

# Smarten Up! Open Data, Toolkits and Participation in the Social City

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**Abstract:** The current era of austerity is placing increasing pressure on governments everywhere to do more with less, particularly at the local level where government services have the greatest impact on citizens' everyday lives. Thereby the roles of information and communication technologies and citizens are highlighted. This article is designed to yield insights into how local city administrations can facilitate and optimize citizen involvement in the context of the co-production of city services deploying mobile devices. Cities can be seen to open up public data aiming at offering new opportunities for the generation, use and integration of, among others, economic, social and environmental data. They seek to do so *via* city-hosted toolkits allowing users – which are the most important users of the city's urban environment and generating the most current data and knowledge that may inform and enrich governing practices, such as planning - to develop mobile applications emphasizing local deployment. The analytical framework focuses on the role of the (purposefully) city-provided toolkit and the citizens' capacities to engage in the public domain guided by the Living Lab approach. In doing so, the dynamics between the provided tools (and data) addressing the needs of the city and citizens underpinning citizens' everyday life experience in navigating and appropriating the urban space, are drawn out. The empirical results are used as preliminary evidence to yield a more rounded understanding of co-production of e-government information and services leveraged as a core innovative process, currently being played out, in the city of Athens (Greece) and Ghent (Belgium).

**Key words:** user participation, smart city, living lab, Athens, Ghent, toolkits, public service design.

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In recent years, the term 'smart city' has been deployed, particularly in policy-driven contexts, as an approach to address contemporary societal challenges, such as mobility and ageing populations that cities are facing. The smart city-concept is not clear-cut. Different definitions and implementations seem to point to Information and Communication Technologies (ICT) in playing a dominant role in making cities more intelligent, interconnected and efficient, while others seem to emphasize the social and economic factors guiding this process. In other words, the term seems to incorporate an integrated control of city systems underpinned by ICT infrastructure and human and social capital development (CARAGLIU *et al.*, 2009). Increasingly, however, a shift can be detected in dubbing the city social rather than smart, stressing that ICT facilitate and empower citizens to become active in shaping their urban environment, establishing relationships with the city and fellow citizens, and to collectively tackle shared urban issues and co-create solutions (de LANGE & de WAAL, 2013).

This view is inspired by literatures that tend to associate citizen engagement with a convergence of production, distribution, and consumption practices and a blending of user creativity, collaboration, and sharing-enabled and sharing-assisted network technologies (cf. Web 2.0. in O'REILLY, 2005). More specifically, pointing to a shift from individuals as mere 'consumers' to 'producers' supporting the democratization of knowledge and information. This is supported by the deployment of various terms, concepts, and models in various media and management literatures, such as convergence culture (JENKINS, 2006); culture of connectivity (van DIJCK, 2013), and wkinomics (TAPSCOTT & WILLIAMS, 2006).

By inviting and, in many cases, facilitating participatory practices, service development becomes (relatively) open and distributed. This is said to challenge the more standard division of labour between institutions and citizens, urging institutions to look at the implications for public services development (*vis-à-vis* people's "right to the city" (LEFEBRE, 1968/1996) and to adopt new, or, alternative models and ways of organization. In this context, the notion of "goodness of governance" can be heard and which is linked to terms such as (citizen) participation, consensus-driven, accountable, transparent, responsive, effective and efficient, and inclusive (VERMA & KUMARI, 2010).

In this regard, in recent years, political commitments towards open government and open data can be detected where the public sector *via* global, national, regional, local or thematic portals increasingly make open government data (OGD) available to citizens (JANSSEN, 2012); they are

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offered access to real time information about the things and people that surround them. OGD is public sector information (PSI) that is made available for reuse, as public good, as defined and regulated by Directive 2013/37/EU, the revised PSI Directive (EU 2013). As a result, arguably, a 'datafication' of the city associated with the 'smart city' concept, can be distilled relating 'smart-embedded' devices (e.g., smart phones, sensors, smart meters) to the 'intelligence' of the city providing people with real-time and location-based information. For example, sensors can monitor the air quality or detect patterns of movement of people in the city. These data, and information stemming from these datasets, can help governments to better understand their city (e.g., traffic jams, air quality), and to eventually deliver better services, including citizen-generated ones. And, which may be enabled and supported by institutional-provided toolkits facilitating a more demand-orientation, more public participation and an increasingly open and responsiveness of institutions.

However, while not a new phenomenon, to date, the user participation literature in, particularly, the media research field has tended to focus on the institutional-hosted platform, such as a city website as a site of participatory culture. It has pointed to seemingly transcending boundaries between development and usage associated with production and consumption practices, without fully explaining the mechanisms of and implications for city administrations that have sought to strategize user participation in the digital realm. In other words, more systematic research is desirable to yield insights into the development and organization of institutional-citizen interactions where production modalities interact by giving particular attention to the ways citizen participation and practices are structured and organized across permeable institutional boundaries. In particular, this literature has tended to give insufficient attention to the apparent link between user participation and technological advancement, overestimating the creative capacities of users and underestimating technological capabilities. And, which seems to demand a more multi-levelled understanding of the organization of local public service design between institutions and citizens guided by institution-hosted open data platforms (or hubs).

In addition to the perennial political, administrative and legal constraints which often hamper public sector innovation, local government also faces a number of challenges concerning standards and interoperability. There is a need for common standards or approaches to make it easier to open data from various sources and transform it into a publicly useable format (or, from 'open data' towards 'open access'). Even if local governments have heard about open data, many, particularly at the smaller, local level, do not know

where or how to begin in terms of making the information it holds available to citizens. Also, even where they do succeed in opening data, many local governments are unsure how to help citizens use it to create value.

This article, therefore, seeks to understand how citizen involvement (or, participation) is constituted and maintained in the context of the co-production of city services, and which is nowadays leveraged as a key element in city governance. It aims to provide insights into the dynamics between the city administration and citizens with particular attention to the ways the administration develops citizen participation into a city service and the ways in which that service enables and facilitates particular modes of co-development that are shown to shape and maintain a city-hosted platform as a site from which the city may benefit. The cities of Athens (Greece) and Ghent (Belgium) serve as case studies where public data is actively opened up so to engage citizens with opportunities to develop mobile applications that use local open data. It addresses the needs of the city and citizens underpinning citizens' everyday life experience in navigating and appropriating (parts of) their city. The empirical investigation focuses on the role of the (purposefully) city-provided toolkit and the citizens' capacities to engage in the public domain guided by a Living Lab approach.

The remaining sections are structured as follows: The first section yields a perspective on citizen participation *vis-à-vis* ICTs in governance practices. Next, the multi-methodological approach is operationalized for the case studies of the cities of Ghent and Athens. This is followed by a presentation of the key findings. The article concludes with a discussion of the findings drawing attention to gradations in participatory qualities or capacities and optimization practices that underpin the extent and sustainability of 'co-development' practices across institutional boundaries. It yields insights into how public service delivery, supported by an enabling and inclusive design framework at the local level, can be co-designed between the city and citizens, and from which both the city and everyday city life can possibly benefit.

## ■ Smart participation

With the proliferation of digital technologies, a growing number of government entities are applying the open government approach as a way to tap into the innovative potential of the public, and which is merely a public

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policy's philosophy rather than a political strategy of public actions aimed at citizens. The prolific role of ICTs, arguably, makes the move towards an e-government even more prevalent. Not only ICTs can be seen to improve the transparency and efficiency of government agencies, but increasingly they are also used to better facilitate democratic practices by guiding and improving interactions between government and citizens (MEIJER, 2007). However, local government cannot simply rely on technology alone. Instead, public administrations must do part of the work itself by 'opening up', such as *via* data and engaging citizens in the creation of new public service oriented applications. Attention, therefore, has been given to the role of ICTs *vis-à-vis* organizational dynamics within and across institutional boundaries.

User participation has generally been understood as an expression of a DIY culture that can provide mutual benefits for firms and users (BRUNS, 2008; VON HIPPEL, 2005), thereby highlighting a merging of firm/business interests, technological platforms, and users. In other words, taking into consideration the fact that some streams of thought have conceptualized user participation in terms of creative (or, cultural) emancipation while others have examined user participation in a business setting by focusing on profitability, user participation itself has tended to be associated with the notion of 'free'. Thus, increasingly people have invested skills, knowledge, and time in digital development practices, such as self-produced videos, game cheat tutorials, and apps, without a particularly strong financial impetus. Against the backdrop of ever cheaper, faster, and user-friendlier digital technologies this kind of Web-based user creativity has become more prevalent and not only businesses but also governments are catching on, highlighting a particular industrial logic.

What is at stake is the relationship between user participation and capitalism (FISHER, 2010) urging the dismantling of the development and organization of institution-user interactions across the institutional boundaries, drawing attention to the underlying premise of Web 2.0 production models that seems to be at odds with common conceptions of 'homo economicus' (van der GRAAF, 2009). In the dominant discourse of economic behaviour, firm and market dynamics are often explained in terms of transaction costs. This perspective suggests that under particular circumstances people use a market when the benefits minus transaction costs exceed those managed within the organisational environment. In other words, transaction costs are associated with predicting – to the extent that decisions can be quantified – when particular economic tasks will be executed by the firm or the market, that is, the issue of 'make or buy' (WILLIAMSON & WINTER, 1993). However, the organization of production

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in many contemporary Internet communities, such as open source communities and social networks, does not seem to depend on markets or managerial hierarchies and there is no direct or future monetary return.

In particular, JENKINS (2006) has pointed to a reconfiguration associated with user participation underlying business operations in the media industries which he conceptualizes using the notions of 'participatory culture' and 'convergence culture' to refer to an intermediate zone of top-down and grassroots activities, and the unpredictable influences of firm power and consumer power. BENKLER (2006) provided a conceptual framework that understands user participation in the light of the 'networked information economy' underpinning the idea that the Internet enables and facilitates increased opportunities for user participation, which generates a better likelihood of enhancing information quality and diversity in the information environment associated with freedom and autonomy. In his view, the networked information economy works to enhance the efficacy of non-market production suggesting an alternative model to organize 'commons-based peer production'. This term refers to a framework of collaboration where "inputs and outputs are shared, freely or conditionally, in an institutional form that leaves them equally available for" everyone to use as they wish outside the proprietary commercial system (BENKLER, 2006: 62).

Thus, whereas Jenkins seems to acknowledge and hail user participation in the context of commerce, Benkler understands user participation outside a commercial framework – as an alternative to firm and market-based models – by depicting user creativity as a mode of (peer) production that is based on a kind of individual action characterized by self-selection and decentralization, facilitating social sharing and exchange which are argued to underlie the networked information economy. In both streams of thought user participation has been understood in terms of productive behaviour that, to various degrees, is connected to social modalities such as collaboration and sharing, and which, as outlined above, have tended to be associated with the notion of 'free' resources or services, at least as far as users are concerned.

In this view, the organization of production across institutional boundaries has been scrutinized by examining work arrangements between institutions and users, such as by untangling user participation or creativity in terms of '(unwaged) labour' (cf. alternative mode of production involving social sharing and information exchange – BENKLER, 2006). It draws attention to the implications of (cross-boundary) production forces that seem to move away from the 'factory to society', stressing that public and private

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institutions increasingly depend on those voluntary user activities (TERRANOVA, 2000). The role of institutions can be seen to shift from content production to providing platforms/services for user, or citizen participation, where they as participants shape and maintain an institution-hosted platform underpinning product or service development efforts from which the institution is expected to benefit.

Following a knowledge-based view of institutions, users or citizens are conceived of as external resources of knowledge and skills providing the institutions with certain inputs from which it may benefit (FORAY, 2004; NONAKA, 1991). In this view, informational inputs can come from within and outside the boundaries of the institution. In particular, communities are increasingly recognized as effective organizational means enabling and facilitating complex (tacit and voluntary) knowledge sharing, inform the development of relationships, nurture new knowledge, stimulate innovation, and share knowledge within and across boundaries (cf. SUTKO & de SOUZA e SILVA, 2011; WENGER, 1998). In this role, the community tends to offer a structure of interdependence that can be characterized by relations of a minimal hierarchy and organizational heterogeneity associated with bottom-up and egalitarian accounts of power (POWELL, 1990).

The knowledge-based perspective understands learning as an interactive process where knowledge and related practices are a collective asset dispersed among networked institutions and individuals, while enhancing competences of both (LUNDVALL, 1996). It provides the basis for certain urban behaviours, such as local environmental activism, and people's or the institution's ability to know and learn to occur, as citizens become the foundations of the local city's dynamic knowledge base (van der GRAAF, 2009). In doing so, stressing the important role of knowledge in social and urban development where knowledge equals practice, by "continuously harness[ing] new technologies and processes to develop knowledge societies that are people-centered, inclusive and development oriented" (UNESCO, 2007: 1). Thus, these contributions may provide the institution with inputs across its boundaries which may advance and fine-tune opportunities for (co-)development and benefit the product or service.

A concern arises, however, from the tension between need information (generated by users) and solution information (generally originated by the institution), which is known as information stickiness. Successful product or service development deals effectively with information costs, where institutions are said to economize the acquisition of reliable need information that assists in delivering a product or service tailored to users' specific

needs. Institutions and users tend to know different things, finding expression in the development of different product and service types (VON HIPPEL, 2005). It can be costly, however, to move information from one site to another, yet, less so if users fulfil certain design tasks.

Institution-provided toolkits (or, specialized software applications) have been shown to assist in this practice of systematically outsourcing certain design tasks from the institution to users. Toolkits tend to reduce the threshold for engagement by enabling and facilitating user participation in product or service development corresponding to their individual needs (VON HIPPEL & KATZ, 2002). As such, a toolkit can facilitate citizens, viewed as valuable participants, in governance practices, co-locating problem solving tasks with need-related information. Consequently, the institutional-hosted platform where both public agencies and users meet and contribute to, operates as a gatekeeper of information and value flows between the different stakeholders. This can inform and enrich the development and sustainability of public services, better addressing local needs sensing the dynamics of cities based on the participation of citizens, companies and organizations (BALLON & VAN HEESVELDE, 2011). Thus, citizens are actively motivated to view the city itself as something they can collectively tune, in the manner that it is efficient, interactive, adaptive and flexible by bringing in their personal knowledge, helping a collective (social) intelligence to develop (FOTH *et al.*, 2008).

Yet, with the emphasis on the communal aspects of citizen participation, studies seem to have paid less attention to the organization of these dynamic relations that move across (communal/institutional) boundaries (BASSOLI, 2010; FISCHER, 2006; HORELLI, 2013). In addition, the apparent link between citizen participation and technological advancement is downplayed. In particular, a seeming lack of knowledge and skills required to participate in processing, (co-)producing and using open data (services) – both on the citizen and institutional side – can be detected (see 'data literacy' in WILLIAMS & COLES, 2007). Often, the creative capacities of citizens and the contributions they make to product/service development are overestimated (or, 'hyped'), while differences in the design and use of technologies, such as software routines and toolkit formats, tend to be under-exposed (van der GRAAF & VEECKMAN, 2014). And this when knowledge and skills seem even more important in the context of the (co)development and use process across boundaries, warranting a systematic investigation into the organization of local public service design between city administrations and citizens on institutional-hosted platforms (cf. "participation as the new ideology", COOKE & KOTHARI, 2001). The



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remainder of this article, therefore, explores the role and the optimization of the toolkit as a 'co-development site' using open data *vis-à-vis* the design capabilities of citizens.

## ■ Methodology

For this article, a multiple case study analysis was conducted for two smart city initiatives in Europe, namely Ghent (Belgium) and Athens (Greece). Aside from the traditional goals such as increasing transparency and improving government services, Ghent has aimed to connect with local developer communities, and to enable data-centric discussions *via* [data.gent.be](http://data.gent.be). The city has been quite successful in realizing these goals, but is eager to take it a few steps further, specifically: Up-skilling less experienced citizens in their use of open data, enable faster and better app development, gain better insights into how to make data interoperable, and improve internal processes for publishing open data. The interest for Athens is to showcase the added value of open data in the city services provision (see [www.cityofathens.gr](http://www.cityofathens.gr) and [www.geodata.gov.gr](http://www.geodata.gov.gr)). More specifically, the plan was to begin with exploring the open data potential, to support the city in any decision taking, policy drawn, processes identified or actual initiatives relevant to opening up data, and have new knowledge in place as far as innovative services development and deployment is concerned. Keeping in mind the ultimate mission of improving everyday life quality and the city experience *via* a citizen-oriented approach. Note that Athens is relatively new in opening up data in comparison to Ghent.

Thus, by opening up datasets (mainly provided by the administrations but also user-generated ones) and bringing different stakeholders together, the city administrations are interested in gaining better insights into citizens' local interests and needs and to deliver better services *via* smart mobile applications facilitated by toolkits on a city-hosted platform. For this purpose, citizens were invited to participate from the ideation phase to provide both suggestions for thematic toolkits and new datasets, all the way to the development and use of the mobile applications. Citizen involvement reported on here has been collected starting from August 2012 to March 2014. At the moment of writing, this initiative is still in progress (up to December 2014). Nevertheless, these early findings will provide some preliminary insights into how the city is setting up these bottom-up processes, and how early hurdles can be tackled and participation be

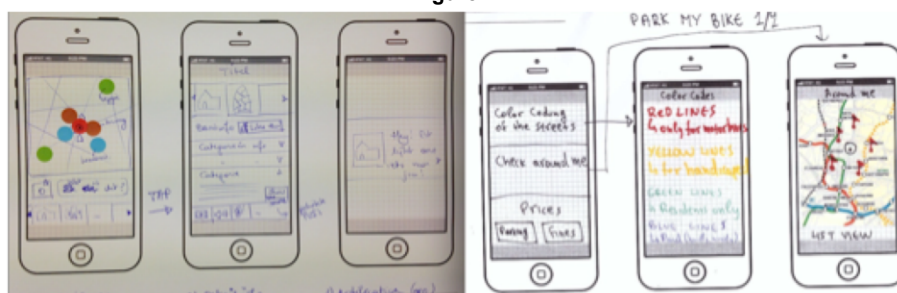
optimized. During the testing period, citizen input was collected in three iteration cycles guided by a Living Lab approach (VEECKMAN *et al.*, 2013). More specifically, a multi-methodological approach has been deployed. The first two cycles made use of interviews and a design workshop (N=12), while the latter cycle was supported by a design workshop and surveys (N=80).

### ■ From ideation, to (tailored) templates and applications

In the summer of 2012, a first workshop was organised in Ghent and Athens to facilitate interaction among different stakeholders (i.e. citizens, professional developers, ICT companies, public authorities as the providers of open data) about the development of new city services using open data, toolkits and, particularly, mobile technologies. The cities hope to provide an easy way for stakeholders to start creating own public services, as it makes the development processes less time-consuming and more cost-effective, and more importantly they can determine the mobile applications they want and need.

These workshops were organised to gather user interests and requirements, as a way to guarantee that the eventual applications are appealing and meet real citizen needs and wants. This resulted in the co-creation of mock-ups with basic functionalities inspired by some application scenarios provided by the cities, such as a Smart Cyclist scenario describing how environmental information can optimize cycling experiences in Athens. The following five focus domains to be reworked into toolkit templates – as tool peruse - could be drawn out: 1) Environmental, traffic and transportation data, urban planning; 2) Real-time availability of parking facilities near public places; 3) Points of interest (Pols) or interesting routes in the city; 4) Citizen-generated Pols; and, 5) Events in the cities. In conjunction with the envisioned (more policy) objectives of the cities, Athens focused on 1 and 2, and Ghent on 3 to 5. The following Figure gives an impression of the created paper mock-ups in both cities.

Figure 1



Next, a first version of the application templates was developed, taking the different user requirements into account, such as an easy-to-use interface, feedback functionalities. They should be seen as working mobile web applications based on HTML5 and PHP. JavaScript and JSON are also used to enhance the user experience and allow communication with the application's back-end and data. The users' location is retrieved using the geo-localizing functionality of HTML5. Initially, the templates address ready-to-use datasets provided by the cities but were soon migrated towards the use of Open Data Commons, as a 'mediator' between the application templates and the available datasets.

By December 2012, the application templates were available on the city-hosted platform underpinned by the Open Data Commons, where registered users (authenticated *via* a login) are able to download the source code. Through this platform, or Web-based 'Hub', citizens can assess the necessary toolkits, datasets and other documentation material to start developing city-related services. The Hub also has a forum for registered users to discuss and help each other in the development process. This is also an opportunity for city administrations to interact with citizens, and gradually form a live community. The city-hosted platform is a single point of entrance for all platform components (free of charge), and vice versa, citizens can upload their extensions to the designated space inside the hub. This way, the cities facilitate mobile application development, as citizens are able to personalize the application templates (through the provided source code) in order to meet their needs. For example, citizens are able to combine multiple templates, add or remove parts, and so forth.

After two testing cycles, the results showed that half of the citizen developers had been intensively adapting the templates and spent about 1.5 days working on it. The parking application in Athens and the crowd-sourcing template in Ghent were perceived as the most interesting ones.

The citizen developers were well aware that the templates were still under development, and therefore assessed the information quality as rather poor but accurate. Another related remark was the current lack of real-time data. Positive feedback was given about the accessibility of the templates using different types of mobile devices or operating systems.

Interestingly, none of the citizen developers actually developed their own application (even when a lot of technical difficulties were resolved after the first iteration). It became apparent that the skill level of the citizen developers varied. In practice, this meant that experienced citizen developers thought the templates to be 'boring' and were not intrinsically motivated to, for example, allow for problem-solving challenges and creativity, while less experienced citizen developers did not succeed in installing the templates, even with the help of others or when consulting the documentation. Instead, they evaluated the templates through the online demo website and stopped using the templates. The more experienced citizen developers also expressed this concern:

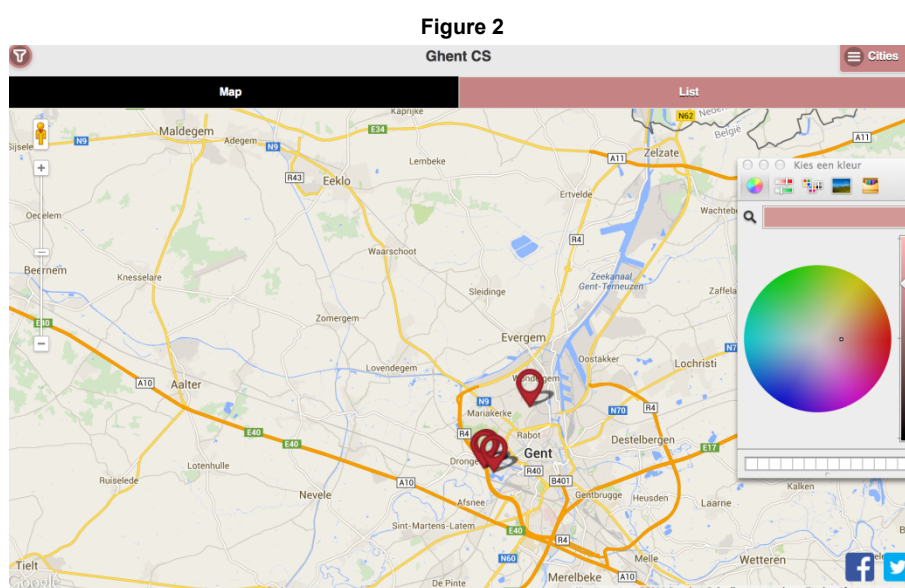
"I had a look to the templates, and I rather thought that it would be something that even my aunt or uncle could use immediately. But with these templates, no way..." (Interview, Ghent).

In order to involve less experienced to no technical experienced citizens, the citizen developers advised to design more user-friendly tools, such as a drag-and-drop interface.

Based on this feedback (August 2013), the cities decided to implement a different approach to take different levels of capabilities into account in the next iteration cycle. For this purpose, a new complimentary tool, called the 'App Generator Tool' (AGT) was made available to ordinary users. With this tool, citizens with limited to no technical knowledge can participate more easily in the application development processes. The AGT is an online graphical environment allowing users to combine various datasets available for a city and build their app online without having to use a single line of code. Thus, its goal is to make (interesting) applications easy to create and make it easy for users to add the datasets they want on the city-hosted platform, while people can actual enjoy the participatory experience rather than being frustrated. The citizen developer only needs to elect a city and (one or more) dataset(s), set the theme colour and fill in a title for the application. When the application is created, a unique identification number is assigned and the app can also be shared with others. See Figure 2 for a created app using the AGT (see for the tools and more applications [www.citadelonthemove.eu](http://www.citadelonthemove.eu)).

In addition, for those citizens with more skills or higher interest to learn, a Web-based 'converter tool' helped to reduce and overcome difficulties in deploying the datasets with the template applications. In doing so, a complimentary opportunity could be created to involve more citizens, and also the findings have shown that civil servants tended to prefer this 'middle ground' solution as using just code was often too complex and a drag and drop functionality too simple and allowed for lesser possibilities. Moreover, the converter tool also offers the opportunity for user-generated datasets to be used, shared, and managed, visualized in the apps.

In doing so, the cities could guarantee that every citizen, also those who lack specific capacities, is able to become involved and be heard in public service design from which the city and all its inhabitants and visitors may benefit.



## ■ Discussion and conclusion

The impetus for this study was evidence of various contemporary city administrations – associated with the notion of smart cities – being frustrated by: a lack of open standards for (local) government data and the vertical and cumbersome structure of their data architectures. The W3C Government

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Linked Data (GLD) Working Group has provided standards and other information to help governments around the world publish their data as effective and usable Linked Data, using Semantic Web technologies. However, there is a gap to fill to bring local governments up to the standard required to achieve their objectives in publishing and exploiting open, linked data. The maturity of a city with respect to open data often has a direct correlation with its adoption of open standards and the principles of open architectures. The integration of back-office systems with open data is said to lower the barriers to opening up opportunities for local administrations to use the feedback from those stakeholders exploiting the data they publish, drawing attention to the need of both a top-down and bottom-up stimulus in the engagement with open data.

Accepting this, this impetus was paralleled by evidence of a 'participatory turn' in user participation in digital development practices. Arguably spearheaded by the open source model of software development associated with the bazaar and gift-giving models (BENKLER, 2006), this emergent and rapidly evolving user-generated development of intangible goods or products is reflected in the claimed democratization of Web technologies. User participation is emerging as a creative infrastructure that is recognized as a significant aspect of the knowledge-based economy (United Nations, 2008).

With these interwoven streams of thoughts, the findings presented have sought to produce insights into the participatory processes between city administrations, citizens, and other stakeholders and how these processes are evolving to guide the co-design of public service delivery in the context of open data and mobile app development. For Athens and Ghent it was crucial to design for a citizen participation-approach in the solution development and adaptation of public service delivery, and which is associated with aspects of what has been termed participatory governance emphasising democratic engagement, in particular through deliberative practices (FUNG & WRIGHT, 2003). This citizen participation and collaboration can be described as one of the cornerstones of an open government (HARRISON *et al.*, 2012). A culture of open government is created when access to government information is broadened (principle of transparency), and when people are involved to form collaborations between researchers, the private sector and civil society or other stakeholders (principle of participation and collaboration).

This approach of democratic governance is supported by new technologies that may alter the relationship between citizens and their governments. However, one must keep in mind that these principles also

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incorporate some unintended consequences. In participatory governance processes it is unlikely that everybody can be represented or compete in the project. As a consequence, it can include some and exclude other citizens. Especially when some specific capacities or skills are needed to participate, there is the risk that citizens who lack these capacities are neglected, rendering them unable to become involved and heard (TURNHOUT *et al.*, 2010). *Visa versa*, it is a misunderstanding that more collaboration is always desired (McGUIRE, 2006). It is only desirable to the extent that it can meet its potentials and lead to more effective problem solving.

For Ghent and Athens then this article examined and assessed how processes of participation and collaboration across institutional boundaries could be set up between the government, citizens and other stakeholders; and which is seen as a practice of good governance. The preliminary findings suggest that citizen or public participation, starting from the ideation phase, involved a dynamic by which public concerns, needs and values are distilled and taken on in governmental and corporate decision-making as well as linked to the notion of empowerment, that is, an increase in influence and control through the acquisition of knowledge and skills. In the research design, supported by living labs, the needs and values of citizens, gathered in both cities, were taken into account so as to guide development processes and types of open datasets and, to the extent possible, citizens with different skills or other specific capacities were able to take part in these development dynamics by means of a tailored toolkit approach. Such a tactic also alludes to the promise of modularity in collaboration between various institutional and citizen stakeholder groups in the development and adoption of a common, interoperable system, easing the task of participation, coordination and collaboration of open data and locative and mobile service delivery. In this process the 'value alternation/amplification' premise of public service development and maintenance was highlighted as multi-stakeholder arrangements within Ghent and Athens and between these cities could be facilitated.

These findings made the challenge of inclusion and exclusion apparent and ways it could be handled (e.g., on the technical level). Furthermore, these two principles can also be seen as generating mechanisms for public value, in addition to, often heard, efficiency, effectiveness or intrinsic enhancements. They support an increase into citizens' and the administration's ability to 'know and learn' in outlining the city's dynamic knowledge base. The preliminary results in this context, have pointed to the knowledge-intensive and information-rich co-development associated with certain participatory modalities of civic engagement guided by design

capabilities (of citizens) and design space (particularly, the toolkit, AGT and converter tool). The findings, therefore, contribute to a multimodal understanding of citizen participation, yet the various aspects underlying participation qualities should be further investigated so as to yield a robust understanding of an inclusive framework of decentralized governance in public service design in this context.

In addition, the city administration needs to set appropriate conditions to enable local communities rather than the market to facilitate citizen participation. For many cities, and academia alike, this means to critically further examine their current institutional design *vis-à-vis* the logic of participation and governance guided by the magic of terms such as openness, inclusion and participatory literacy.

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