The discursive construction of a smart city: the case of the Wallonia Region's 'Intelligent Territory' call for projects

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Abstract

The smart city concept encompasses and covers various societal issues. As such, it can sometimes sound nebulous and ambiguous to local decision-makers. From one municipality to another, different visions and meanings of the smart city—ranging from a reductionist understanding based on technological determinism to a more holistic, socio-technical view—can coexist and adapt to local specificities and contexts. Thus, each territory develops its own vision of the smart city according to its challenges. All this may impact the implementation of smart city policies. Drawing from the extensive literature on digital government in public policy and administration as well as public management, this article investigates how local decision-makers differently portray the concept of smart city and how they discursively construct and legitimize their own vision of the concept. We analyze the Belgian "Intelligent Territory" call for projects, initiated in 2019 by the Walloon Region. In particular, a quantitative and qualitative content analysis of 88 projects submitted by various Walloon towns, municipalities and inter-municipalities is carried out. More precisely, we explore the motivations for implementing smart city policies put forward in their project by local decision-makers. The empirical results highlight the diversity of visions of the concept of smart city that exist in Wallonia city governments. We identify ten categories which offer an original classification of the opportunities offered by smart city policies according to local decision-makers. Our findings suggest that there is no one-size-fits-all approach for smart city development. Overall, this study contributes to our understanding of the (varieties of) discursive logics underpinning the construction of digital and smart city policy realities.

1. Introduction

Over the last ten years, the concept of smart city has become popular at the local level, as it provides answers to various issues common to cities and towns. Although its all-encompassing nature appeals to decision-makers, the latter may have difficulties in making sense of the opportunities that smart cities can offer to local communities. Despite the abundance of literature, no consensual theoretical framework has emerged. Each locality has its own constraints and develops its own visions according to its historical heritage and specificities. In the end, it is sometimes difficult to appreciate the scope of the concept and the opportunities offered by digital technologies. This can slow down the development of smart city policies in certain municipalities and more generally the constitution of a sustainable and intelligent territory. Observing what is happening on the ground makes it possible to overcome some of these theoretical limitations.

With a view to proposing an inspiring and appropriable framework for local decision-makers, this research investigates the "Intelligent Territory" call for projects supported by the Walloon Region. Initiated in 2019, the call for projects represented a funding opportunity for municipalities wishing to solve public problems by using new technologies in their political project. The projects submitted by local decision-makers address a variety of issues and aim to achieve different objectives. From an academic point of view, the call is also an opportunity to better understand how decision-makers legitimise their own vision of the smart city. The analysis of these projects allowed the construction of a classification based on the motivations of the decision-makers prior to their implementation. These motivations put forward expected outcomes which are sometimes similar but introduced by discourses which may diverge. Our typology highlights a discursive dimension that help to understand why the concept of smart city can seem so vague, distant, and changing. As it is based on concrete Walloon projects, the typology can also help decision-makers to reappropriate the concept more easily.

2. Theoretical framework

The concept of "smart city" is increasingly dominating urban public policy scripts around the world (Lorquet & Pauwels, 2020; Visser, 2019). It is introduced as a new paradigm to think of and organize the sustainable development of urban areas (Acuto & Parnell, 2016; Viitanen & Kingston, 2014) and, in particular, to exploit ICTs for developing livable, competitive and sustainable cities (Greco & Bencardino, 2014). To put it bluntly, a smart city is a city using ICTs to achieve: (1) resource efficient, safe, inclusive and accessible urban environments; (2) economic growth based on the principles of environmental sustainability and inclusive prosperity; and (3) equal access for all to public goods and high-quality services (United Nations, 2015). As such, the notion of smart city is therefore intertwined with that of digital government (e-government).

In the literature, as with the concept of smart city, the term "e-government" – which «blurs the borders between public administration, new technology and changing administrative methods» (Giritli Nygren 2012: 616) – has been conceptualized and operationalized in a variety of ways (for a review, see e.g. Terlizzi 2021)). Digital government belongs to a subset of process innovations that can be referred to as technological process innovations, which are aimed at creating or using new technologies in a given organization to render services to citizens (De Vries et al., 2016). As for the purpose of this article, we define e-government as the (city) government's use of the Internet and other ICTs to deliver information and public services to citizens, which may have both advantages and disadvantages. While optimists argue that digital government represents a once-and-for-all improvement for all policy domains, pessimists contend that the use of digital tools of government compromises decision-making processes due to oversimplification in data interpretation and modelling. However, there are also those who argue that e-government should not be seen as a panacea. In other words, digital technologies do not automatically create a better government unless a number of conditions are met (Asgarkhani, 2005; Heeks & Bailur, 2007; Homburg, 2018; Terlizzi, 2021).

The main arguments in favour of the digitalization of the public sector mainly point to improvements in efficiency, quality, effectiveness, accountability, and trust (Table 1). The conditions that might determine success or failure of e-government strategies concern both the demand side (e.g., digital divide with regard to access and use of ICTs on the part of the citizenry) and the supply side (e.g., implementation context, ICT infrastructure, civil servants' ICT expertise) at both the national and subnational levels of government (Di Giulio & Vecchi, 2019, 2021; Gauld et al., 2010; Helbig et al., 2009; Meijer et al., 2018; Terlizzi, 2021).

Table 1. **Main advantages associated with digital government**

Advantage	Argument
Digital government improves efficiency	ICTs, and in particular Internet-based applications, generate cost savings on data and information collection, provision, transmission, and sharing
Digital government improves service quality	The use of ICTs facilitates the understanding of user requirements making it possible to provide services tailored to citizens' needs
Digital government improves effectiveness	The use of the networking potential of ICTs to share among a range of dispersed stakeholders in several policy sectors helps achieve more effective policy outcomes
Digital government improves accountability and trust	By improving information flows and encouraging citizen engagement (e.g., through crowdsourcing), digital government helps build and strengthen the trust relationship between government and citizens, as well as between government agencies

Source: Terlizzi (2021: 20)

When it comes to city governments, achieving such advantages through smart city innovations is a complex transformational process that involves multiple and interconnected changes at the level of "hard" (e.g. buildings, energy grids, water networks, mobility) and "soft" (e.g. human and social capital, urban culture) components of urban systems (Angelidou, 2014). These changes can be grouped in three main categories (Meijer & Bolívar, 2016): technology, human resources, and governance. While the technological dimension brings the focus on the introduction of loads of ICT solutions in urban systems as the key factor for smart city development (Washburn & Sindhu, 2010), the other two categories focus on non-technological components. Because the smart city concept is

not limited to the application of digital technologies to cities, digital city governments are not a mere technological matter (Albino et al., 2015). The adoption of a context-aware perspective is crucial for fully grasping the broader meaning of this phenomenon (Castelnovo & Sorrentino, 2018). Cities require human capital to enable smart-city-related transition processes (Hollands, 2008; Shapiro, 2006), but also collaborative environments for technology to be correctly integrated and deployed in the urban environment (Torfing, 2016). The smart city concept is therefore multidimensional and consists of multiple features like enhancing the quality of life, adopting ICTs in urban systems, implementing new governance, focusing on human capital, favouring public value creation, supporting innovation and reaching a more sustainable territory (Appio et al., 2019; Batty et al., 2012; Giffinger et al., n.d.; Ibrahim et al., 2018; Ramaswami et al., 2016).

Because of such conceptual multidimensionality, "the smart city is a somewhat nebulous idea" (Shelton et al., 2015: 13). It is ambiguous and practitioners often see it as fuzzy, thus attributing different meanings to it (Angelidou, 2014; Anthopoulos, 2017; Kitchin, 2015; Korachi & Bounabat, 2020; Lazaroiu & Roscia, 2012). Policymakers have therefore cultivated different interpretations of the smart city concept, ranging from a holistic view – with a broad focus encompassing sustainability and civic participation issues - and to a more reductionist understanding – with a narrow focus on technological deployment (Mora et al., 2019). Research by Desdemoustier et al. (2019), for example, shows that a holistic view of smart cities prevails among policymakers operating in medium- and large-size Belgian municipalities. Conversely, policymakers operating in rural areas and small size municipalities either do not have any understanding of smart cities or display a narrow technology-focused interpretation. Narrowing down the focus on the holistic view of smart cities, Csukás & Szabó (2021) undertake a comparative study of smart city strategies in Amsterdam, Barcelona, London, Helsinki, New York, Vienna, Berlin, Budapest and Moscow. Four different development strategies emerge from their analysis. These strategies focus on: (1) environmentally related objectives; (2) developing and rolling out platforms and ICT applications to provide quality of life improvements

directly for citizens; (3) social inclusion activities such as involving innovations that deal with elderly care, better working conditions for disabled people, or helping immigrants to settle; and (4) activities that facilitate citizen engagement in urban governance. Consistently with Ruhlandt (2018), this work argues that the choice of a strategy over another is very dependent on local contextual parameters such as the perception of new technologies, attitude towards privacy and cultural heuristics. In line with this evidence, Tang et al. (2019) argue that city governments have different place-based interpretations of smart city development because they operate in different urban local environments where residents experience different practical problems. Bringing the focus on the broader social, technological and, economic environment in which policymakers operate, their work explains that decision making is not only affected by the needs expressed by local dwellers but it is also affected by the technological affordances of available ICT solutions and exiting urban infrastructures, as well as by the budgetary constraints that limit public and private investments. Adopting an inductive method of analysis, they examine the smart city plans of 60 municipalities and single out four different development models, which are largely associated with specific attributes of the urban environment: (1) the broad-spectrum (holistic) model of major metropolitan areas, which are economically prosperous and/or embed provincial or national capitals; (2) the business ecosystem model of cities transitioning from former transportation hubs and manufacturing centers to high-tech entrepreneurial economies; (3) the smart transportation model, which surfaces from rich and congested population centers with a history of business activity in high technology and finance; and, (4) the essential services model, which relates to urban environments where smartphone-based information systems are widely diffused in the day-to-day activities of the local population. Echoing Nam & Pardo (2011: 190), this work argues that there is no one-size-fits-all approach for smart city development and that "city governments' imperative is thus to establish a set of clearly articulated strategies that are well-situated in the environmental context". These are indeed place-based strategies that are not made in a void but based on existing economic and regional contexts (Esposito et al., 2021; Lu & de Jong, 2019). The objective of such place-based choices is to contribute to the efficient

economic and social functioning of a place consistently with the broader goals that urban planners have established for the place (Ashworth & Voogd, 1990). Therefore, place-based solutions for cities can reflect both their status quo and the future ambitions set by policy makers at the city level (de Jong et al., 2018; Han et al., 2018; Merrilees et al., 2012).

The following section provides an empirical analysis of the multiple place-based interpretations that urban policy makers at the city level can have of the smart city concept.

3. Data and methods

Sample

In the framework of the Walloon call for projects "Intelligent Territory" of 2019, 88 smart city projects were submitted. Geographically, the analysed projects are distributed between the different Walloon Provinces as follows: 10% in Namur, 13% in Walloon Brabant, 21% in Luxembourg, 26% in Hainaut and 30% in Liège.

Data analysis

In order to be properly received, local decision-makers had to fill in a form to identify, as precisely as possible, the nature of their project. For the purposes of this study, the answers provided to question 46 were selected. This question asked about the societal impact expected by the decision-makers after the implementation of their smart city project. The concept of societal impact can be understood in a relatively broad sense, which makes it possible to capture the results expected by political decision-makers after the implementation of their project. This question makes it possible to analyse the narratives that motivate the use of technology in a smart city project to respond to a public problem. The analysis of these motivations was carried out in two stages.

Firstly, in order to propose a study that is the least subjective possible, the quantitative analysis of the expected societal impacts was carried out using a computer and statistical language analysis method. To do this, an HDP thematic model was used. This is an unsupervised machine learning technique

used to derive categories from linguistic data. First, the software performs a lexical processing of the words used by the policy makers. Then, it gathers them according to their occurrence and degree of correlation. Finally, the software generates different archetypes that it considers statistically relevant.

In a second step, an interpretation of the results, based on the results of the HDP thematic model, was carried out. A second reading of the call for projects was carried out in order to give meaning to the categories generated by the software. These 10 categories were then used as the basis for a qualitative analysis of the content of the projects. This second stage, based on the quantitative analysis, made it possible to clarify and understand the 10 types of motivation of Walloon local decision-makers in the context of smart city policies. Before presenting these categories, it should be noted that different objectives can materialise in practice in a relatively similar way. The aim here is to distinguish smart city policies according to the motivations behind them and not according to the technical solutions that make it possible to achieve them.

4. Empirical evidence

According to our findings, the municipalities that participated in the call saw the following opportunities in their smart city project:

1. Strengthening the communal identity

2. Strengthen the local economy

3. Strengthen social links

4. Improving energy consumption

5. Reducing the environmental footprint

6. Improve safety

7. Improve access to public services

8. Improve the attractiveness of the municipality

9. Reduce CO2 emissions

10. Strengthen the link between public administration and citizens

Strengthening the communal identity

Some municipalities are aware of the complexity of the global challenges and the mobilisation required of everyone to meet them. In order to effectively initiate a sustainable and intelligent transition and to provide answers to these challenges, they feel it is necessary to strengthen the communal identity on their territory. Municipalities see digital technologies and smart city policies as an opportunity to modernise themselves and increase the sense of belonging of their population. In concrete terms, it is possible to simplify the interaction between civil society, politicians and the administration by setting up digital applications and platforms. This type of initiative makes information flow more easily between actors and gives them a voice. It also promotes greater transparency of policy choices and the development of a common vision of the territory and its issues. Strengthening this sense of belonging can set in motion a movement of all the actors of the commune behind a common project.

Strengthening the local economy

Various decision-makers have indicated their willingness to mobilise new technologies to promote the local and circular economy in their territory. Strengthening local trade and short circuits allows a more sustainable development of the territory in terms of economy. This type of initiative gives a boost to local businesses and promotes local economic development. From a practical point of view, some of these municipalities have expressed their enthusiasm for the development of digital platforms for local commerce. These platforms encourage citizens to visit local shops by including incentives and gamification. In concrete terms, citizens who play the game are rewarded with points. These points can then be used to unlock benefits, preferential rates or gift vouchers to be used in local shops.

Strengthening social links

According to some Walloon municipalities, local development should be achieved through smart city policies that strengthen the local fabric. Here too, digital platforms can be developed. These platforms are pointed out for their role in facilitating interactions between the associative, sports and cultural sectors and citizens. For example, some municipalities highlight the positive impact that a platform allowing consultation of the various events organised in the area could have. Such a platform would simplify access to information and make it easier to book tickets for a sports or cultural event. This type of initiative can also improve contact between different sectors with a view to facilitating the loan of equipment or communal spaces. Overall, policies of this type mobilise technology to make local life more dynamic, improve social cohesion and encourage the dynamics of mutualisation.

Improving energy consumption

Several projects have focused on the implementation of intelligent tools to automate and optimise certain energy infrastructures. Decision-makers point to positive economic and environmental externalities behind these initiatives. For example, the installation of intelligent thermostatic valves on radiators in municipal buildings makes it possible to automatically turn off the heating when these spaces are unoccupied at night or at weekends. Some devices also allow for a better understanding of the energy consumption of certain buildings and, subsequently, to raise awareness among their occupants. In concrete terms, these smart city projects enable municipalities to make savings while at the same time modernising their buildings.

Reducing the environmental footprint

Some municipalities focus their vision of the smart city on the contribution of digital technologies to environmental projects. Digital technologies facilitate the involvement and awareness of citizens behind projects with positive environmental impacts for their territory. Some projects aim to simplify soft mobility modes. For example, one project aimed to bring back to life some footpaths that, over time, have become unused. Thanks to an application, citizens can list them, and even create new

routes, in order to help the municipality bring them back to life and refresh them. Citizens are directly involved in making a change by sending information to the local authority. Other projects also focused on processes to make it easier to use a bicycle for travel. These projects generate behavioural changes and involve citizens in environmentally positive actions.

Improving security

In some cases, smart city policies and new technologies are highlighted for their ability to address safety issues. For example, the installation of sensors at certain strategic locations on the banks of a river, subject to occasional flooding, makes it possible to prevent flooding by sending an automatic signal to the relevant decision-makers and services. An alert can then be sent quickly to the inhabitants so that they can take precautions and limit material damage. These devices also make it possible to better identify problematic areas and possibly consolidate them later on. This type of discourse mainly highlights the usefulness of digital technologies in the prevention of certain risks.

Improving access to certain public services

Some municipalities suffer from a lack of public services. For example, some rural areas have a large surface area that does not allow operators such as the TEC or SNCB to offer a relevant service to the population. These municipalities find solutions to these problems in digital technology and smart city policies by setting up multimodal platforms. The idea was put forward to set up an application that would make it possible to find the appropriate mode of transport according to the needs of each citizen. The idea is to centralise different types of mobility such as solidarity taxis, carpooling, mobipoles/multi-modality hubs, carpooling parking on the same centralising application. These initiatives are based on territorial intelligence, digital technology and collaboration between citizens to improve the quality of life of inhabitants.

Improving the attractiveness of the municipality

Some municipalities base their vision of the smart city on the desire to increase economic activity in their area. It is sometimes easier or more pleasant for citizens to go to shopping areas outside their

municipality. This has a direct impact on certain streets and shops that have been abandoned by their inhabitants. Various "dormitory towns" are therefore keen to put a stop to this phenomenon and wish to mobilise technology to make their town centres more attractive. Revitalisation of town centres can be achieved, for example, by improving mobility on certain roads in the town. Some decision-makers have highlighted the impact of setting up temporary parking spaces controlled by sensors. These spaces allow drivers to park for free for a relatively short period of time and encourage a faster turnover. This makes it easier for drivers to find a parking space to visit local shops. This type of initiative reduces the number of double-parked cars or those looking for a parking space and improves the attractiveness of shopping streets.

Reducing CO2 emissions

Other municipalities want to fully engage in reducing the environmental impact of their community's actions by improving air quality. Digital technologies can help reduce CO2 emissions in a number of ways. For example, an app can help understand people's habits and provide personalised advice on how to reduce their environmental impact. To make this more enjoyable, serious game processes can be used. In concrete terms, it is a question of making an environmental approach attractive by setting up a system of trophies, monitoring progress or comparing results with other users. All of this helps to encourage the involvement of citizens. Another type of initiative highlights the usefulness of platforms as facilitators of a local collective self-consumption dynamic. In this case, the municipality is acting to promote the co-production and consumption of sustainable energy on its territory. The application connects different residents who wish to invest in an ecological and mutualisation dynamic at the neighbourhood level.

Strengthening the link between public administration and citizens

Some decision-makers highlight the interest of smart city policies in improving the links between the administration and citizens. Digital technologies provide simpler means of contact with the administration for the population. A better proximity between the municipal administration and the

citizens allows for a better collaboration with the latter. This type of initiative makes it possible to bring up expertise from the field and problems while operating more transparently and efficiently. For example, some municipalities wished to take advantage of the subsidies from the call in order to set up platforms simplifying the dialogue between the administration and the citizens. The use of digital tools as an interface between citizens and the administration makes the latter more accessible. In some municipalities, the implementation of digital and interactive notice boards was also envisaged in order to reduce a potential digital divide. These projects promote a direct link between the administration and the citizens, simplify administrative procedures and promote better cohesion in the territory.

5. Discussion and conclusion

The development of ICTs has deeply influenced how individuals behave in society and how governments act throughout all the stages of the policy process. The rapid developments in new technologies over the last years have affected the interaction between public administration and citizens, with the latter ceasing to be simple service recipients and becoming more active actors in relation to governmental affairs.

It is common to define the concept of digital government in relation to its advantages. Digitalization is seen as a tool for achieving better government in that the use of ICTs in the public sector makes it possible to improve efficiency, quality, effectiveness, accountability, and trust. However, how decision-makers perceive and make sense of these advantages in diverse contexts is a matter of empirical investigation. This article aimed at contributing to the vast literature on digital government and smart cities by empirically investigating how local decision-makers (differently) portray the opportunities offered by the use of digital technologies in city governments. In particular, this research intends to foster the debate on the importance of investigating the varieties of discursive

logics put forward by decision-makers to construct digital and smart city policy realities (Esposito et al., 2021; Schou & Hjelholt, 2019; Schou & Pors, 2019; Terlizzi, 2021).

Joining the smart city movement is not always easy. Taking hold of the concept and its potential requires real work to reappropriate the concept within a territory with its own characteristics. In order to propose more concrete theoretical analyses, it is interesting to build models that are directly based on the reality of the field. In this context, this article attempts to present the motivations that drive policy makers to adopt the smart city concept and to materialise it in Wallonia. The analysis of the "Intelligent Territory" call for projects shows how a smart city policy project can be shaped within a community. The observation of the different motivations of local decision-makers has made it possible to highlight 10 categories of projects carried out in the field. These are intended to be inspiring for anyone who wants to transform their territory intelligently and sustainably. The smart city concept should not be seen as a miracle recipe or a one-size-fits-all solution to be strictly followed. The richness of this concept lies in its reappropriation by local decision-makers, in the appropriateness of their project to their local challenges and in their ambition to be part of a global and intelligent transformation of their territory.

References

Acuto, M., & Parnell, S. (2016). Leave no city behind. *Science*, *352*(6288), 873–873. https://doi.org/10.1126/science.aag1385

Albino, V., Berardi, U., & Dangelico, R. M. (2015). Smart cities: Definitions, dimensions, performance, and initiatives. *Journal of Urban Technology*, *22*(1), 3–21. https://doi.org/10.1080/10630732.2014.942092

Angelidou, M. (2014). Smart city policies: A spatial approach. *Cities*, *41*, S3–S11. https://doi.org/10.1016/j.cities.2014.06.007

Anthopoulos, L. (2017). Smart utopia VS smart reality: Learning by experience from 10 smart city cases. *Cities*, *63*, 128–148. https://doi.org/10.1016/J.CITIES.2016.10.005

Appio, F. P., Lima, M., & Paroutis, S. (2019). Understanding Smart Cities: Innovation ecosystems, technological advancements, and societal challenges. *Technological Forecasting and Social Change*, *142*, 1–14. https://doi.org/10.1016/j.techfore.2018.12.018

Asgarkhani, M. (2005). Digital government and its effectiveness in public management reform: A local government perspective. *Public Management Review*, *7*(3), 465–487. https://doi.org/10.1080/14719030500181227

Ashworth, G. J., & Voogd, H. (1990). *Selling the City: Marketing Approaches in Public Sector Urban Planning*. Belhaven Press.

Batty, M., Axhausen, K. W., Giannotti, F., Pozdnoukhov, A., Bazzani, A., Wachowicz, M., Ouzounis, G., & Portugali, Y. (2012). Smart cities of the future. *The European Physical Journal Special Topics*, *214*(1), 481–518. https://doi.org/10.1140/EPJST/E2012-01703-3

Castelnovo, W., & Sorrentino, M. (2018). The digital government imperative: a context-aware perspective. *Public Management Review*, *20*(5), 709–725. https://doi.org/10.1080/14719037.2017.1305693

Csukás, M. S., & Szabó, R. Z. (2021). The many faces of the smart city: Differing value propositions in the activity portfolios of nine cities. *Cities*, *112*, 103116.

https://doi.org/10.1016/j.cities.2021.103116

de Jong, M., Chen, Y., Joss, S., Lu, H., Zhao, M., Yang, Q., & Zhang, C. (2018). Explaining city branding practices in China's three mega-city regions: The role of ecological modernization. *Journal of Cleaner Production*, *179*, 527–543. https://doi.org/10.1016/j.jclepro.2018.01.098

De Vries, H., Bekkers, V., & Tummers, L. (2016). Innovation in the public sector: A systematic review and future research agenda. *Public Administration*, *94*(1), 146–166. https://doi.org/10.1111/padm.12209

Desdemoustier, J., Crutzen, N., & Giffinger, R. (2019). Municipalities' understanding of the Smart City concept: An exploratory analysis in Belgium. *Technological Forecasting and Social Change*, *142*, 129–141. https://doi.org/10.1016/j.techfore.2018.10.029

Di Giulio, M., & Vecchi, G. (2019). Multilevel policy implementation and the where of learning: the case of the information system for school buildings in Italy. *Policy Sciences*, *52*(1), 119–135. https://doi.org/10.1007/s11077-018-9326-4

Di Giulio, M., & Vecchi, G. (2021). Implementing digitalization in the public sector. Technologies, agency, and governance. *Public Policy and Administration*, 1–25. https://doi.org/10.1177/09520767211023283

Esposito, G., Clement, J., Mora, L., & Crutzen, N. (2021). One size does not fit all: Framing smart city policy narratives within regional socio-economic contexts in Brussels and Wallonia. *Cities*, *118*, 1–14. https://doi.org/10.1016/j.cities.2021.103329

Gauld, R., Goldfinch, S., & Horsburgh, S. (2010). Do they want it? Do they use it? The 'Demand-Side' of e-Government in Australia and New Zealand. *Government Information Quarterly*, *27*(2), 177–186. https://doi.org/10.1016/j.giq.2009.12.002

Giffinger, R., Fertner, C., Kramar, H., & Meijers, E. (n.d.). *City-ranking of European Medium-Sized Cities*.

Giritli Nygren, K. (2012). Narratives of ICT and organizational change in public administration. *Gender, Work and Organization*, *19*(6), 615–630. https://doi.org/10.1111/j.1468-

0432.2010.00531.x

Greco, I., & Bencardino, M. (2014). The Paradigm of the Modern City: SMART and SENSEable Cities for Smart, Inclusive and Sustainable Growth. In B. Murgante, S. Misra, A. M. A. C. Rocha, C. Torre, J. G. Rocha, M. I. Falcão, D. Taniar, B. O. Apduhan, & O. Gervasi (Eds.), *Computational science and its applications – ICCSA 2014* (pp. 579–597). Springer. https://doi.org/10.1007/978-3-319-09129-7_42

Han, M., de Jong, M., Cui, Z., Xu, L., Lu, H., & Sun, B. (2018). City Branding in China's Northeastern Region: How Do Cities Reposition Themselves When Facing Industrial Decline and Ecological Modernization? *Sustainability*, *10*(2), 102. https://doi.org/10.3390/su10010102

Heeks, R., & Bailur, S. (2007). Analyzing e-government research: Perspectives, philosophies, theories, methods, and practice. *Government Information Quarterly*, *24*(2), 243–265. https://doi.org/10.1016/j.giq.2006.06.005

Helbig, N., Ramón Gil-García, J., & Ferro, E. (2009). Understanding the complexity of electronic government: Implications from the digital divide literature. *Government Information Quarterly*, *26*(1), 89–97. https://doi.org/10.1016/j.giq.2008.05.004

Hollands, R. G. (2008). Will the real smart city please stand up? Intelligent, progressive or entrepreneurial? *City*, *12*(3), 303–320. https://doi.org/10.1080/13604810802479126

Homburg, V. (2018). ICT, E-Government and E-Governance Bits & Bytes for Public Administration. In E. Ongaro & S. van Thiel (Eds.), *The Palgrave Handbook of Public Administration and Management in Europe*. Palgrave Macmillan.

Ibrahim, M., El-Zaart, A., & Adams, C. (2018). Smart sustainable cities roadmap: Readiness for transformation towards urban sustainability. *Sustainable Cities and Society*, *37*, 530–540. https://doi.org/10.1016/j.scs.2017.10.008

Kitchin, R. (2015). Making sense of smart cities: addressing present shortcomings. *Cambridge Journal of Regions, Economy and Society*, *8*(1), 131–136. https://doi.org/10.1093/cjres/rsu027

Korachi, Z., & Bounabat, B. (2020). Towards a Frame of Reference for Smart City Strategy

Development and Governance. *Journal of Computer Science*, *16*(10), 1451–1464. https://doi.org/10.3844/jcssp.2020.1451.1464

Lazaroiu, G. C., & Roscia, M. (2012). Definition methodology for the smart cities model. *Energy*, *47*(1), 326–332. https://doi.org/10.1016/j.energy.2012.09.028

Lorquet, A., & Pauwels, L. (2020). Interrogating urban projections in audio-visual 'smart city' narratives. *Cities*, *100*, 102660. https://doi.org/10.1016/j.cities.2020.102660

Lu, H., & de Jong, M. (2019). Evolution in city branding practices in China's Pearl River Delta since the year 2000. *Cities*, *89*, 154–166. https://doi.org/10.1016/j.cities.2019.01.026

Meijer, A., & Bolívar, M. P. R. (2016). Governing the smart city: a review of the literature on smart urban governance. *International Review of Administrative Sciences*, *82*(2), 392–408. https://doi.org/10.1177/0020852314564308

Meijer, A., Bolivar, M. P. R., & Gil-Garcia, J. R. (2018). From E-Government to Digital Era Governance and Beyond: Lessons from 15 Years of Research into Information and Communications Technology in the Public Sector. *Journal of Public Administration Research and Theory*, 1–6.

Merrilees, B., Miller, D., & Herington, C. (2012). Multiple stakeholders and multiple city brand meanings. *European Journal of Marketing*, *46*(7), 1032–1047. https://doi.org/10.1108/03090561211230188

Mora, L., Deakin, M., & Reid, A. (2019). Combining co-citation clustering and text-based analysis to reveal the main development paths of smart cities. *Technological Forecasting and Social Change*, *142*, 56–69. https://doi.org/10.1016/j.techfore.2018.07.019

Nam, T., & Pardo, T. A. (2011). Smart city as urban innovation. *Proceedings of the 5th International Conference on Theory and Practice of Electronic Governance - ICEGOV '11*, 185. https://doi.org/10.1145/2072069.2072100

Ramaswami, A., Russell, A. G., Culligan, P. J., Sharma, K. R., & Kumar, E. (2016). Meta-principles for developing smart, sustainable, and healthy cities. *Science*, *352*(6288), 940–943.

https://doi.org/10.1126/science.aaf7160

Ruhlandt, R. W. S. (2018). The governance of smart cities: A systematic literature review. *Cities*, *81*, 1–23. https://doi.org/10.1016/j.cities.2018.02.014

Schou, J., & Hjelholt, M. (2019). Digitalizing the welfare state: citizenship discourses in Danish digitalization strategies from 2002 to 2015. *Critical Policy Studies*, *13*(1), 3–22. https://doi.org/10.1080/19460171.2017.1333441

Schou, J., & Pors, A. S. (2019). Digital by default? A qualitative study of exclusion in digitalised welfare. *Social Policy & Administration*, *53*(3), 464–477. https://doi.org/10.1111/spol.12470

Shapiro, J. M. (2006). Smart Cities: Quality of Life, Productivity, and the Growth Effects of Human Capital. *Review of Economics and Statistics*, *88*(2), 324–335. https://doi.org/10.1162/rest.88.2.324

Shelton, T., Zook, M., & Wiig, A. (2015). The 'actually existing smart city.' *Cambridge Journal of Regions, Economy and Society*, *8*(1), 13–25. https://doi.org/10.1093/cjres/rsu026

Tang, Z., Jayakar, K., Feng, X., Zhang, H., & Peng, R. X. (2019). Identifying smart city archetypes from the bottom up: A content analysis of municipal plans. *Telecommunications Policy*, *43*(10), 101834. https://doi.org/10.1016/j.telpol.2019.101834

Terlizzi, A. (2021). The Digitalization of the Public Sector: A Systematic Literature Review. *Italian Journal of Public Policy/Rivista Italiana Di Politiche Pubbliche*, *16*(1), 5–38. https://doi.org/10.1483/100372

Torfing, J. (2016). *Collaborative innovation in the public sector*. Georgetown University Press.

United Nations (Ed.). (2015). *Transforming our world: The 2030 agenda for sustainable development*. United Nations; A/RES/70/1.

Viitanen, J., & Kingston, R. (2014). Smart Cities and Green Growth: Outsourcing Democratic and Environmental Resilience to the Global Technology Sector. *Environment and Planning A: Economy and Space*, *46*(4), 803–819. https://doi.org/10.1068/a46242

Visser, R. (2019). Posthuman policies for creative, smart, eco-cities? Case studies from China.

Environment and Planning A: Economy and Space, *51*(1), 206–225. https://doi.org/10.1177/0308518X18765481

Washburn, D., & Sindhu, U. (2010). Helping CIOs Understand "Smart City" Initiatives. *Smart City*, *17*. www.forrester.com.

Appendix on data and methods

We built our dataset on the basis of the received project proposals about *Territoire Intelligent* funding initiative. The whole documents set is made of 88 project proposals, of which 8 are OCR-type documents and thus unable to be efficiently preprocessed. Therefore, our final sample comprises 80 documents. In particular, the dataset is made of the following variables: project ID (integer number from 1 to 88), single project name (given by the authors within the attached document proposal), the response text inherent to the item 46 and the assigned theme (3 themes were allowed in the application form: Energy and Environment, Governance and Citizenship, Mobility and Logistic). Text data were preprocessed removing French stop-words after tokenization[1]; in addition, we also checked for bigrams occurrences in order to find sequences of two contiguous elements from a string of tokens (words)[2]. Finally, we lemmatized our corpus using fr_core_news_md-2.2.0 from SpaCy library[3], a natural language tool for assigning context-specific token vectors, part-of-speech (POS) tags, dependency parse and named entities. Table 1 below provides a description of the preprocessed dataset.

[1] Stop words were extended to the following irrelevant words: *plus*, *autre*, *autres*, *ainsi*, *aussi*, *aussitot*, *tout*, *touts*, *toutes*, *autant*

[2] We used the gensim library "simple-preprocess" module for a fast implementation of tokenization, stopwords removal, and bigrams detection; given the small length of text responses, we chose not to look for trigrams.

[3] https://spacy.io/models/fr

Tabe 1. **Description of the dataset**

	max	**mean**	***Tot***
tokens	234	36.72	2,864
	Theme		**number of documents**
1	Governance and Citizenship		35
2	Mobility and Logistic		22
3	Energy and environment		21
	Missing[4]		10 (8+2)
	Tot		**78**

Given that our purpose is to find any meaningful latent topics underlying the *Territoire Intelligent* corpus, we performed a Hierarchical Dirichlet Processing (HDP) topic model (Teh *et al*., 2006), a widely used unsupervised machine learning technique to infer the number of topics from the data. To this end, we chose to rely only on Noun, Adjective and Verbs POS tags. Moreover, given the presence of a widely shared set of words by applicants, we decided to further exclude from our dataset those words that lower the probability of detecting more heterogeneous topics[5].

Table 2 provides the set of the first 10 topics thrown by HDP model, ordered in a descending scale by their significance[6]. For each topic, we also provide a set of 10 most relevant words (as measured by their probability to be assigned to a specific topic). Finally, Table 2 also reports an aggregate measure for model coherence, which help distinguish between topics that are semantically interpretable and those that are mere artifacts of statistical inference[7] (overall coherence level is equal to 0.732, a quite high value for a HDP model).

[4] With respect to the item 46, two more projects showed no text response. Therefore, we ended up with a set of 78 documents.

[5] Excluded words are : *mettre*, *communal*, *permettre*, *projet*, *projets*, *grace*, *place*, *ville*, *mener*, *devoir*, *choisir*, *parking*, *celle_ci*, *jusqu*, *faire*

[6] The default value for the max number of generated topic is set to 150

[7] Topic Coherence measures are a set of indicators that score a single topic by measuring the degree of semantic similarity between high scoring words in the topic. We used two most used coherence measures in topic model evaluation, i.e "c_v" and "u_mass", which are respectively equal to 0.732 and -21, 627.

***Table 2*. Top 10 topics and their related top 20 words**

1	2	3	4	5	6	7
'comprendre',	'culturel',	outil',	'ballade',	'diminue',	'capteur',	naturel',
'application',	'borne',	'convention',	'controle',	'emission',	'system',	'onde',
'connectivit',	'preserver',	'bus',	'classique',	'equipe',	'former',	'embouteillage',
'installer',	'dynamiser',	'tout',	'economiqu',	'impliquer',	'animation',	'subside',
'maintien',	'citoyen',	'producteur',	'renforceront',	'chargee',	'innovant',	'transports',
'singulierement',	'traduire',	'differente',	'moyen',	'vocation',	'niveau',	'commune',
'adaptation',	'necessite',	'traverser',	'fuite',	'collaboratifs',	'inventer',	'famille',
'achat',	'federation',	'decideur',	'progre',	'evidemment',	'consommation',	'progre',
'commercant',	'judicieux',	'conscientisera',	'finir',	'facture',	'borne',	'similaire',
'air',	'derniere',	'derriere',	'succe',	'riverain',	'attenter',	'quartier',
'occupe',	'attent',	'code',	'jeu',	'favoriser',	'urgence',	'cliche',
'construction',	'sante',	'media',	'terroir',	'jeudi',	'reduit',	'education',
'espace',	'pont',	'assurer',	'representer',	'proportion',	'tissu',	'evolution',
'redonner',	'serie',	'plat',	'pole',	'face',	'pum',	'fondamentau',
'collectif',	'chef',	'compte',	'pris',	'reseal',	'vicieux',	'anneer',
'renforceront',	'mutualiser',	'velo',	'soutenir',	'apporter',	'dedie',	'commercial',
'etat',	'donner',	'payer',	'rarefaction',	'demarch',	'patisserie',	'induire',
'citoyen',	'redonner',	'unique',	'baisse',	'renseigne',	'lent',	'vehicule',
'piloter',	'sportif',	'numerique',	'taux',	'production',	'concerne',	'regisser',
'fondamentau'	'evaluer'	'defi'	'consommation'	'niveau'	'dernier'	'conseil'

8	9	10
'accident',	'system',	'onde',
'concert',	'panel',	'dossier',
'envisager',	'potable',	'evolue',
'actualite',	'apre',	'diffusion',
'occasion',	'simple',	'serre',
'provenance',	'laxisme',	'associer',
'inondation',	'famille',	'terme',
'susciter',	'controle',	'appele',
'evolue',	'acceder',	'culturel',
'embouteillage',	'difficile',	'electricite',
'venue',	'second',	'traiteurs',
'wifi',	'vehicule',	'reticente',
'carburer',	'quinzaine',	'inoccupe',
'dresse',	'rendre',	'judicieux',
'enjeux',	'chomage',	'seul',

'legislature', 'attractivite', 'famille',	'bus', 'reduire', 'audit',	'convaincre', 'anticipation', 'proche',
'connecte', 'consideration'	'convergence', 'idee'	'connaissance', 'dialogue

Note: Overall coherence value (c_v) is 0.732 – u-mass measure is -21.627