4	Administrations, Companies, Municipal structure, Citizens, City user, Third sector, Other	Procedural, technological, of service, organizational/business, of technologies
Desio	1	Citizens, City user	Procedural, technological, of technologies, organizational/business, of service
Ferrara*	5	Administrations, Companies, Municipal structure, Citizens, City user, Third sector, Other	Procedural, technological, of technologies, of service, organizational/business
Cagliari*	5	Administrations, Companies, Municipal structure, Citizens, City user, Third sector	Technological, of technologies, of service, procedural
Roma*	5	Administrations, Companies, Municipal structure, Citizens, City user, Third sector	Procedural, technological, of technologies, of service
Tavagnacco	1	Companies, Municipal structure, Citizens, City user	Procedural
Bergamo*	3	Administrations, Companies, Municipal structure, Citizens, City user, Third sector	Technological, of service, organizational / business
Torino	10	Administrations, Companies, Municipal structure, Citizens, City user, Third sector, Other	Procedural, of service, of technologies
Milano	11	Municipal structure, Citizens, City user	Technological, of service
Venezia*	5	Municipal structure, Citizens, City user	Technological, of service, of technologies, organizational/business
Trento	4	Administrations, Companies, Citizens, City user	Procedural, of service, technological
Tavagnacco	4	Companies, Municipal structure, Citizens, City user	Technological, of service
Siena	1	#	#
San Pietro a Maida	1	Citizens	Technological, of service
San Giovanni in Persiceto	1	Citizens	Technological
San Giovanni in Persiceto	1	Municipal structure, Citizens	Technological

(Continued)

Table 12.2 (Cont.)

<i>Municipalities</i>	<i>No. projects</i>	<i>Projects recipients</i>	<i>Type of innovation</i>
Rosignano Marittimo	5	Municipal structure, Citizens	Technological, of service, procedural
Rieti	6	Municipal structure, Citizens, City user	Technological, of service, procedural
Ravenna*	8	Municipal structure, Citizens	Technological, of service, procedural.
Pordenone	9	Companies, Municipal structure, Citizens	Of service
Pavia*	5	Municipal structure, Citizens	Technological, of service
Palermo	6	Companies, Municipal structure, Citizens	Technological, of service, procedural
Padova	2	Municipal structure	Of service
Oriolo Romano	1	Municipal structure, Citizens	Of service, procedural
Modena	3	Companies, Citizens	Technological, of service.
Martignacco	1	#	#
Lumezzane	2	#	#
Livorno	5	Companies, Municipal structure, Citizens	Technological, of service
Lecce	10	Administrations, Companies, Municipal structure, Citizens, City user, Third sector	Of technologies, organizational / business, technological, of service
Latina	2	Administrations, Municipal structure, Citizens	Technological, of service
La Spezia*	6	Administrations, Companies, Municipal structure, Citizens, City user	Technological, of service, procedural
L'Aquila	1	Municipal structure, Citizens	Technological, of service
Imola	4	Citizens, Other, #	Of technologies, #
Genova*	2	Municipal structure, Citizens, City user	Technological, of service
Formia	1	Companies, Citizens	Technological, of service
Fiumicino	1	Citizens	Technological, of service, procedural
Firenze*	4	Companies, Municipal structure, Citizens, #	Of service, procedural, organizational/business, #
Fabriano	1	Municipal structure, Citizens	Of service
Solarolo	1	Municipal structure, Citizens	Technological, of service
Riolo Terme	1	Municipal structure, Citizens	Technological, of service
Faenza	2	Companies, Municipal structure, Citizens	Procedural, technological, of service

(Continued)



Table 12.2 (Cont.)

<i>Municipalities</i>	<i>No. projects</i>	<i>Projects recipients</i>	<i>Type of innovation</i>
Castel Bolognese	4	Municipal structure, Citizens	Technological, of service
Casola Valsenio*	3	Companies, Municipal structure, Citizens	Technological, of service
Collesalveti	3	#	#
Crosia	1	Citizens, City user	Technological, of service
Bari	2	Municipal structure, Citizens	Procedural, of service
Cava de' Tirreni	1	Companies, Citizens	Technological, of service
Baronissi	3	Companies, Citizens	Procedural, technological, of service
Reggio nell'Emilia*	1	Municipal structure, Citizens,	Procedural, organizational/business
Ragusa*	1	Municipal structure	Of service
Formia*	1	Municipal structure, Citizens, Third sector	Of service
Brisighella*	1	Municipal structure	Technological, of service
Total	180		

Source: [www.agendaurbana.it/](http://www.agendaurbana.it/)

\* planning projects, # data not found

- (1) The size of city (small, medium or metropolitan city)
- (2) The number of projects to which a letter of recognition is assigned (A, B, C, D etc.)
- (3) The municipalities and the type of innovation (Table 12.2)

Through these parameters and after a careful reading of all the projects, the type of governance conceptualizations of the smart cities 2.0 was assigned. Table 12.3 identified the correlation between the Italian Urban Agenda projects indicated in Table 12.2 and the four governance conceptualizations of the smart cities 2.0 from Figure 12.1:

- Traditional government (Typology 1)
- Informing urban governance (Typology 2)
- Electronic governance for smart public administrators (Typology 3)
- Collaborative smart governance (Typology 4)

The outcome of this analysis led to the analysis of 104 projects for 20 municipalities. The recipients of smart-type initiatives belong to seven types:

- Administrations (17 projects out of 103)
- Citizens (79 projects)
- Companies (26 projects)
- Municipal Structure (62 projects)
- City User (26 projects)

Table 12.3 Correlations between (1) smart cities initiatives under smart governance sectors in Italian cities, (2) the national ranking between 1 and 39 in the Smart City Index 2018, and (3) the four typologies of governance identified by authors

<i>Municipalities</i>	<i>City type</i>	<i>No. projects</i>	<i>Projects recipients</i>	<i>Type of innovation</i>	<i>Typologies</i>	
Brescia	MEDIUM-SIZED CITIES	4	A, B, C, D	Administrations (prog A, C, D) Citizens (prog A, B, D) Companies (prog A, C) Municipal structure (prog A, B, C, D) Other (prog C) City user (prog C) Third sector (prog C, D)	Of service (prog A, B, C, D) Procedural (prog B, C, D) Technological (prog C, D) Organizational/business (prog C, D) Of technologies (prog C, D)	Tip, 1–prog C Tip, 2–prog D Tip, 3–prog A, B, C Tip, 4–prog A
Ferrara	MEDIUM-SIZED CITIES	5	A, B, C, D, E*	Administrations (prog D) Citizens (prog B, C) Municipal structure (prog A, C, E) Other (prog A, C) City user (prog C, D) Third sector (prog B)	Of service (prog A, B, D) Procedural (prog A, B, C, D, E) Technological (prog A, D) Of technologies (prog A) Organizational/business (prog C)	Tip, 1–prog E* Tip, 2–prog A, B Tip, 3–prog C, D Tip, 4–prog B
Cagliari	METROPOLITAN CITIES	5	A, B, C, D, E*	Administrations (prog A, D) Citizens (prog A, B, D) Companies (prog A, B, C, D) Municipal structure (prog A, C, D) City user (prog A, D, E) Third sector (prog D)	Of service (prog B, C, D, E, F) Procedural (prog D) Technological (prog A, C, D, F) Of technologies (prog C, F) No data (prog G)	Tip, 1–prog A, E* Tip, 2–prog B, C Tip, 3–prog D Tip, 4–prog E*
Roma	METROPOLITAN CITIES	5	A, B, C, D, E*	Administrations (prog A) Citizens (prog A, B, D, E) Companies (prog A, B, D) Municipal structure (prog A, C) City user (prog A, B, D, E)	Of service (prog B, C, D, E) Procedural (prog A) Technological (prog A, B, C, D) Of technologies (prog B, C, D)	Tip, 2–prog A, B, E* Tip, 3–prog C, D Tip, 4–prog B

Bergamo	MEDIUM-SIZED CITIES	3	A,B*,C*	<p>Citizens (prog A,B,C)</p> <p>Administrations (prog B)</p> <p>Municipal structure (prog C)</p> <p>Companies (prog A,B)</p> <p>City user (prog A,B)</p> <p>Third sector (prog B)</p>	<p>Of service (prog A)</p> <p>Technological (prog A,C)</p> <p>Organizational/business (prog B,C)</p>	<p>Tip,2- prog A,B*</p> <p>Tip,4- prog C*</p>
Torino	METROPOLITAN CITIES	10	A,B,C,D,E,F,G,H,I,L	<p>Administrations (prog B,C,D,F)</p> <p>Citizens (prog A,B,D,E,F,G,H,I,L)</p> <p>Companies (prog B,C,D,E,F)</p> <p>Municipal structure (prog B,C,D,G,H,I)</p> <p>City user (prog B,D,E,F,G,H,I,L)</p> <p>Third sector (prog H)</p>	<p>Of service (prog A,B,D,E,F,G,I,L)</p> <p>Procedural (prog A,C,G,H,I,L)</p> <p>Of technologies (prog C,H)</p>	<p>Tip,1- prog E,I</p> <p>Tip,2-prog B, D,G,L</p> <p>Tip,3-prog A,C,H</p> <p>Tip,4- prog F</p>
Milano	METROPOLITAN CITIES	11	A,B,C,D,E,F,G,H,I,L,M	<p>Citizen (prog A,B,D,E,F,G,H,I,L,M)</p> <p>Municipal structure (prog A,C,F,H,I)</p> <p>City user (prog A,L)</p>	<p>Of service (prog A,B,D,E,F,G,H,I,L,M)</p> <p>Technological (prog A,B,C,G,H,I,L,M)</p>	<p>Tip,1- prog D,F,G,L</p> <p>Tip,2- prog H,I</p> <p>Tip,3- prog A,B,C,M</p> <p>Tip,4- prog E,I</p>
Venezia	METROPOLITAN CITIES	5	A,B,C,D,E*	<p>Citizens (prog A,B,C,D,E)</p> <p>Municipal structure (prog C,E)</p> <p>City user (prog B)</p>	<p>Of service (prog A,B,C,E)</p> <p>Technological (prog A,B,C,E)</p> <p>Of technologies (prog D)</p>	<p>Tip,1- prog B</p> <p>Tip,2- prog E*</p> <p>Tip,3- prog A,B,D</p> <p>Tip,4- prog C</p>
Trento	MEDIUM-SIZED CITIES	4	A,B,C,D	<p>Administrations (prog D)</p> <p>Citizens (prog A,B,C,D)</p> <p>Companies (prog A,B)</p> <p>City user (prog C)</p>	<p>Of service (prog A,B,C,D)</p> <p>Procedural (prog B)</p> <p>Technologies (prog A,C,D)</p>	<p>Tip,1-prog B</p> <p>Tip,3-prog A,C,D</p>
Ravenna	MEDIUM-SIZED CITIES	8	A,,B,C,D,E,F*,G*,H*	<p>Citizens (prog A,B,D,E,F,G,H)</p> <p>Municipal structure (prog A,B,C,D,G,H)</p>	<p>Of service (prog A,B,D,E,F,G,H)</p> <p>Procedural (prog C,G)</p> <p>Technological (prog B)</p>	<p>Tip,1-prog B,H*</p> <p>Tip,2-prog G*</p> <p>Tip,3-prog C,D</p> <p>Tip,4-prog A,E,F*</p>

(Continued)

Table 12.3 (Cont.)

Municipalities	City type	No. projects	Projects recipients	Type of innovation	Typologies	
Pordenone	SMALL TOWN	9	A,B,C, D,E,F, G,H,I	Citizens (prog C,D,E,F,G,H,I) Companies (prog A,B) Municipal structure (prog C,D,E,G,H)	Of service (prog C,D,E,F,G,H,I) Procedural (prog A,B,E,G) Technological (prog D,E,F,H,I)	Tip, 1- prog D,E,G, H Tip,2- prog C Tip, 3- prog A,B,F,I Tip,4- prog I
Pavia	SMALL TOWN	5	A,B,C D*,E*	Citizens (prog A,B,E) Municipal structure (prog C,D) Municipal structure (prog A,B)	Of service (prog A,B,C,D,E) Technological (prog A,B,C,D,E) Of service (prog A,B)	Tip, 1- prog A,B,E* Tip, 3- prog C,D* Tip, 2- prog B Tip, 3- prog A
Padova	MEDIUM-SIZED CITIES	2	A,B	Municipal structure (prog A,B)	Of service (prog A,B,C)	Tip, 2- prog A
Modena	MEDIUM-SIZED CITIES	3	A,B,C	Citizens (prog A,B,C) Companies (prog A)	Of service (prog A,B,C) Technological (prog A,B,C)	Tip, 2- prog A Tip, 3- prog B,C
Lecce	MEDIUM-SIZED CITIES	10	A,B,C, D,E,F, G,H,I,L	Administrations (prog A,I) Citizens (prog B,C,D,E,F,G,I,L) Companies (prog I) Municipal structure (prog B,C,E,F,G,H,I,L) City user (prog I) Third sector (prog I)	Of service (prog A,B,C) Technological (prog A,B,C) Of service (prog A,B,C,D,E,F,G,H,L) Technological (prog A,B,C,D,E,F,G,L) Organizational/business (prog I) Of technologies (prog I)	Tip, 1- prog B,D,E,F Tip, 2- prog H,L Tip, 3- prog A,C Tip, 4- prog G,I
La Spezia	MEDIUM-SIZED CITIES	6	A,B,C D,E*,F*	Administrations (prog C,F) Citizens (prog A, B,C,D) Companies (prog C) Municipal structure (prog A,B,C,D,E,F) City user (prog C)	Of service (prog A,B,C,E,F) Procedural (prog C,F) Technological (prog A,B,C,D,E)	Tip, 1- prog B,D,F* Tip, 2- prog C,E* Tip, 3- prog A

Genova	METROPOLITAN CITIES	2	A,B*	Citizens (prog A, B) Municipal structure (prog B) City user (prog A)	Of service (prog A,B) Technological (prog B)	Tip,1-prog A Tip,4-prog B
Firenze	METROPOLITAN CITIES	4	A,B,C, D*	Citizens (prog B) Companies (prog A) Municipal structure (prog B,D) No data ( prog C)	Of service (prog A,B) Procedural (prog A) Organizational/business (prog D) No data ( prog C)	Tip,1-prog B* Tip,3-prog A,B,C Tip,4-prog C,D*
Bari	METROPOLITAN CITIES	2	A,B	Citizens (prog A) Municipal structure (prog A,B)	Of service (prog A,B) Procedural (prog A)	Tip,1-prog A Tip,3-prog B Tip,4-prog A
Reggio nell'Emilia	MEDIUM-SIZED CITIES	1	A*	Citizens (prog A) Municipal structure (progA) Third sector (prog A)	Procedural (prog A) organizational/business (prog A)	Tip,2-prog A* Tip,4-prog A*
<b>Total</b>	<b>104</b>					

Source: [www.agendaurbana.it/](http://www.agendaurbana.it/)

\* planning projects, # data not found

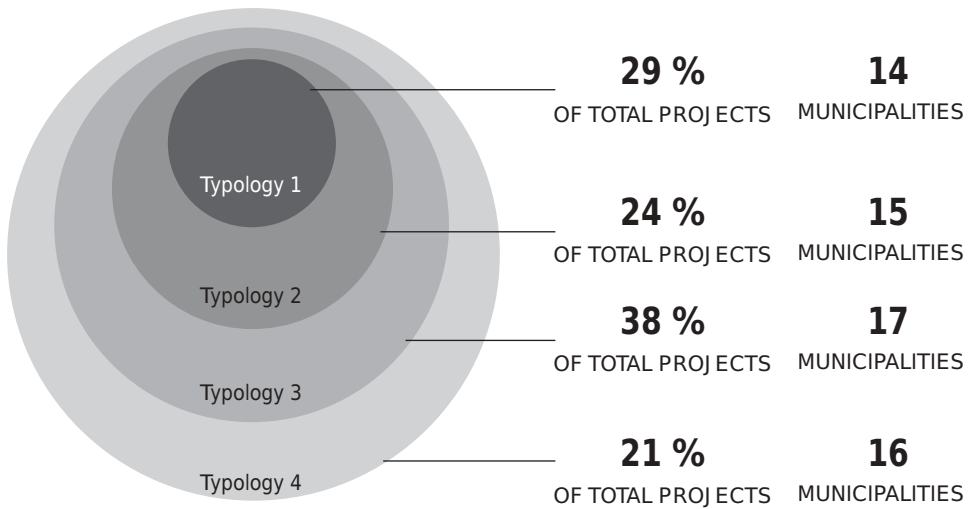


Figure 12.2 Subdivision of governance conceptualizations in Italian cities: traditional government (Typology 1); informing urban governance (Typology 2); electronic governance for smart public administration (Typology 3); collaborative smart governance (Typology 4)

Source: Chapter author(s)

- Third Sector (8 projects)
- Other

The types of innovation are classified into 5 types:

- Service (87 projects out of 103)
- Procedural (28 projects)
- Technological (57 projects)
- Technologies (12 projects)
- Organizational/business (5 projects)

In Figure 12.2 we further subdivided the governance conceptualizations of the Italian smart cities 2.0 projects. It is interesting to underline that Typology 3 (Electronic governance for smart public administrators) involves the greatest number of projects and municipalities.

Finally we mapped the same municipalities, taking into consideration the total amount of funding provided for the 104 projects that fell under the sectors ‘government’ and ‘governance in planning’. The results do not constitute a complete picture of the Italian context, since the collection and cataloging of design interventions on smart cities throughout the country is constantly in progress and therefore not exhaustive, but they do allow for some interesting observations to be drawn.

Figure 12.3 clearly shows that cities of central and northern Italy have a greater per capita investment (in euros) in smart governance actions, while the southern regions tend to invest less in these issues, with the exception of Cagliari and Bari.

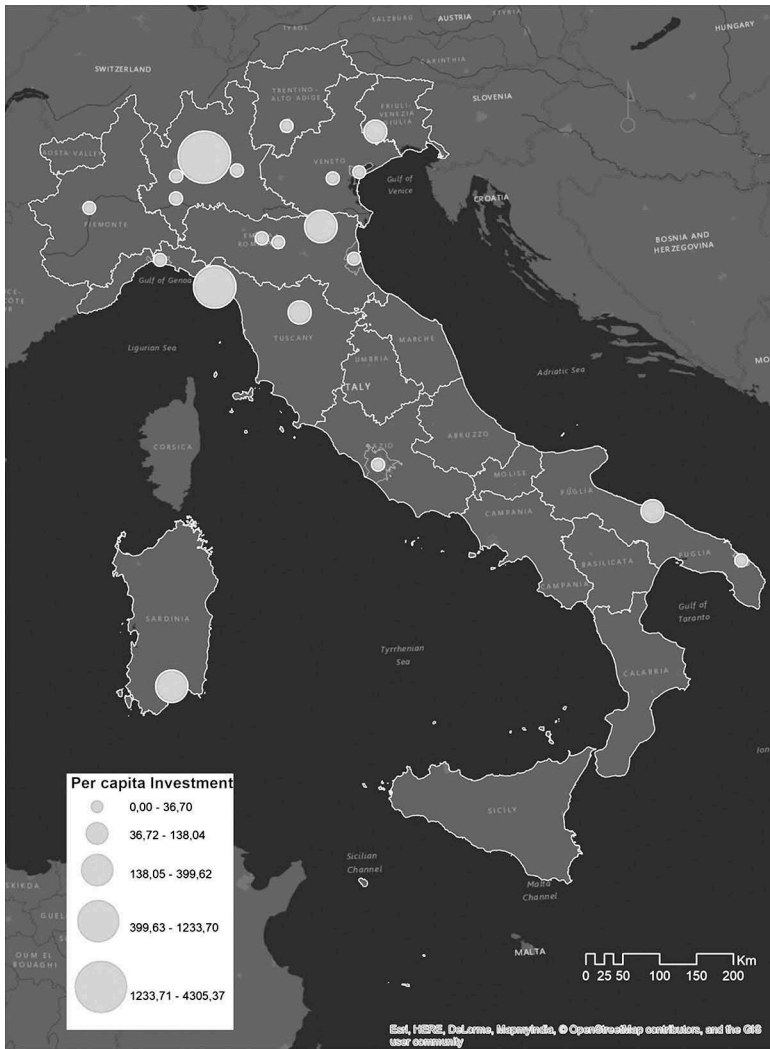


Figure 12.3 Per capita investment calculated in relation to the projects financed on the themes of ‘government’ and ‘planning’

Source: IFEL-ANCI, Agendaurbana.it

## Conclusion

In this chapter we presented a framework for comprehensive critical policy analysis of smart governance, which we identified as an overlooked topic in the emerging academic field of smart urbanism. In summary, smart urbanism, which we have defined as the transformation of smart city initiatives from smart cities 1.0 to smart cities 2.0, is characterized by a focus on smart governance. To demonstrate this, we studied the implementation through the governance of smart cities 2.0 and developed the definition of four conceptualizations applicable in society.

In order to investigate this further we undertook a comparative review of Italian smart city projects through a process of analysis that sought to understand which types of governance applied in different cities that have been useful for the transformation into smart cities 2.0. Despite the Italian smart cities initiatives being characterized by a bottom-up approach—in which each city tried to plan and execute its own smart program—the outcomes of the analysis established a changing governance model of smart cities. The analysis found that the typology of ‘collaborative smart governance’, which we consider the best conceptualization in relation to smart cities governance initiatives, currently has the lowest percentage of projects but involves a significant number of municipalities (16 out of 20 in the study). This implies that governance based on the technology-based approach is transforming into a progressive people-centric governance, in which the technology appears to be instrumental. Future research plans to extend the methodology to a comprehensive study of smart governance initiatives in Italy in order to define how these initiatives have been advanced by the smart cities 2.0 generation.

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## Notes

1 <http://agendaurbana.it/>.

2 <http://fondazioneifel.it/>.

3 The final number was 180 because repetitive projects were excluded from the analysis.

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