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Succeeding with Smart People Initiatives
Difficulties and Preconditions for Smart City Initiatives that Target Citizens

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Succeeding with Smart People initiatives: Difficulties and preconditions for Smart City initiatives that target citizens

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Abstract:

Smart City is a paradigm for the development of urban spaces through the implementation of state-of-the-art ICT. There are two main approaches when developing Smart Cities: top-down and bottom-up. Based on the bottom-up approach, the concepts of Smart People and Smart Communities have emerged as dimensions of the Smart City, advocating for the engagement of citizens in Smart People initiatives. The aim of this research is both to find the types of Smart People initiatives and to identify their difficulties and preconditions for success. However, such initiatives that aim to (1) leverage the citizens intellectually and (2) use citizens as a source of input for ideas and innovation, are understudied. Therefore, this research proposes a concentrated framework of Smart People initiatives from an extensive literature review. On one hand, this framework contributes with a common ground and vocabulary that facilitates the dialogue within and between practitioners and academia. On the other hand, the identification of difficulties and preconditions guides the academia and practitioners in how to successfully account for citizens in the Smart City. From the literature review and the conduct of case studies of five European cities, participation came out as the key difficulty across both types of Smart People initiatives and cases, closely followed by awareness, motivation and complexity.

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1 Introduction

With the fast pace of technological development, opportunities arise to address the present urban challenges. The urban population is outgrowing cities' infrastructure, climate instability calls for energy efficiency and cities are experiencing global competition for talent while societies are being segregated by the digital divide. (Clarke, 2013). The Smart City concept emerges in this context as the promised solution able to address environmental (Malhotra, Melville & Watson, 2013; Corbett & Mellouli, 2017), social and economic (Breuer, Walravens & Ballon, 2014) challenges through the implementation of state-of-the-art Information and Communication Technologies (ICT) (Piro et al., 2014). The new ICT infrastructures in terms of ubiquitous sensor networks, a plethora of smartphone applications, multi-stakeholder platforms and real-scale testbeds are proposed as solutions to today's urban challenges (Caragliu, Del Bo & Nijkamp, 2011; Lanza et al., 2016). The Smart City concept is a complex paradigm of managing urban areas that modernizes and digitizes the traditional dimensions of urbanism, governance, environment and society with information systems (Hollands, 2008). In a way, Smart Cities can be seen as realised city information systems (Bowerman et al., 2000), with the goal to collect data to transform into valuable information to in turn found Smart City solutions - through valorization of the city *buzz*. This digitization ultimately changes the way living spaces are envisioned (Prasopoulou, 2017). However, there is a long lasting debate on the definition, framework and actors of Smart Cities but one of the largest disunities concerns the approach of development: top-down or bottom-up (Albino, Berardi & Dangelico, 2015).

The top-down approach, advocated by big corporations and centralized governments, considers Smart Cities as a sole product of innovative technologies implemented in real-time geographically-spread networks. These networks monitor and control the urban infrastructure of the city with the final aim to achieve resource efficiency and sustainability. (Breuer, Walravens & Ballon, 2014). Applied examples of this paradigm are the *built-from-scratch* cities of Songdo (South Korea), Masdar (United Arab Emirates) and PlanIT (Portugal) - humankind's latest attempt to build the city of the future (Strickland, 2011). As utopian as it may seem, these projects embody dystopias of techno-centrism, digital divide, dysfunctional power balances and conservatism (Allwinkle & Cruickshank, 2011). Hollands (2015) explains that such projects, built around corporate power and profits, lack the envisioning of quality and dynamics of the social and urban development that will succeed them. Angelidou (2014) emphasizes that while focusing on efficiency, built-from-scratch cities have a restricted view on societal values (social cohesion and quality of life) that makes the adoptability of the solution questionable. Similarly, Söderström, Paasche and Klauser (2014) advocate that the technocratic concept of urban development overlooks the human factor and promotes a dangerous mentality where urban affairs are presented as matters detached from the political context. This practice contradicts the core of Smart Cities which, besides technology, also resides in the democratic and social development of regions. (Söderström, Paasche & Klauser, 2014). Ratti and Townsend (2011) and Vanolo (2014) add that top-down

developed cities are generic and tend to fail in matching citizens' needs, culture and mentality and in reaching fundamental civic goals (social cohesion, democracy and rule of law). Moreover, Ratti and Townsend (2011) claim that top-down visions ignore the enormous innovative potential that resides in the expertise, knowledge and experience of citizens about their own habitats.

In relation to this top-down scepticism, Giffinger and Gudrun (2010) acknowledge citizens (Smart People) as a vital component of the Smart City concept, besides living, mobility, environment, governance and economy (as depicted in Figure 1.1). Hollands (2008) claims that Smart Cities must start with the development of the human capital and only utilize technology when it results in improved economic and political efficiency and when it enables social, cultural and urban progress. The bottom-up Smart City is foremost about the Smart People and Smart Communities. Smart People are citizens that are actively involved in managing, envisioning and collectively co-producing their city (Walravens, 2015). Smart Communities - networks of citizens and other stakeholders linked by norms, values and goals - are in the core of Smart Peoples' sustained involvement (Batty et al., 2012).



Figure 1.1: Illustration of Giffinger and Gudrun's (2010) Smart City components

Academics and policymakers have embraced the involvement of citizens as key to succeed with Smart City initiatives and urban development (Schuurman et al., 2012). For instance, Arnkil et al. (2010) present the Quadruple Helix concept that extends the traditional Triple Helix of the public and private sector and the universities with the citizens (users) (see Figure 1.2). The citizens can be included in a diversity of ways – from mere informants to crucial catalysts in the innovation and co-producing process (Arnkil et al., 2010). Chourabi et al. (2012) describe people and communities as one of the eight dimensions that frame a Smart City (besides (1) management and organization, (2) technology, (3) policy, (4) governance, (5) economy, (6) built infrastructures and (7) natural environment) and stresses the need to address people as part of bigger communities. Also, they continue by advocating that people's needs should be balanced in a society characterized by diversity. Similarly, Geller (2003) accentuates building vibrant communities and empowering citizens on a personal

level. In these strong networks and cooperations, Smart People do not only pursue but also generate public value themselves. This generation of value enables the creation of a social capital that is acknowledged as one of the most beneficial outputs of the bottom-up approach. (AlAwadhi & Scholl, 2013; Bakici, Almirall & Wareham, 2013). Actually, social capital in terms of social knowledge transfer, networking, trust, participation and engagement determines a city's: urban competitiveness (Coe, Paquet & Roy, 2001), wealth (Caragliu, Del Bo & Nijkamp, 2011), employment level (Shapiro, 2006), attractiveness to incoming talent (Paskaleva, 2011) and even level of happiness (Ballas, 2013).

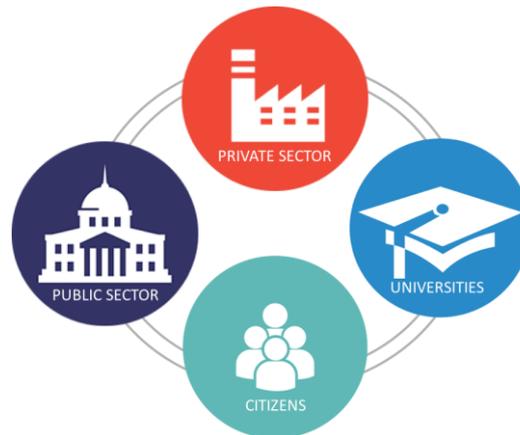


Figure 1.2: Illustration of Arnkil et al.'s (2010) Quadruple Helix

Having established the need for citizen-centric development, the focus shifts on how to approach citizens and what degree of collaboration should be in place to achieve success. There are many ways (see section 2.2) in which Smart Cities can approach citizens. These approaches, defined as Smart People initiatives in this research, may aim to leverage citizens intellectually and use their input as a source for ideas and innovation. These initiatives therefore become the citizens' interface towards the Smart City, city Information System. However, as confirmed by past research in this field, these Smart People initiatives are understudied (Schuurman et al., 2011). In these terms, this research contributes to the research field of Information Systems by both establishing a framework of Smart People initiatives and providing guidance on how to succeed with these bottom-up initiatives by identifying their difficulties and preconditions.

1.1 Purpose

The primary purpose of this paper is to investigate the difficulties and preconditions for Smart People initiatives in order to guide both academia and Smart City practitioners in how to successfully account for the citizens in the Smart City. However, since these types of initiatives are understudied, a D-route to identify the types of Smart People initiatives and to define them has to be taken. The identification and definition aim to contribute with a common ground and vocabulary in the discourse on Smart People initiatives in order to facilitate the dialogue within and between practitioners and academics.

The investigation will consist of five cases, five Smart Cities in Europe, in which the perspectives of Smart City practitioners will be explored. These Smart City practitioners' perspectives will further be complemented with the perspective of Behavioural Science academics in each city. The joint perspectives will result in a more holistic and in-depth picture of the difficulties and preconditions for Smart People initiatives needed to be addressed in order to successfully account for the citizens in the Smart City. This interdisciplinary multi-perspective aims to achieve a strong and concrete contribution to both practitioners in the field (the Smart City practitioners) and future Smart City research.

1.2 Research questions

1. What are the types of Smart People initiatives?
2. What are the difficulties and preconditions for Smart People initiatives?

1.3 Disposition

This paper will commence with a literature review. The first part of the literature review will address research question 1 by presenting what Smart People initiatives are to set the stage for the research conduct. The literature review will then address research question 2 by investigating the difficulties and preconditions for these initiatives. Secondly, the methodology used to conduct the research will be described - with research design, literature gathering, research conduct, data analysis and research quality and ethics. Thirdly, the empirical results stemming from the data collection will be outlined. Fourthly, the empirical results will be followed by a discussion synthesizing the findings from the literature review with the empirical findings. Here, some additional literature from the field of Behavioural Science will be brought in to complement the discussion. Fifthly, the paper will end in a conclusion highlighting the most important findings and presenting the research limitations and suggestions for future research.

1.4 Delimitation

The scope of this research is delimited to the difficulties and preconditions regarding Smart People initiatives. As Chourabi et al. (2012) identify, there are eight dimensions of the Smart City concept (people and communities, management and organization, technology, policy, governance, economy, built infrastructures and natural environment) and each of them can be used as a lens in the study of the Smart City paradigm. In this research, Smart People constitute a focal point and the initiatives, difficulties and preconditions in the Smart City is studied from a citizen-centric perspective. Therefore, for example technological, financial, policy-making and organizational difficulties are not investigated unless they directly related to the citizens.

2 Smart People initiatives

Smart People initiatives - Smart City initiatives that are citizen-centric - are understudied (Schoorman et al., 2011). Actually, the extensive literature review research (see section 3.1 for the methodological approach) concluded that there is no condensed framework of Smart People initiatives. This is a deficiency that may enlarge the segregation of ideas between academics and practitioners as they lack a common vocabulary. Therefore, the first aim of the literature review is define Smart People initiatives (see section 2.1) and to form a framework of the types of Smart People initiatives (see section 2.2). The second aim is to explore the difficulties and preconditions for each of the identified types of initiatives (see section 2.3).

2.1 Smart People initiative definition

As strongly advocated by Hollands (2008), the neo-conservative vision of the development of Smart Cities based on the entrepreneurial values of the elite few, is neither a sustainable nor an efficient solution. The author continues by emphasizing that the key element of Smart Cities should reside in the opportunity it provides to achieve a balanced empowerment between the public sector, the private sector and the citizens in governing the city. Similarly, Chourabi et al. (2012) relate the engagement of citizens in Smart City initiatives with the likelihood of success or failure of the effort. Following, Dameri and Rosenthal-Sabroux (2014) emphasize the need for early phase collaboration with citizens when envisioning the city.

Having established citizen participation and engagement as a cornerstone of the Smart City concept, the attention shifts to determining the nature of collaboration. Bakici, Almirall and Wareham (2013) acknowledge the creation and leveraging of human capital, in terms of knowledge-transfer, networking, trust, participation and engagement, as one of the most beneficial outputs of the bottom-up approach. Further, Hollands (2008) claim that cities cannot afford not to consider citizen contributions, beliefs, norms and ideas while governing the city. But what does *consider* mean? According to Baccarne, Mechant and Schoorman's (2014) field study on different citizen-centric initiatives, the citizens can be approached as a source of information, as research subjects and as providers of services. Evidently, there is a considerable difference between these three approaches, with the third one having to acknowledge the high potential that resides in the social capital of the citizens. This is also identified by Komninos, Pallot and Schaffers (2013), who state that citizens can be close collaborators in co-producing the city, Hancke, Silva and Hancke (2013), who acknowledge the problem-solving capabilities and expertise that resides in crowds and Benouaret, Valliyur-Ramalingam and Charoy (2013), who mean that the solutions provided by citizens for their settings exceed the solutions provided by merely employing technology in terms of accuracy and cost-efficiency.

Consequently, Smart City initiatives that primarily target the citizens, so-called Smart People initiatives, may approach the citizens by (1) leveraging them intellectually and (2) using them as a source of input for ideas and innovation.

2.2 Framework of Smart People initiatives

The following section summarizes each type of Smart People initiative identified during the literature review (see section 3.1 for the methodological approach) and ends with the proposition of a framework of Smart People initiatives. The types of initiatives described in section 2.2.1-2.2.9 are discussed with the final aim to support their relevance and contribution as Smart People initiatives - (1) leverage the citizens intellectually and (2) use the citizens a source of input for ideas and innovation. This belonging under the umbrella of Smart People initiatives is what binds the types of initiatives together. Otherwise, they differ in terms of physical and digital organization, how the citizens are engaged and how the initiatives provide value. These characteristics of each type of initiative are highlighted in the following subsections. Particular importance lies in identifying the degree of citizen involvement and the benefits the initiative produces in leveraging human capital. When appropriate, initiatives and programmes headed by the European Commission (EC) are presented as a validation of the high impact of EC sanctions in the development of Smart Cities in Europe.

2.2.1 *Living Labs*

Initiated in the mid-1990, Living Labs are now valuable social artefacts in many European cities. This results in the development of successful and highly adopted products in many fields of activities from manufacturing to eHealth or eParticipation and the boosting of innovation and regional development. (Hielkema & Hongisto, 2013). Living Labs are an extension of laboratory experiments that aim to get more accurate and naturalistic user information. This is achieved by having long-term data and allowing observation of everyday activities coupled with active involvement of citizens in the innovation process (Schuurman et al., 2011). Citizens in Living Labs can be involved as informants, testers, contributors and co-creators in the iterative development process (Veeckman & Van Der Graaf, 2014).

The two most distinctive features of Living Labs are (1) user-centric innovation methodologies and (2) natural-setting experimenting (Ballon et al., 2011; Schaffers & Turkama, 2012; Cosgrave, Arbuthnot & Tryfonas, 2013). The first feature brings together the Public and Private sector with the People in a long-lasting rather than project-lasting Partnership (also known as the 4P). In the Living Lab setting, these ecosystems of actors are easily transformed into a network for: knowledge sharing (in the form of information, expertise and skills) (Baccarne, Mechant & Schuurman, 2014), innovative iterations of artefact development or improvement (Bakici, Almirall & Wareham, 2013) and impact and behavioral change assessments (Ballon et al., 2011; Paskaleva, 2011). The second feature enables the public and private sector, especially SMEs (small and medium sized enterprises) and start-ups, to shape their solutions and business models through constant feedback and close collaboration with the potential users in real-life settings, which lowers the failure risk (Bakici, Almirall & Wareham, 2013). Besides accelerating the development, experimenting in real-life settings assures higher adaptation probability and support for the social impact of the solution (Schaffers & Turkama, 2012; Sanchez et al., 2014).

Consequently, Living Labs can be categorized as Smart People initiatives (as defined in section 2.1) as they (1) foster citizens' social capital by engaging them in the knowledge sharing network of the initiative (Baccarne, Mechant & Schuurman, 2014) and (2) use the citizens for co-creating the iterative development process (Veeckman & Van Der Graaf, 2014).

The literature is poor on methods and tools used in Living Labs. Here, the research of Leminen and Westerlund (2017) becomes interesting, as it proposes a dual axis frame. The frame consists of (1) the innovation process (*linear* or *iterative*) and (2) the tools (*standardized* or *customized*) to categorize the approaches in existing Living Labs with their advantages and possible side-effects. The Living Lab environment in Europe is fragmented, hindering cross-platform collaborations (Ballon et al., 2011). This holds true even though the EC has founded the European Network for Living Labs (EC, 2006) that aims to create a pan-European, highly diverse (in terms of varieties of cultures, societal backgrounds) test-bed for the enterprises to test their solutions.

2.2.2 Open Data

The development of ubiquitous sensor networks, social media forums and virtual platforms have suffocated city administrators with *big data* (Janssen, Charalabidis & Zuiderwijk, 2012). Whilst the theoretical potential of the data is high, time and knowledge constraints within the local administration restrict its benefits (Nam & Pardo, 2011a). Several local administrations that recognize their limited knowledge and skills but still acknowledge that how data is leveraged and shared within the city will determine their competitiveness, have opted for Open Data platforms (Clarke, 2013). In order to support civic engagement (Davies, 2010) in Open Data platforms, data from numerous activities in the city (transport, health, agriculture, business, law and education (Theodoridis, Mylonas & Chatzigiannakis, 2013)) is freely available for everyone to use and republish as they wish. The use should be allowed without restraints from privacy restriction, copyright, patents or other mechanisms of control to the extent that it does not break national norms and regulations (Dameri & Rosenthal-Sabroux, 2014). Therefore, citizens in Open Data platforms can be approached as potential users and publishers of data.

The availability of and access to Open Data have proven to achieve four key advantages. First, Open Data facilitates the creation of new businesses concerned with the improvement of city services (Hielkema & Hongisto, 2013; Clarke, 2013; Lee, Hancock & Hu, 2014). Second, by opening up their data, local governments become more accountable towards citizens. This increases the perceived governmental transparency and allows the government to expect higher levels of trust and satisfaction in return. Ultimately, the duo-power structure in the relationship between the local administration and the citizens becomes more balanced. (Batty et al., 2012; Baccarne, Mechant & Schuurman, 2014). Third, when the data is opened citizens perceive that they have a higher share in the city administration and that they can co-govern the city. In turn their civic engagement is fostered. (Clarke, 2013; Christopoulou, Ringas & Garofalakis, 2014). Fourth, and last, availability of data increases citizen creativity, recalls for innovation and boosts competition - all variables that contribute to the creation of a collective intelligence in the city that in turn results in the creation of better services and

products (Hielkema & Hongisto, 2013; Janssen, Charalabidis & Zuiderwijk, 2012; Bakici, Almirall & Wareham, 2013; Meijer & Bolívar, 2016).

Accordingly, Open Data can be categorized as a Smart People initiative (as defined in section 2.1) as it (1) helps balance the duo-power structure between citizens and local administrations (Batty et al., 2012; Baccarne, Mechant & Schuurman, 2014), fosters citizens' social capital in terms of civic engagement (Clarke, 2013; Christopoulou, Ringas & Garofalakis, 2014) and (2) uses citizens as sources (publishers) of data.

The EU encourages Open Data initiatives. This is emphasized in the *EU Commission's Open Data Strategy* (EC, 2017a) and the EU funded project *Citadel* that aims to facilitate the creation of mobile apps from Open Data in many European countries through templates.

2.2.3 Open Innovation

The traditional top-down central planning often fails to create a city that matches citizens' needs and converges with how the citizens envision the future of their habitats. Moreover, the creative and cognitive skills inside local administrations are limited and framed by specific (political) agendas. (Komninos, Pallot & Schaffers, 2013). Realizing these limitations in a time when the potential for innovation determines the competitiveness of a city, local administrations are opting for Open Innovation platforms – an approach to manage innovation and knowledge with a longer history in the private sector (Paskaleva, 2011; Schuurman et al., 2012). Open Innovation platforms are citizen-driven approaches based on networking and cross-institutional relations. They aim to align innovation policies with the goals of urban development and shared visions, knowledge, skills, experience and strategies. Citizens in Open Innovation initiatives can be engaged in co-producing, managing and envisioning solutions, rather than solely participating. In this way, they extend the R&D department of the city. (Paskaleva, 2011). Besides the virtual Open Innovation platforms that Paskaleva (2011) mentions, a concrete physical example of an Open Innovation platform could be a warehouse where citizens are provided with tools, such as 3D-printers, to create and innovate (Diez, 2012).

The main aim of Open Innovation platforms is total inclusiveness of stakeholders in managing the city. Open Innovation platforms make use of collective creativity by connecting the public sector, the private sector, educational institutions (universities, research centres) and the citizens in what is known as the Quadruple Helix (see Figure 1.2 above) of collaboration (Baccarne, Mechant & Schuurman, 2014). In this way, the efforts of different stakeholders are synergized to approach the city needs in a more holistic way resulting in new products and services that are developed with the simultaneous consensus of end-users, experts, providers and vendors (Ballon et al., 2011; Hielkema & Hongisto, 2013). Since the solutions are reached through co-production rather than mere participation, Open Innovation platforms contribute to the establishment of close collaborations among the Quadruple Helix stakeholders, shaping relationships that are long-lasting and mutually-beneficial (Komninos, Pallot & Schaffers, 2013). Consequently, a higher quality of social interaction is promoted, resulting in strengthened social capital in terms of citizens' level of participation and civic engagement (Lee, Hancock & Hu, 2014). As Paskaleva (2011) stresses, the breakthrough of this management tool is that the citizens are recognized as an important dimension of the city

and treated with reciprocity in sharing benefits and responsibilities for the resulting decisions.

As a result, Open Innovation can be categorized as a Smart People initiative (as defined in section 2.1) as it (1) strengthens social capital in terms of citizens' level of participation, civic engagement and empowerment (Lee, Hancock & Hu, 2014) and (2) uses citizens as co-producers of their habitats.

The European Commission have stimulated the experimentation with Open Innovation platforms through CIP ICT-PSP and FP7-ICT programs in which citizen-driven initiatives are funded in order to reach inclusive growth and high adoption of technological solutions (EC, 2012; EC, 2015b).

2.2.4 Crowdsourcing

The research of Surowiecki (2004) on *wisdom of crowds* and of Lévy (1994) on *collective intelligence* emphasize that the combined intelligence of a group of people exceeds the performance of the most intelligent member (Schoorman et al., 2012). In the context of Smart Cities, the concepts of wisdom of crowds and collective intelligence are enabled by Crowdsourcing platforms that connect groups of people, or crowds, in an attempt to collaboratively complete tasks quickly (Hancke, Silva & Hancke, 2013). Crowdsourcing platforms can enable (1) data collection, (2) data selection and (3) data assessment exclusively through bottom-up approaches without the need for top-down agency (Benouaret, Valliyur-Ramalingam & Charoy, 2013). Therefore, citizens in Crowdsourcing initiatives are exploited as source of ideas, innovations and engaged as problem-solvers.

Researchers evaluate Crowdsourcing as a more fruitful tool in reaching meaningful and highly adaptable solutions in comparison to groups of experts or sole technological platforms (Schoorman et al., 2012; Benouaret, Valliyur-Ramalingam & Charoy, 2013). Benouaret, Valliyur-Ramalingam and Charoy (2013) advocate that the solutions achieved through Crowdsourcing exceed the solutions provided by sensors or computers in terms of accuracy and expenditures. In their field study, Schoorman et al. (2012) show that whilst the solutions achieved through Crowdsourcing do not score high on innovativeness they are more easily adoptable by the citizens. Moreover, since Crowdsourcing approaches citizens and calls for their participation, social capital in terms of civic engagement and empowerment can be fostered. This may in turn improve decision-making, enhance services and promote new business opportunities and job creation. (Borges & Zyngier, 2014). The resulting maturity of the human capital is achieved by the incremental production of public value by the citizens and the establishment of collaboration networks in Crowdsourcing events (Baccarne, Mechant & Schoorman, 2014; Christophoulou, Ringas & Garofalakis, 2014). The improvements in decision-making, city services and management, arise because the citizens have a deeper knowledge and understanding of their problems and can address them in a more holistic way (Borges & Zyngier, 2014).

Consequently, Crowdsourcing can be categorized as a Smart People initiative (as defined in section 2.1) as it (1) fosters social capital in terms of civic engagement and empowerment and (2) uses citizens as problem-solvers and sources of ideas and innovations (Schoorman et al., 2012).

2.2.5 Crowdsensing

City administrations face significant challenges posed by the urban areas' spatial distribution, the plethora of standards to comply with and the complexity and granularity of the infrastructure that monitors and senses the urban structures or the environment. Therefore, Crowdsensing has emerged as both a state-of-the-art solution for sensing the ubiquitous city and a tool for sharing concerns regarding the efficacy and efficient use of the city infrastructure by *the consumers* of the city. Crowdsensing stands for the gathering and tracing of infrastructural, environmental and spatial information of urban spaces by using citizens to collaborate through their mobile devices and the Internet. (Cardone et al., 2013; Hancke, Silva & Hancke, 2013; Gabrys, 2014). Therefore, in Crowdsensing initiatives, citizens are engaged as collectors and publishers of data.

Crowdsensing can be applied in two ways (1) participatory sensing, when citizens manually determine to send their data, and (2) opportunistic sensing, when data collection is pre-agreed with the citizens and proceeds automatically (Mirri et al., 2016). Through Crowdsensing the citizens do not only harvest data, but they interact with information that may affect their way of living towards being more environmentally-friendly and energy-efficient (Balestrini, Diez & Marshall, 2014). However, it is important to stress that Crowdsensing platforms do not intend to replace sensor networks but rather to validate the sensor reporting (Mirri et al., 2016) and increase the sensitivity of the monitoring in the house/person unit (Balestrini, Diez & Marshall, 2014). Indeed, Crowdsensing embodies distinct benefits in comparison with sensor network monitoring (Hu et al., 2013). Firstly, Crowdsensing is a cheaper solution because it does not require the deployment of a fixed infrastructure. Secondly, Crowdsensing can enable monitoring of areas where deploying a fixed infrastructure may pose significant challenges (Cardone et al., 2013; Sun et al., 2016; Mirri et al., 2016). Thirdly and lastly, even if Crowdsensing does not theoretically require strong social links between citizens, more often than not it results in fostering community collaboration and civic participation (Pouryazdan et al., 2016).

Accordingly, Crowdsensing can be categorized as a Smart People initiative (as defined in section 2.1) as it (1) fosters community collaboration, civic participation (Pouryazdan et al., 2016), provides citizens with information that they can use in their daily decision-making (regarding energy, environmentality etc.) (Balestrini, Diez & Marshall, 2014) and (2) uses citizens as collectors and publishers of data.

2.2.6 Innovation Districts

Clusters are well-studied economic models in which interconnected companies achieve (1) higher productivity, (2) innovation and (3) stimulation for new business formations, through geographic proximity (Porter, 2000). Based on the concept of clusters, Smart Cities are exploring the formation of interchangeably so-called Smart Hubs/Parks or Innovation Districts as pockets for regional growth (Batty et al., 2012; Baccarne, Mechant & Schuurman, 2014). Innovation Districts are clusters of start-up companies, creative industries and inter-firm collaborations. These clusters are often organically located in large, skilled, well-connected urban environments and benefit from governmental incentives and stimulation to achieve stable growth and innovation. (Nathan, Vandore & Whitehead, 2012). Innovation

Districts therefore, engage citizens by supporting them in their entrepreneurial ventures.

Innovation Districts connect a number of stakeholders (governments, universities and research institutes, industries and research labs, start-ups, SMEs, landlords and developers within the district) each attracted by win-win opportunities (Cosgrave, Arbuthnot & Tryfonas, 2013). Nathan, Vandore and Whitehead (2012) categorize Innovation Districts as *hands-on*, *hidden-hand* and *hands-off* depending on the degree of governmental intrusion in the initiative. Zooming in on the hidden-hand model, which is gaining more popularity in Smart City contexts, governments incentivize the creation of Innovation Districts by tax incentives, cheap rents or service provision (communication infrastructure, housing and transportation) (Cosgrave, Arbuthnot & Tryfonas, 2013). Besides enabling stable economic growth and innovation, Innovation Districts have a high impact on the quality of the human capital in the region because of the highly skilled and highly educated citizens that they employ (Cosgrave, Arbuthnot & Tryfonas, 2013). Moreover, the advantage of building human capital will translate into long-term positive impacts on the competitiveness of the region (Glaeser & Berry, 2006). As advocated by Glaeser and Berry (2006), an initial advantage in human capital now will produce an even larger advantage in human capital later.

Cosgrave, Arbuthnot and Tryfonas (2013) emphasize the importance of Innovation Districts in the valorization-chain of ideas and products in Smart Cities. As Living Labs and Crowdsourcing initiatives are product-focused, Innovation Districts have a clear role in transforming the products that come out of these initiatives into marketable artefacts. This in turn enables the creation of business/economic value. (Cosgrave, Arbuthnot & Tryfonas, 2013).

As a result, Innovation Districts can be categorized as Smart People initiatives (as defined in section 2.1) as they (1) impact the quality of human capital in the area by providing more jobs and attracting human capital from outside the area (Cosgrave, Arbuthnot & Tryfonas, 2013) and (2) act as the last ring of the valorization chain in the Smart City context by using the ideas and solutions built in the Innovation District in the city (Cosgrave, Arbuthnot & Tryfonas, 2013).

2.2.7 Participatory eGovernance

Nam and Pardo (2011a) emphasize that a fundamental change in the way cities are governed today is how it provides services to citizens. As the traditional physical bureaus of service delivery suffered from lack of time and participation, poor efficiency and efficacy, Smart Cities deployed eServices. As far as eServices are concerned, one of the most ambitious strategies is the provision of a single entry point. (Aldama-Nalda et al., 2012). However, according to Macintosh and Coleman (2003) and Paskaleva (2009), the provision of eServices and information is only the first stage of the duo-power structure stabilization between governments and citizens in Smart City contexts. The second stage is eParticipation - the electronic delivery of governmental services with the underlying objective of including citizens in the policy development process (Macintosh & Coleman, 2003). Through eParticipation, local governments share the power to manage, plan, envision and co-produce

the city with the citizens (Ertiö, 2013), enabling citizens to raise issues, change agendas and modify government initiatives (Davies, 2015).

eParticipation has the potential to improve the relationship between citizens and local administrations. This improvements primarily concerns service quality and efficacy, transparency and responsiveness, promotion of trust, social inclusion and citizen satisfaction. (Ertiö, 2015). Moreover, eParticipation blurs the strict borders between citizens and businesses, on one side, and local administrations, on the other side, by making their interaction faster and more convenient. In turn, this results in lower costs, healthier competitiveness and economic growth. (Davies, 2015). Furthermore, the accessibility of right information from both citizens and governments at the right time will increase the quality of decision-making, which is a precondition for sustainable development (Khansari, Mostashari & Mansouri, 2013). According to field research by Ertiö (2013), eParticipation through mobile devices can reach new audiences, complement the traditional participation channels and consequently reach higher inclusion.

Consequently, Participatory eGovernance can be categorized as a Smart People initiative (as defined in section 2.1) as it (1) provides citizens with the right information that increases the quality of their decision-making (Khansari, Mostashari & Mansouri, 2013), makes space for higher inclusion in governance and (2) uses citizens to plan and co-produce the city (Ertiö, 2013).

The European Commission has initiated several programs and projects regarding eGovernance and eParticipation. Examples are: the European eGovernment Action Plan 2016-2020 (EC, 2017b), the Malmö Ministerial Declaration on eGovernment (EC, 2009) and the eParticipation Preparatory Action (EC, 2015a). These stress public sector revitalization and stakeholder inclusion and reemphasize the utopia for a common pan-European platform of collaboration (EC, 2017b).

2.2.8 Online Learning

Online Learning encompasses education from multiple sources in the city and aims to reach individuals in their settings. The goal is to leverage the human capital in terms of contextual learning, technology literacy and the city goals and vision (environmentality, sustainability, social inclusion etc.). (Christopoulou & Ringas, 2013). Online Learning brings several benefits to the citizens. Firstly, Online Learning aids certain communities to acquire the necessary competences to join the Smart City knowledge-transfer chain and benefit from the capacity-building technologies (Allwinkle & Cruickshank, 2011). Secondly, if implemented successfully, Online Learning can leverage the human capital in a city in terms of entrepreneurship, innovative spirit, affinity to lifelong learning and creativity. Since these capabilities of citizens define the competitiveness of a city, Online Learning fosters the competitiveness of an area as a by-product of leveraging its human capital. (Holotescu et al., 2016). Similarly, since cities with a well-educated labour force have the tendency to achieve rapid urban growth, Online Learning can be a tool for economic progress (Albino, Berardi & Dangelico, 2015). Thirdly, through Online Learning activities, local governments can affect certain capabilities that the citizens need to develop in order to contribute to the city goals and ambitions (Andone, Holotescu & Grosseck, 2014). One instance of this benefit is the

fostering of entrepreneurship spirit through Massive Open Online Courses (MOOC:s) and Open Education Resources (OER:s) in the city of Timisoara as described by Andone, Holotescu and Grosseck (2014).

Online Learning can be deployed in the form of activities that are (1) regular, habitual or (2) incidental, unplanned. Either way, the learning process aims to take place in the context where the need for knowledge emerges, immersing the citizen in a more engaging experience (Christopoulou & Ringas, 2013). According to Christopoulou, Ringas and Garofalakis (2014), this type of contextual learning is highly motivational and engaging and results in fostering citizens' participation and sense of belonging and enables urban social interactions.

Accordingly, Online Learning can be categorized as a Smart People initiative (as defined in section 2.1) as it (1) fosters social capital by including citizens in the knowledge-transfer chain as beneficiaries (Allwinkle & Cruickshank, 2011) and (2) uses citizens' knowledge and experience in citizen knowledge-transfer (Christopoulou & Ringas, 2013).

The European Commission has initiated several Online Learning initiatives. These especially target marginalized communities with the final aim to diminish social segregation and the digital divide. One such example is the program *MASELTOV* (Mobile Assistance for Social Inclusion and Empowerment of Immigrants with Persuasive Learning Technologies and Social Network Services). (Gaved et al., 2012).

2.2.9 Interactive Social/Virtual Networks/Platforms

Interactive Social/Virtual Networks/Platforms (ISVNP:s) are cyberspaces of forums, meetings and virtual spaces. These cyberspaces empower a ubiquitous intelligent network of people collaborating, participating and sharing. (Albino, Berardi & Dangelico, 2015). ISVNP:s create the possibility for private and public organizations, educational and non-governmental institutions, citizens and other stakeholders to foster a two-way communication based on ideas sharing and feedback (Coe, Paquet & Roy, 2001). Therefore, ISVNP:s engage citizens by providing them with additional digital spaces for ideas sharing.

ISVNP:s enable the infrastructure for bottom-up approaches, encourage participation and engagement and decentralize city management (Komninos, Pallot & Schaffers, 2013). Moreover, ISVNP:s leverage social capital by creating information-rich, interconnected and homogeneously-empowered communities that share a strong sense of belonging (Kanter & Litow, 2009; Komninos, Pallot & Schaffers, 2013). ISVNP:s are inclined to diminish the social segregation by equally empowering different socioeconomic groups (Kanter & Litow, 2009). Moreover, as Allwinkle and Cruickshank (2011) describe, ISVNP:s are geographically *intelligent*, because they enable the creation of natural communities that share concerns and work towards the achievement of the same goals despite the geographic distance.

As a result, ISVNP:s can be categorized as Smart People initiatives (as defined in section 2.1) as they (1) leverage social capital in terms of creating information-rich, inclusive communities and diminishing social segregation (Kanter & Litow, 2009) and (2) use citizens as collaborators (Albino, Berardi & Dangelico, 2015).

2.2.10 Framework of Smart People Initiatives

Stemming from section 2.2.1-2.2.9, a framework of Smart People initiatives could be formed containing all the types of Smart City initiatives that target citizens by either leveraging them intellectually and/or using their input for ideas and innovations (see Table 2.2.10.1).

Table 2.2.10.1: Framework of types of Smart People initiatives with definitions

Smart People initiative	Definition	Reference
Living Labs	<i>An extension of laboratory experiments, aiming to get more accurate and naturalistic user information by having more long-term data and allowing observation of everyday activities coupled with active involvement of citizens in innovation process.</i>	Schuurman et al. (2011)
Open Data	<i>Data that is freely available to everyone to use and republish as they wish, without restrictions from privacy restriction, copyright, patents or other mechanisms of control which support civic engagement.</i>	Dameri & Rosenthal-Sabroux (2014); Davies (2010)
Open Innovation	<i>A citizen-driven approach based on networking and cross-institutional relations that aims to align innovation policies with the goals of urban development and share visions, knowledge, skills, experience and strategies.</i>	Paskaleva (2011)
Crowdsourcing	<i>Consists of outsourcing tasks to a group of people, or crowd, in an attempt to collaboratively complete tasks quickly. A combination between Open Innovation and wisdom of crowds.</i>	Hancke, Silva & Hancke (2013:414); Schuurman et al. (2012)
Crowdsensing	<i>Gathering and tracing of infrastructure, environmental and spatial information for urban spaces using citizens to collaborate through their mobile devices and the Internet.</i>	Cardone et al. (2013:112); Hancke, Silva & Hancke (2013:394)
Innovation Districts	<i>Cluster of start-up companies, creative industries and inter firm collaborations, often organically located in large, skilled, well-connected urban environments benefiting from governmental incentives and stimulation to achieve stable growth and innovation.</i>	Cosgrave, Arbuthnot & Tryfonas (2013:672); Lee, Hancock & Hu (2014); Nathan, Vandore & Whitehead (2012)
Participatory eGovernance	<i>Electronic delivery of governmental services with the underlying objective of including citizens in the policy development process.</i>	Edwards (2001:81); Lee, Hancock & Hu (2014:84)
Online Learning	<i>Education deriving from multiple sources in the city to reach individuals in their settings, aiming at leveraging human capital in terms of contextual learning, technology literacy and city goals and vision (environmentality, sustainability, social inclusion etc.).</i>	Andone, Holotescu & Grosbeck (2014:2); Christopoulou & Ringas (2013:2)
Interactive Social/Virtual Networks/Platforms	<i>Cyberspace of forums, meetings, virtual spaces that empower a ubiquitous intelligent network of people collaborating, participating and sharing.</i>	Albino, Berardi & Dangelico (2015:8); Baccarne, Mechant & Schuurman (2014); Hu et al. (2014); Letaifa (2015)

2.3 Difficulties and preconditions for Smart People initiatives

Having established the foundation for this research, with a Smart People initiative definition and a framework of the types of Smart People initiatives, the focus shifts to the primary

purpose of this research. The following sections summarize the difficulties and preconditions for each type of Smart People initiative identified during the literature review (see method for reviewing process in section 3.1).

2.3.1 *Living Labs*

Citizen participation, highly influenced by the citizens' self-perceived abilities, motivation and satisfaction, is a crucial factor for the success of the Living Labs. In order to facilitate citizen participation, *creative toolkits* may be used with which citizens can express their ideas, feelings and feedback. (Veeckman & Van Der Graaf, 2014). Moreover, even though the natural motivation of the citizens to participate is high, since they contribute in the co-creation of their own environment, citizen should be constantly encouraged with “the motivator of love or glory in the form of creativity” (Veeckman & Van Der Graaf, 2014:3). Citizen involvement can be hindered by the fact that Living Labs are time consuming experiments and the enthusiasm of the citizens may decline during the routine iterations (Cosgrave, Arbuthnot & Tryfonas, 2013). Moreover, the technical issues occurring while experimenting with the artefacts may decrease the interest of the citizens and lead to possible drop-outs. If the participation challenges of Living Labs are not addressed, the initiative may end up increasing the digital divide and social incoherence in the society. (Veeckman & Van Der Graaf, 2014).

Initiative maturity (the state when the initiative is fully developed) has proven to be another difficulty when implementing Living Labs. Since the initiatives are bounded by limited public funds and project time-frames, Living Labs have a tendency to remain underdeveloped. (Schaffers & Turkama, 2012; Schaffers et al., 2011b). It is important for the sustainability of the initiative that a shared vision with roles, expectations and responsibilities of each stakeholder (including the citizens) is established. In particular, the business case should be well-defined in order to prevent the stakeholders from exploiting each-other's contribution in terms of ownership of the solution, intellectual property rights and access terms. (Schaffers & Turkama, 2012). Other issues are brought forward by Sanchez et al. (2014), who stress the difficulty to control the impact of the experimented artefact on the Living Lab, since the ecosystem is complex and open to other influences.

2.3.2 *Open Data*

Paradoxically, if not cautiously implemented, Open Data initiatives can be counterproductive and contribute to the deterioration of civic rights, collaborative networks and the citizen-local government relationship (Viitanen & Kingston, 2014). According to Janssen, Charalabidis and Zuiderwijk (2012), the barriers to the success of Open Data initiatives can be categorized as difficulties of (1) task complexity, (2) use and participation, (3) legislation and (4) information quality.

First, in terms of task complexity, it is advocated that Open Data requires specific skills and cannot be easily approachable by citizens with no professional digital literacy (Veeckman & Van Der Graaf, 2014). Therefore, Open Data platforms should be complemented by help desks, explanations, clear metadata and supporting tools to assist citizens in finding, browsing and understanding the potential of the data (Janssen, Charalabidis & Zuiderwijk,

2012). Moreover, visualization tools can be offered to the citizen to facilitate the analysis of data. Importantly, these tools should not tunnel the user's perspective in a biased way. (Domingo et al., 2013). Further, if the data is not available in a centralized architecture or portal, but fragmented in different software and applications, citizens may lose interest (Janssen, Charalabidis & Zuiderwijk, 2012). Komninou, Pallot and Schaffers (2013) claim that opening up data will not lead to automatic benefits if the initiative is not accompanied with citizens-driven innovation models.

Second, citizen participation may be hindered by the lack of: time, knowledge on how to make use of the data or feedback from local administration on citizens input (Janssen, Charalabidis & Zuiderwijk, 2012). Therefore, it becomes important to promote the potential of the data and to educate the citizens on how to use it. Moreover, to grasp citizens' interest, Open Data Hackathons and competitions with rewards for outstanding ideas could be used (Hielkema & Hongisto, 2013). The threshold for entering these competitions should be kept low and a clear strategy should be used. This strategy ought to be built on pre-defined topics of interest based on community needs and not the Open Data per se. (Janssen, Charalabidis & Zuiderwijk, 2012).

Third, zooming in on legislation, several authors (Batty et al., 2012; Domingo et al., 2013; Baccarne, Mechant & Schuurman, 2014; Meijer & Bolívar, 2016) accentuate accounting for privacy, security and intellectual property rights when opening citizens' data. Particular focus should lie on the ethics of data triangulation techniques that may reveal confidential information.

Fourth, regarding information quality, both the lack of data and data overflow can cause citizen dissatisfaction and result in low usage. A common reason for lack of data is the resistance from the local administration to open up their data in order to prevent possible critique (Lee, Hancock & Hu, 2014). Janssen, Charalabidis and Zuiderwijk (2012) propose the method of *comply or explain* to establish an open culture that forces employees to make their data transparent unless this act goes against regulations in place. Moreover, even if the strength of Open Data resides in the ability to mashup data-sets and triangulate information from different sources, citizens should not be overwhelmed by data overflow.

2.3.3 Open Innovation

Initiative maturity is a common Smart City challenge that may affect the success of Open Innovation platforms. These platforms are enabled by state-of-the-art technologies (IoT, Web 2.0) but require thorough consideration of the social-dimension in order to avoid short-termism (Baccarne, Mechant & Schuurman, 2014). Short-termism can also be dictated by lack of political support or willingness to absorb input from other stakeholders (Hernández-Muñoz et al., 2011) or diverging visions among stakeholders that inhibit collaboration (Schaffers et al., 2011a). Therefore, the initiatives should be based on sustainable partnerships fostered with clear goals (Schaffers et al., 2011a) and continuous transparent evaluation of the socio-economic impact of the initiative (Baccarne, Mechant & Schuurman, 2014). Even when all these preconditions are achieved, difficulties to achieve valorization (deriving socio-economic value from the initiative) may remain (Walravens, 2015).

Lee, Hancock and Hu (2014) emphasize citizen participation as a challenge that can be addressed by offering incentives to grasp citizen motivation. However, even when civic engagement is in place, the collaboration may be hindered by the local institutions' structural, organizational or regulatory inability to empower citizens in co-production. These issues are addressed by Paskaleva (2011) with new processes of decision-making that includes citizens rather than solely structural reforms. Related to the citizen-government relationship, Hernández-Muñoz et al. (2011) identify issues of security, privacy and trust.

Komninos, Pallot and Schaffers (2013) recall that the *smart*-factor of Open Innovation platforms should not reside in the technology per se. It should reside in the way the application will address a socio-economic need or issue of significant relevance for the city or a particular community. To transfer the focus from the technology to the need, the authors propose three pillars: (1) sharing rather than recreating or redeveloping (technological solutions, information, knowledge, know-how), (2) creating a forward looking culture that envisions the sustainability of the initiative and (3) using low-cost solutions (reusing software, ideas or solutions proven elsewhere as successful) and starting in a small scale. (Komninos, Pallot & Schaffers, 2013).

2.3.4 Crowdsourcing

As shown in field researches (Schuurman et al., 2012; Breuer, Walravens & Ballon, 2014), the solutions achieved through Crowdsourcing may conflict with the goals, policies and long-term envisioning of the city. Similarly, the ideas harvested by the crowds might be *wild*, unrealistic and chaotic since the citizens may lack the necessary critical thinking of how feasible their ideas are (Baccarne, Mechant & Schuurman, 2014).

Borges and Zyngier (2014) showed in their field research that citizens may lack motivation to participate in Crowdsourcing events. The authors however, witnessed that the citizens participate when they are interested in the result of the process or when they gain self-promotion by participating (Borges & Zyngier, 2014). Rewards are also considered probable stimulus for participation and engagement (Calderoni, Maio & Palmieri, 2012; Theodoridis, Mylonas & Chatzigiannakis, 2013). For the rewards to be successful, Theodoridis, Mylonas and Chatzigiannakis (2013) emphasize that they should be compatible with citizen needs and interests and may very well be moral rather than monetary. The authors also mention the application of gamification (turning the events into games) to incentivize the citizens. Besides participation, rewards also boost creativity and innovation because they stimulate citizens to think of outstanding ideas.

In terms of participation, researchers also focus on the ethical aspects – the digital divide. Crowdsourcing should not hinder participation of particular groups based on their socio-economic status, level of knowledge or digital-literacy. Therefore, educational services, training and alternative means for participation (besides the technological ones) should be provided. (Hancke, Silva & Hancke, 2013; Breuer, Walravens & Ballon, 2014).

Moreover, there is a challenge of valorization in Crowdsourcing platforms – the need to transcend the one-time events in sustainable businesses or spin-offs (Breuer, Walravens & Ballon, 2014). Schuurman et al. (2012) also emphasize that Crowdsourcing may require the

local government to release more information, an act that may face resistance from within the institutions. The authors continue with a call for a self-organizing structure of the Crowdsourcing events, to increase the sustainability and detach them from top-down agency. Calderoni, Maio and Palmieri (2012) repeat the privacy and security issues in using Crowdsourcing applications, where citizens create user profiles that can be eavesdropped.

2.3.5 *Crowdsensing*

Besides the potential to harvest data of high quality and coverage, Crowdsensing is associated with challenges for both practitioners and citizens. In a field study, where sensor kits were distributed to households for monitoring energy and environmental data, Balestrini, Diez and Marshall (2014) identified several difficulties related to Crowdsensing. Firstly, the robustness of the technology made it difficult for the citizens to use the kit. Secondly, lack of troubleshooting advice hindered citizens in making practical use of all the information gathered from the sensors. Lastly, there was an issue regarding the reliability and meaningfulness of the data due to the low-cost sensors that required constant calibration in order to function correctly. Interestingly, the research also revealed that even if the sensors should be undistruptive to be acceptable in citizens' homes, they should not be too *quiet*. Actually, citizens preferred to be involved in engaging experiences (for example through sounds of notifications). (Balestrini, Diez & Marshall, 2014).

Since the success of Crowdsensing is highly dependent on the usability of the platform (application, sensor kit etc.), participation remains a challenge (Chon et al., 2013; Farkas et al., 2015). In order to test the popularity and norm of adoption of the platform, Farkas and Lendák (2015) suggest that extensive risk analysis and real-setting simulations should be performed before deployment. A solution to lack of participation could be incentivizing users with rewards (Calderoni, Maio & Palmieri, 2012; Pouryazdan et al., 2016). Cardone et al. (2013) mention the need to combine social rewards with monetary ones, because intrinsic motivation will keep the citizens in the Crowdsensing loop and foster engagement rather than just participation. Similarly, raising citizen awareness regarding the benefits (social, environmental etc.) of the system ought to help convince citizens to participate (Perera et al., 2014). Gamification-based activities may also be a more interesting scheme to capture citizen interest (Wu & Luo, 2014; Mirri et al., 2016). However in order to assure reliability of the harvested data, the rewards should be based on the quality and usefulness of the data provided, rather than merely the quantity (Wu & Luo, 2014; Pouryazdan et al., 2016; Mirri et al., 2016).

Crowdsensing platforms need to cope with issues related to the reliability and trustworthiness of the data. However, the larger the pool of citizens as informants, the less significant the inaccuracies caused by intentional or accidental wrong reporting (Mirri et al., 2014). To assure a self-regulating mechanism for the platform, a reputation-based citizen recruitment based on other users' votes has been suggested. In this way deceiving users will be ranked as unreliable by the community and will therefore not be taken into consideration when aggregating data. (Pouryazdan et al., 2016).

Almost every author elaborating on challenges of Crowdsensing, mention security concerns. Evidently, questions of data usage, sharing and ownership should be well-established and be

based on clear regulations. These regulations could further be explained to the citizens in order to raise the transparency and trust of the initiative and to not hinder participation. (Calderoni, Maio & Palmieri, 2012; Hancke, Silva & Hancke, 2013; Balestrini, Diez & Marshall, 2014; Farkas & Lendák, 2015; Sun et al., 2016). Moreover, Mulligan and Olsson (2013) proposes that citizens may be more willing to participate if they are aware that their data will be shared with other interested citizens (academia, start-ups etc.) rather than monopolized and traded. Similarly, Perera et al. (2014) suggest that the model of Crowdsourcing can be widely adopted if maximum usability of the data is assured on both ends (citizens and back end).

Hancke, Silva and Hancke (2013) advocate that for Crowdsensing to be beneficial, citizen education on how to use and understand the new technology may be required. Pouryazdan et al. (2016) outline the requirements for a non-disruptive system as being able to efficiently produce a complete data management flow and provide feedback to the user/citizen.

2.3.6 Innovation Districts

In their field research of the economic district of the inner east of London, Nathan, Vandore and Whitehead (2012) identified several challenges experienced within the district. Firstly, young businesses need development advice through mentoring and management advice. Secondly, young businesses are under-supplied with skilled staff that may be attracted by larger companies. Thirdly, access to finance may be a hinder. Fourthly, the rents in Innovation Districts are low but when the companies will grow and need more space they will face a very expensive market regarding workspace access and cost. Lastly the biggest challenge encountered by the entrepreneurs in the Innovation District is the difficulty in reaching business maturity. For most firms this means scaling or finding a stable market, especially when the product they offer is disruptive. Hence, there is a need for the governments to approach Innovation Districts with personalized schemas tailored to the local context and conditions. (Nathan, Vandore & Whitehead, 2012).

2.3.7 Participatory eGovernance

Looking at eServices and eParticipation, the first challenges emerge from within local governments. The governmental institutions should shift towards a more service-friendly and participative-oriented organizational culture (Alawadhi et al., 2012). This culture may currently be hindered by the officials' prejudice against the usefulness of the citizens' input (Åström et al., 2015).

Several authors concerned with eParticipation bring up the issue of digital-divide (Coe, Paquet & Roy, 2001; Clarke, 2013; Deakin, 2014; Davies, 2015; Ertiö, 2015). According to the European Union (EU), the digital divide is related to factors like (1) income level, (2) digital illiteracy and (3) domicile (Davies, 2015). Nam and Pardo (2011a) merges the first and third factor in what they describe as a dual (social and spatial) segregation of urban spaces. They mean that unthoughtful digitalization may results in increased marginalization of poor neighbourhoods. However, a contrary view that emphasizes the socio-personal rather than socio-economic nature of digital-divide has been proposed (Macintosh & Coleman, 2003). As a strong advocator for this perspective, Partridge (2007) emphasizes that self-

efficacy (the belief that the person can perform a particular behaviour or task) is a more significant contributor to the digital-divide than socio-economic factors. As preconditions, Clarke (2013) recommends the availability of the traditional channels of face-to-face communication to complement the new technological means to assure the inclusion of elderly, digitally-illiterate and particular socio-economic groups that may not afford or access the new solutions. Other authors call for the need of skill training in order to overcome the digital divide (Coe, Paquet & Roy, 2001; Davies, 2015).

Citizen motivation is another challenge of eParticipation initiatives that may be hindered by: (1) lack of trust in local governments (Paskaleva, 2009; Åström et al., 2015; Davies, 2015), (2) lack of confidence in the willingness of local administration to absorb citizens' feedback (Åström et al., 2015), (3) previous dissatisfaction with government responsiveness, (4) perception that the government is promoting the interests of powerful developers (top-down agency) (Kleinhans, Van Ham & Evans-Cowley, 2015) and (5) issues of privacy (Ertiö, 2013; Davies, 2015). To foster citizen collaboration, researchers have proposed: using incentives, gaming strategies and a constant two-way communication, being present on already established channels that are part of citizens' daily use and acting based on citizen feedback (Kleinhans, Van Ham & Evans-Cowley, 2015). Ertiö, Ruoppila and Thiel (2016) emphasize that curiosity may motivate citizens to get involved in eParticipation initiatives. However, to achieve loyalty, the solution should be user-friendly, easy to use and technically reliable (Ertiö, Ruoppila & Thiel, 2016).

Even if citizens are motivated to participate in initiatives that will create public value, Ertiö, Ruoppila and Thiel (2016) identified that citizens tend to have an individualistic stance. They exploit eParticipatory applications as an opportunity to raise their voice but are reluctant to engage in discussions with fellow citizens or receive feedback from officials (Ertiö, Ruoppila & Thiel, 2016). Ertiö (2013) links this lack of engagement with the lack of familiarity with two-way communication applications in a time when most of the applications issued to citizens leverage only one-way communication (either Crowdsourcing/sensing (input) or information (output)). Moreover, according to the Technology Acceptance Model (TAM) theory, users' motivation to use technology decreases if the self-perceived skills in handling the artefact are low (Ertiö, Ruoppila & Thiel, 2016).

2.3.8 Online Learning

As reviewed by Letaifa (2015), many authors link Online Learning initiatives with the leveraging of social capital in terms of tailoring capabilities, diminishing inequalities and fostering engagement. In contrast, Plumb, Leverman and McGray (2007) advocate that Online Learning initiatives do little to challenge the already established structures of knowledge and wealth concentration. Citizens restricted by the seven *I's* - Ignorance, Incomprehension, Inability, Incapacity, Impotence, Incompetence, and Inadequacy – have no chance of benefitting from Online Learning activities in the way these initiatives are being deployed today. The authors call for a more critical envisioning of Online Learning in contrast to the established idea that Online Learning is an unproblematic and successful tool to address social development. (Plumb, Leverman & McGray, 2007).

For cities that want to build Online Learning initiatives, a framework of concerns has been

proposed including: (1) competences to be developed, (2) type of learning activities, (3) learners, (4) technologies, (5) enablers/ community moderators and (6) duration (Andone, Holotescu & Grosseck, 2014). Gaved et al. (2012) emphasize the need to bring together experts from a range of domains when implementing Online Learning initiatives (like educators, software developers, urban planners, social support workers and the potential users) and build a citizen-centric approach.

2.3.9 Interactive Social/Virtual Networks/Platforms

As emphasized by Coe, Paquet and Roy (2001), the durability and dynamism of collaborations in Interactive Social/Virtual Networks/Platforms (ISVNP) is underpinned by reciprocity and mutual trust. Technology alone cannot facilitate the creation of engaged communities if the roots underlying these relations are rotten. Hence, if there is a lack of common aspirations or if citizens share the belief that their input will not be absorbed by policy makers, the ISVNP initiative will fail. Therefore, it is of high importance that ISVNP:s promote win-win collaborations and are based on collective interests. Moreover, it is important that ISVNP:s address the possibility of digital and knowledge divide. (Coe, Paquet & Roy, 2001).

As advocated by Allwinkle and Cruickshank (2011), ISVNP:s enable both the creation and flow of knowledge that promote innovation and a healthy juxtaposition of demand and request that shortens the time to market and adoption of solutions. However, the focus of ISVNP:s should move beyond economic growth to the promotion of higher engagement in local governance (Coe, Paquet & Roy, 2001).

2.4 Bridging the literature gap

Table 2.4.1 summarizes the difficulties identified in the literature for each type of Smart People initiative (see Appendix 10.1-10.7 for the corresponding preconditions). Importantly, the literature review shows that the types of Smart People initiatives differ in terms of how they are organized physically and digitally, how citizens are engaged and how they provide value. Therefore, it is important for the academia and practitioners to address each type of initiative separately when identifying the possible difficulties and preconditions, before exploring commonalities. In these terms (as supported by the literature review described in section 3.1), the literature is fragmented and there is a lack of research that holistically examines one type of initiative to deduce possible difficulties and preconditions for practitioners to refer to. This lack of condensed knowledge helps to further motivate this research.

Table 2.4.1: Difficulties with Smart People initiatives identified in the literature

Smart People initiative	Difficulties identified in literature	Reference
Living Labs	complexity, digital divide (as spill-over effect), experimental conditions, initiative maturity, intellectual, participation, property rights, polished product, routine iterations, time-consuming	Cosgrave, Arbuthnot & Tryfonas (2013); Sanchez et al. (2014); Schaffers et al. (2011b); Schaffers & Turkama (2012); Veeckman & Van Der Graaf (2014)
Open Data	complexity (task), counterproductive (as spillover effect), data overflow, data/info quality, digital illiteracy/digital divide (need for professional digital literacy), feedback, fragmented architecture (decentralization), occupied citizens, participation (& use), regulatory restrictions, skill gap, transparency, usage knowledge	Janssen, Charalabidis & Zuiderwijk (2012); Lee, Hancock & Hu (2014); Veeckman & Van Der Graaf (2014); Viitanen & Kingston (2014)
Open Innovation	citizen empowerment, initiative maturity, mistrust, participation, political will, purpose vs. solutions, regulatory restrictions, security/privacy outcry, shared vision, short-termism, valorization	Baccarne, Mechant & Schuurman (2014); Hernández-Muñoz et al. (2011); Komninos, Pallot & Schaffers (2013); Lee, Hancock & Hu (2014); Schaffers et al. (2011); Walravens (2015)
Crowdsourcing	assessment of ideas, conflict with goals/ long envisioning, digital divide, feasibility, information, motivation, privacy, top-down agency, valorization	Baccarne, Mechant & Schuurman (2014); Borges & Zyngier (2014); Breuer, Walravens & Ballon (2014); Calderoni, Maio & Palmieri (2012); Hancke, Silva & Hancke (2013); Schuurman et al. (2012)
Crowdsensing	acceptability (balance), applicability (troubleshooting advice), complexity, engagement, participation, privacy/security outcry, reliability and meaningfulness of the data (data quality), usability (adoption)	Balestrini, Marshall and Diez (2014); Calderoni, Maio & Palmieri (2012); Cardone et al. (2013); Chon et al. (2013); Farkas et al. (2015); Farkas & Lendak (2015); Hancke, Silva & Hancke (2013); Sun et al. (2016)
Innovation Districts	access to finance, mentoring and management advice (helping hand/support), reaching business maturity, skill gap, workspace access and cost	Nathan, Vandore & Whitehead (2012)
Participatory eGovernance	availability heuristics (previous dissatisfaction with government responsiveness), cross-(digital)context illiteracy (inconsistency), digital divide, individualism, loyalty, mistrust (disbelief in acknowledging the citizens' input), motivation, organizational culture, prejudices regarding the usefulness of citizens' input, privacy, top-down agency	Alawadhi et al. (2012); Åström et al. (2015); Clarke (2013); Coe, Paquet & Roy (2001); Davies (2015); Deakin (2014); Ertiö (2013); Ertiö (2015); Ertiö, Ruoppila & Thiel (2016); Kleinhans, Van Ham & Evans-Cowley (2015); Paskaleva (2009)
Online Learning	unequal power structures	Plumb, Leverman & McGray (2007)
Interactive Social/Virtual Networks/Platforms	mistrust (disbelief in acknowledging the citizens' input), civic engagement, digital divide	Coe, Paquet & Roy (2001)

3 Methodology

In order to deepen the knowledge of how to succeed with Smart People initiatives and account for the citizens in the Smart City, this paper investigates what Smart People initiatives are and their difficulties and preconditions. To enable proper replicability of this research, the methodological approach used to gather empirical data and literature for the literature review is carefully outlined in this section. Firstly, the approach for gathering literature for the literature review is described (see section 2). Secondly, the research design chosen as a fundamental basis for conducting this research is presented. Next, the process for selecting the cases is outlined. Thereafter, the empirical data conduct is described with interviewee selection, the interview and pilot testing. The procedure for analysing the empirical data is then presented. Finally, the research quality and ethics are discussed.

3.1 Gathering literature

After developing the initial interest and motivation to work with difficulties and preconditions of Smart City initiatives that target citizens, the existing literature in the field was explored to find what was elaborated, and moreover what was missing. Clearly, even if many researchers acclaimed the importance of citizen involvement, Quadruple Helix and bottom-up approaches in managing Smart City initiatives (Chourabi et al., 2012; Bakıcı, Almirall & Wareham, 2013; Baccarne, Mechant, & Schuurman, 2014; Hollands, 2015; Thomas et al., 2016), the definition of Smart People initiative is still unclear. Therefore, in order to set a common vocabulary for practitioners and academics in the field, a literature review was conducted to create a feasible definition of Smart People initiatives and to find the types of Smart City initiatives that target citizens. After formulating the definition (see section 2.1) and the Smart People initiative framework (see section 2.2), the types of Smart People initiatives found were explored in the existing literature to find the few but already outlined difficulties and their preconditions (see section 2.3).

In terms of literature gathering, a literature diary was established to allow working in parallel without duplicating work. In the diary the searches conducted were noted down, together with the medium, the results offered and the filtering options (as depicted in Table 3.1.1). The following four search channels were used:

- Google Scholar
- LUP (Lund University Publications) - only for bibliography
- The thesis supervisor
- Bibliographies of relevant articles in the search results

Firstly, the search terms for Google Scholar were as follows:

- For section 2.2 (defining and finding the types of Smart People initiatives): “Smart City Smart People”, “Smart City Smart People initiatives”, “Smart City [type of initiative found]”

- For section 2.3 (finding difficulties and preconditions for the found types of Smart People initiatives) “Smart City Smart People difficulties OR challenges OR problems OR failure”, “Smart City [type of initiative] difficulties OR challenges OR problems OR failure”, “Smart City Smart Citizen initiatives OR difficulties OR challenges OR problems OR failure”, “Smart City [type of initiative] preconditions OR solutions”

Secondly, the search process in LUP was as follows: the search term “Smart City” was used and all bibliographies of the articles in the search result were examined, and relevant articles were used. Thirdly, the thesis supervisor provided some articles of relevance. Lastly, all bibliographies were explored to find potential relevant articles.

Table 3.1.1: Extract from the literature diary

Keywords searched (in Google Scholar)	“Smart city” smart people difficulties
Results	10200 from 2011-2016 sort by relevance
Further notes	Skipped articles based on case-studies other than European cities
The unread articles of the first 40 ones listed	

3.1.1 Developing the Smart People initiative framework

The types of Smart People initiatives were extracted from the literature with the selection criteria of them fulfilling the two criteria in the Smart People definition - (1) leverage the citizens intellectually and (2) use the citizens as a source of input for ideas and innovation. The saturation point of the literature review was reached when new articles that were considered did not bring new insight and when the authors and concepts became highly repetitive. To extract data from the literature review, an excel table was created (as depicted in Table 3.1.1.1) where the types of Smart People initiatives brought up in the literature and corresponding references were listed. The complete table with the literature supporting each type of initiative is available in Appendix 2.

Table 3.1.1.1: Extract from the literature review table of Smart People initiatives

Crowdsourcing	Alawadhi et al. (2012); Albino, Berardi & Dangelico (2015); Angelidou (2014); Baccarne, Mechant & Schuurman (2014); Bakıcı, Almirall & Wareham (2013); Balakrishna (2012); Breurer, Walravens & Ballon (2014); Borges & Zyngier (2014); Boulos & Al-Shorbaji (2014); Calderoni, Maio & Palmieri (2012); Celino & Kotoulas (2013); Christopoulou, Ringas & Garofalakis (2014); Clohessy & Morgan (2014); Dameri & Rosenthal-Sabroux (2014: 166, 204, 211, 231); Hancke, Silva & Hancke (2013); Haque (2012); Hielkema & Hongisto (2013); Jollivet (2011); Komninos, Pallot & Schaffers (2013); Lee, Hancock & Hu (2014); Letaifa (2015); Mirri et al. (2014); Quirino, Santos & Calles (2016, May); Schuurman et al. (2012); Theodoridis, Mylonas & Chatziannakis (2013); Walravens (2015)
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The result of the literature review was a summarizing table (as depicted in Table 3.1.1.2) representing a framework of Smart People initiatives (see full framework in section 2.2.10). This framework was then used to create a common understanding of the initiatives and facilitate the communication between the researchers’ and the interviewees.

Table 3.1.1.2: Extract from the framework of Smart People initiatives

Crowdsourcing	<i>Consists of outsourcing tasks to a group of people, or crowd, in an attempt to collaboratively complete tasks quickly. A combination between Open Innovation and wisdom of crowds.</i>
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3.2 Research design

A qualitative research strategy was chosen to answer the research questions. The reason for this was to ensure in-depth insight into this still relatively under-investigated area in order to outline a base for future research. The research approach was also based on the interpretivist paradigm (Orlikowski & Baroudi, 1991; Gummesson, 2003; Bhattacharjee, 2012) with the aim to obtain the perspective of practitioners and academics on the difficulties they have encountered or believe likely to occur and the preconditions they have implemented or see as necessary to obviate the difficulties.

Similarly, the Information Systems and Behavioural Science interdisciplinary approach used in this research embraces the reality as shaped by the experiences of these interviewees and the social context they are acting in, in line with the interpretivist approach (Orlikowski & Baroudi, 1991; Gummesson, 2003; Bhattacharjee, 2012). As Information Systems and Behavioural Science both spring from the Social Sciences, they share a common foundation that emphasizes the human behaviour in the organizational/technological and social context and ought to merge well in an interdisciplinary analysis. The interpretivist approach is further suitable for this research, as a relatively new, context-based and multifaceted topic is explored. (Bhattacharjee, 2012; Recker, 2012). Still, the research questions are descriptively formulated (with *what*), aiming to spur more focused future research.

3.3 Case selection

Knowing that one of the most discussed topics in the debate of case studies is sampling, the sampling was based on a structured theoretical sampling not a random/ad-hoc one (as discussed below). Moreover, being aware of the present scepticism on single-case studies (Easton, 2003) and being eager to conduct broad research that would avoid single-case biases and allow for statistical generalization, it was decided to rely on multiple case studies:

Multiple cases strengthen the results by replicating the pattern-matching ability and increasing confidence in the robustness of the results. (Recker, 2012:97)

Regarding the sampling, five European cities Copenhagen (Denmark), Helsingborg (Sweden), Timisoara (Romania), Tirana (Albania) and Turku (Finland) were chosen (see Figure 3.3.1). The amount of five was chosen to achieve depth and representability (geographical spread) but still stay within a feasible scope for the set time frame. The primary sampling requirement was that the cities must have implemented or are implementing Smart People initiatives. The reasons for choosing only European cities was twofold. First, European cities act under the European Union funding sanctions and the Smart City

initiatives fall under the umbrella of Horizon 2020, European Digital Agenda and European Union funding (Paskaleva, 2011; Papa, Gargiulo & Galderisi, 2013). This means that these Smart Cities share some common standards, in terms of technology, legislation, privacy and security sanction (Paskaleva, 2011; Papa, Gargiulo & Galderisi, 2013), which makes them more comparable. Noticeably, even if Albania is not an EU member, the country has been aspiring an EU-membership for a long time, achieved a candidate state in 2014 and therefore acts sufficiently enough as an EU country (Prime Ministry of Albania, 2017). Second, the European Union has been working on the utopia of establishing a shared platform to connect all the European Smart Cities. They have therefore imposed standards and legislations, which makes the cities even more comparable. (Lombardi, 2011; Paskaleva, 2011; Lee, Phaal & Lee, 2013; Marsal-Llacuna, Colomer-Llinàs & Meléndez-Frigola, 2015).

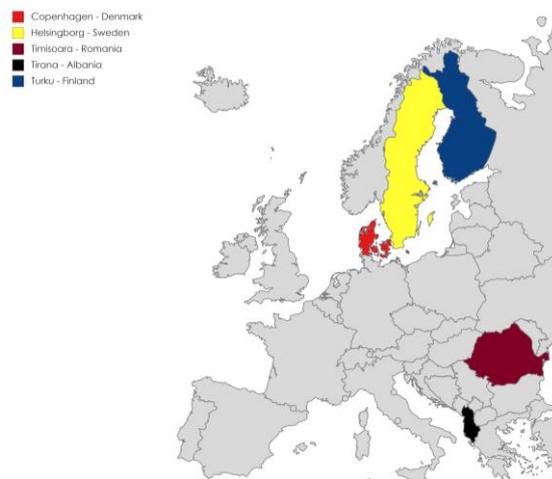


Figure 3.3.1: Smart City cases

Since case studies are idiographic and narrow in scope and setting, they are notorious for lacking statistical generalizability (Easton, 2003). Therefore, it was decided to expand the case sampling in terms of culture, mentality, history and democratic education to represent both Eastern and Western countries. This enables discovery of what findings are contextually-bound to specific features of a city and what findings are general across the cities. For a more in-depth description of each case city selected for this research see Appendix 1.

3.4 Multi-case study conduct

To address the research question of difficulties and preconditions for Smart People initiatives, the qualitative methodology of multiple case studies was chosen. The choice was based on the facts described by Bhattacharjee (2012) and Recker (2012) that:

1. Case studies is the most popular form of qualitative method as well as the most well-established approach to use for research in social science,

2. Case studies is a method involving intensive research on a phenomenon in its natural settings, therefore it is very appropriate for investigating emerging phenomena which are under- investigated or novel,
3. Case studies can help derive more contextual insight into the phenomena of interest by virtue of its ability to capture a rich array of conceptual data,
4. Case studies enables studying a phenomena of interest from the perspectives of multiple participants.

These characteristics of the case study method were highly appropriate to the research inquiry of this research since, as argued above, the Smart People topic is still emerging, contextualized, under-investigated and dynamic.

Regarding the multiple-case study method, an embedded design approach was employed (see Figure 3.4.1). According to this approach, a case study is investigated through more than one unit of analysis. The approach was achieved by including two types of perspectives. The first type was multiple perspectives inside Smart City organizations (initiative responsible, practitioners, municipality employees and technology or initiative specialists) that work closely with the implementation and governing of the initiatives. The second type, aimed at contrasting the first type, was perspectives of people outside the Smart City organization (academics in Behavioural Science) that have a holistic view of the mentality, culture and action-logic of the citizens but are not engaged in implementing or governing Smart City initiatives. This interdisciplinary multi-perspective, with its complementing views, resulted in valuable information on the envisioning of Smart People in Smart Cities.

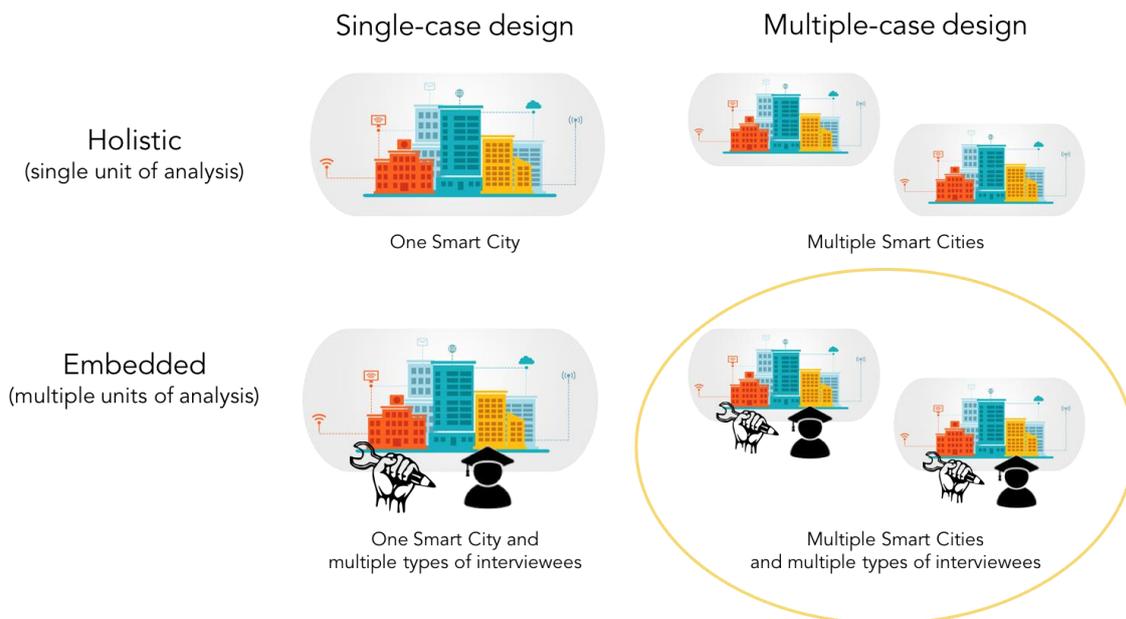


Figure 3.4.1: An applied illustration of Newell and Simon's (1972) case study design types, with the type used in this research encircled

Embedded multiple-case studies also allow for triangulation of perspectives (Hevner & Chatterjee, 2010). The triangulation of perspectives was achieved through the juxtaposing of practitioners' and academics' perspectives. On one hand, the practitioners' perspective fuelled the research with the experience and viewpoint of managers and specialists whose envisioning of the city and limited knowledge on citizens' thoughts and action-logic may raise unrealistic expectations that are difficult to implement. On the other hand, the academics' perspective fuels the research with the viewpoint and action-logic of citizens and potentially validate and identify additional solutions (preconditions) to the difficulties that may arise in the Smart City organization – citizen relationship. Hence, triangulation was performed through the within-case practitioner validation and through the academics validation of the found difficulties and preconditions. The insight provided by the academics that potentially added on to the practitioners' input was thus outside of the scope of the triangulation.

3.5 Selecting interviewees

In order to obtain divergent perspectives on the research area, both internal and external Smart City organization perspectives were gathered (see complete list of interviewees in Table 3.5.1). This diversity of viewpoints was as mentioned of high importance in this research as the representatives from inside the Smart City organization have limited insight into the citizens' thoughts and beliefs. This is knowledge that instead is property of the academics outside the Smart City organization. They, as academics, are however in turn missing the practitioner knowledge of Smart City goals and envisions. Consequently, the two types of perspectives supplemented and potentially even opposed each other, and therefore allowed for a comparison of viewpoints inside and outside the Smart City organization.

The interviewees inside the Smart City initiatives were chosen from within a range of different roles and positions: managerial affiliations, specialists of particular matters, coordinators and facilitators of communication between institutions, practitioners and makers. They know the initiative implementation process and brought their viewpoints on citizen engagement, relevance, importance and necessity. These interviewees were found by searching on the web for "Smart City [the city name]" and the range of different roles and positions listed above. The potential interviewees were then firstly approached by email (see the message emailed in Appendix 3) and with a follow-up phone call if required to obtain a reply.

The interviewees outside the Smart City organization were Behavioural Science academics: Sociologists and Psychologists. They know the mentality, action-logic and culture of the cities and contributed with their citizen perspective. Hence, they have witnessed and could explain the causes of citizens' potential lack of interest, engagement, participation or involvement in the practitioners' initiatives. These interviewees were found by searching on each cities' University website and academics working on the faculties of Psychology and Sociology (as these are the two key components of Behavioural Science (Banerjee, 1995)).

The potential interviewees were then firstly approached by email (see the message emailed in Appendix 3) and with a follow-up phone call if required to obtain a reply.

Hence, first, the Smart City practitioners inside each Smart City organization were interviewed. Then, a table with all the Smart People initiatives, difficulties and preconditions resulting from these interviews was composed for each case. Next, the academia outside the Smart City organization were interviewed to reflect upon their case city's initiatives in terms of: potential difficulties, the difficulties presented by the practitioners and complementing preconditions from their Behavioural Science perspective.

Table 3.5.1: Interviewees in alphabetical order by city name, then by order of date of conducted interview

I	City	Perspective	Organizational role	Interview Type	Date	Duration
1	Copenhagen	Practitioner	Industrial Ph.D. at CPH Solutions Lab	Skype	2017-02-17	48 min
2	Copenhagen	Practitioner	Project leader – Green growth & Smart City	Telephone	2017-03-07	1h and 7 min
3	Copenhagen	Academia	Associate Professor in Sociology at University of Copenhagen	Skype	2017-03-20	28 min
4	Helsingborg	Practitioner	Digitalizing Director	Face-to-face	2017-02-10	53 min
5	Helsingborg	Practitioner	Smart City Coordinator	Face-to-face	2017-02-10	1h and 15 min
6	Helsingborg	Academia	Ph.D. in Psychology at Lund University	Face-to-face	2017-03-06	47 min
7	Timișoara	Practitioner	City Manager	Skype	2017-02-24	1h and 1 min
8	Timișoara	Practitioner	CEO at Timisoara Start-up Hub	Skype	2017-02-28	26 min
9	Timișoara	Practitioner	President Smart City Association	Skype	2017-03-05	1h and 25 min
10	Timișoara	Academia	Conf. univ. dr. in Sociology at Western University of Timisoara	Skype	2017-03-28	44 min
11	Tirana	Practitioner	Municipality-UNDP Coordinator	Skype	2017-02-21	51 min
12	Tirana	Practitioner	UNDP - Open Data Specialist	Skype	2017-02-22	30 min
13	Tirana	Practitioner	Head of new Technology & Innovations at a telecommunication company	Skype	2017-02-28	22 min
14	Tirana	Practitioner	General Director of Strategic Projects and Foreign Investments	Skype	2017-02-28	48 min
15	Tirana	Academia	Former Chair of Social Science Research Center at University of New York Tirana	Skype	2012-03-17	54 min
16	Turku	Practitioner	Municipality Project Services Manager	Face-to-face	2017-03-22	1h and 6 min

17	Turku	Practitioner	Specialist, Open Innovation platforms (6Aika strategy)	Face-to-face	2017-03-22	35 min
18	Turku	Practitioner	Director, Start-up services (SparkUp)	Face-to-face	2017-03-22	28 min
19	Turku	Practitioner	Project Manager (6Aika strategy)	Face-to-face	2017-03-23	43 min
20	Turku	Practitioner	Specialist, Open Data	Face-to-face	2017-03-23	27 min
21	Turku	Academia	M.Soc.Sc., Project Researcher at University of Turku	Face-to-face	2017-03-24	1h and 45 min

3.6 The interview

Interviews were chosen as the data collection technique to address the selected cases. The reasons behind this choice were that interviews (1) are the most common data-collection technique for case studies, allowing a close, personal, reciprocal interaction with the interviewees and (2) enable discovery and exploration of under-investigated fields lacking solid legacy theories (Kvale, 2006). Before approaching the cases, an interview protocol (see section 3.6.1) and a plan for conducting pilot testing were established (see section 3.7). As described above, to maintain a constant vocabulary throughout the interview process, the created framework of Smart People initiatives was used to base the interviews on. This framework enabled the interviewer and the interviewees to share the same understanding of each concept during the interview.

3.6.1 The interview protocol

The interview was composed of open-ended questions which allowed the interviewee to elaborate freely without being neither restricted nor lead. When preparing the questions for the interview, the best practices described by Dillman (1978) were relied on:

1. The question content and wording was clear and understandable, stated in simple language, avoiding ambiguity and biased words. Since the questions were open-ended, it was double-checked that they are neither too general, nor too detailed.
2. The question sequencing was natural and motivating for the interviewee to elaborate and not lose interest. The interview was purposively formed to engage the interviewee and involve him/her in his/her experience and ideas and then ask for reflections. For example, it would be more intuitive to ask for preconditions before elaborating difficulties because preconditions are related to the beginning of initiatives whereas difficulties are related to implementation or post-implementation process. However, this sequencing might have proven counterproductive, since the interviewees might not come up with preconditions before realizing and recalling the difficulties.

As the framework of Smart People initiatives had been formed and the research questions were straightforward, so was the formulation of the interview questions. The pilot versions

and the regular versions of the interview protocol can be found in Appendix 4-5 and 7-8 respectively. Firstly, the organizational role of the interviewee was requested. Thereafter, the questions differed depending on the role of the interviewee (practitioner or academia).

The questions for the practitioners had three main goals. First, to find the types of Smart People initiatives conducted in the city and to get the framework confirmed/evaluated. Second, to go through the actual initiatives implemented within each type, how they target the citizens and the difficulties and preconditions encountered regarding the citizens. Third, and last, to get general advice on how to succeed with Smart People initiatives. The description of each actual initiative implemented was asked for to generate a better understanding of the context. This understanding ensured that the initiative was placed in the correct type of Smart People initiative and helped set the scene for the interview with the academics (by ensuring that the academics completely understood the context of the initiatives in order to fully give their perspective on potential difficulties and preconditions).

The questions for the academics had two main goals. First, to get the Behavioural Science perspective on potential difficulties regarding the citizens of the actual initiatives implemented. Second, to get the Behavioural Science perspective on potential preconditions that could have obviated or at least alleviated the difficulties mentioned by themselves and the practitioners.

3.6.2 The interview conduct

To limit the discourse to the framework of Smart People initiatives and to allow for an open discussion of different difficulties and preconditions for these initiatives, semi-structured interviews were conducted. This kind of interview allowed the interviewee to freely describe their own thoughts and experience but also enabled the researchers to stay within the research focus of the relationship between the Smart City organization and the citizens. In order to be rigorous in the interviewing process, the order of the questions in the interview protocol was respected and no question was excluded. However, since the interview was semi-structured and the path of the discourse was not completely predictable, the protocol was extended with contextual follow-up question. Follow-up questions allow for deeper understanding of particular discussions and further understanding of correlations between constructs (Bhattacharjee, 2012). In order to produce rich and accurate data from the interviews, the interviews were grounded in the interviewees' own experience (Schultze & Avital, 2011). For instance, elaboration or discussion around an initiative of which the interviewee claimed to have limited knowledge was not insisted upon.

The interview process for each practitioner and academia consisted of six steps. First, asking the interviewee for missing demographic information. Second, asking the interviewee to read through the definition and the framework of Smart People initiatives and to bring up potential

questions for clarification¹. Third, asking the interviewee for permission to record the interview for transcription. Fourth, asking the questions of the interview protocol in the set order. Fifth, asking potential follow-up questions to get clarifications or more in-depth thoughts on what had been brought up. Sixth, end the interview with a short more in-depth outline of the aim and scope of the research conducted.

3.7 Pilot testing of interview protocol

As mentioned, pilot testing of the interview protocol was conducted in order to evaluate the quality of the questions, if they were clear to the interviewees, had a natural flow and if they created a motivating context for the interviewees to elaborate in. The pilot testing enabled proper iterative evaluation and improvements to gain richer data.

For productivity reasons, it was decided to test the protocol through face-to-face interviews as it enabled monitoring of emotional expressions and body language of the interviewees in reaction to the questions. The case of the Smart City of Helsingborg was chosen as the target for the pilot testing. The reasons for this choice were multiple. First, the city was the most feasible in scope and size (the smallest city out of the 5). Second, it was in close proximity to the origin of the research conducted (Lund). Lastly, it was closely related to the University at which the research was conducted (Lund University, which has a campus located in Helsingborg). All the pilot testing of both the practitioner and the academia interview protocol were held before the remaining corresponding type of interviews.

After the pilot testing, slight changes were made to the interview protocol. These changes were supported with clear arguments from the interviews (listed in Appendix 5). As the changes were considered to be only minor, they were accounted for during the pilot interviews and therefore did not significantly change the content of the interview. All the results from the pilot testing were therefore intertwined with the succeeding data collected (with the data from the other 4 cases).

3.8 Data Analysis

The interviews were recorded electronically with the consent of the interviewee in accordance with ethical considerations. Using the electronic sources, the interviews were transcribed verbatim in order to allow for further analysis. Since multiple-cases were conducted, the data analysis included two steps: within-case and cross-case analysis. (Bhattacharjee, 2012).

¹ The only exception to this point, was when the interviewee clearly only had been involved in one of the types of Smart People initiatives (I8; I13; I20). Then that specific initiative was focused on directly instead, to avoid interviewee confusion of the meaning of the other types of initiatives and insecurity of not being able to contribute.

In the first stage, difficulties with preconditions discovered within each case were examined. This examination allowed for distinguishing difficulties that were case-specific. To conduct such analyses, open coding as described by Corbin and Strauss (1990) was employed. This coding strategy is highly applicable to this research for two reasons. First, the themes of coding had been defined from the research questions to be the following: initiatives, initiative descriptions, difficulties, preconditions and other features of interest such as evaluation of the framework or characteristics of the case city (each theme was given a unique coding colour, coding number and coding label in a colour-coding theme guide, see Appendix 9). Second, from these themes open coding of concepts within each theme was performed. Each concept found was extracted either directly from the transcripts or required some interpretation and was therefore defined as a concept by the researchers (see Table 3.8.1 for extract from coding).

Table 3.8.1: Extract from the transcript with colour codes and numbered themes

54	(1:16:15) there might be, I think from the citizen side, I think they are much exited to give their feedback but there might be this time constraint and also this tiring effect. I think it is ok if they are willing to do it, but if I think of myself if I would be constantly asked something just because I live there, that would be very tiring at some point. I probably, I would find it cool at the beginning but at some point I would be like "I do not care anymore, it is too much". But having said that, I think that one of the strengths that they do there is basically just building something new, so there is a lot of free way into what type of things that they can built there, because they basically have no constraint at all, so they are basically free to ideate, you know as much as they want and come up with the craziest ideas ever, to put a tower in there or what not. So I think that gives much more freedom actually than any other parts of the city, because there are a couple of blocks there but basically nothing else, just a field.	2. Difficulties (Occupied citizens, Novelty effect, Tiring effect) 3. Precondition (Blank slate)
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To increase the validity, accuracy and rigor of the coding, cross-checking (as described by Bhattacharjee, 2012) was employed. Accordingly, the researchers coded all interviews separately and then matched the results in debating sessions. The inter-coder reliability across the interviews was approximated to 80%, accounting for different choice of words with the same meaning and missing codings from one coder that was confirmed by the other. This approach enabled complementing findings resulting in a more holistic picture of concepts and refinement of the definition of these concepts. Cross-checking helps to diminish personal biases, prejudices in interpretations and the perils of interpretation monopoly (Bhattacharjee, 2012). Furthermore, the coding and cross-checking was performed iteratively to ensure that the data collected was relevant to the research aim. In order to avoid influential biases from already coded concepts and risk restricting and framing the open interview approach, the interview protocol was strictly followed. The iterative coding process did however enable confirmation and elaboration of already coded concepts in follow-up questions.

In the second stage, the patterns between different cases were matched (Yin, 2011). This pattern discovery allowed for defining which difficulties and preconditions were bounded to certain contextual constraints and which were generalizable. During the across-case compilation, all concepts that shared the same meaning were synchronized (by using the

same defining concept) and small changes to the numerous concepts to ensure consistency were made. This enabled (1) a comparison of the difficulties and preconditions between the cases, (2) the creation of a common list of difficulties and preconditions to aid further research and practitioners and (3) counting the occurrences of concepts and in turn ranking the most highlighted difficulties and preconditions.

In the end, particular difficulties with preconditions were matched and extended with Behavioural Science theories. In other words, concepts that had a meaning in the field of Behavioural Science were matched and extended with the definition according to these theories. This pattern matching technique (Yin, 2011) helped refine the findings.

Despite the scepticism of the generalizability of theories derived from case-studies (Lee, 1989; Easton, 2003), case studies can produce relevant and applicable theories. As stressed by Eisenhardt (1989), case studies can fruitfully contribute to the establishment of novel theories around emerging phenomena that are under-investigated. Moreover, these resulting theories are very likely to be empirically valid (Eisenhardt, 1989). However, one of the most challenging issues of case-studies remains idiosyncrasy. In this research this challenge was counteracted by conducting multiple-cases each discussed from two types of perspectives (Smart City practitioners and Behavioural Sciences academics). This embedded multiple-cases technique allowed for pattern-discovery between cases and the identification of local and global constructs inside the phenomena.

3.9 Research quality

In order to obtain rigor and good research quality, guiding principles and recommendations for the type of research conducted was followed. Firstly, to ensure applicability of the case studies, multiple case studies and triangulation of within case perspectives were employed (Bhattacharjee, 2012). This was achieved by investigating the five selected cases of European Smart Cities, with a minimum of three interviewees from each city (at least two practitioners and one academic perspective). Secondly, to affirm quality of the interview protocol, the protocol was pilot-tested (Bhattacharjee, 2012) in the three case-interviews of the Smart City of Helsingborg and thereafter updated in an iterative manner to improve the quality of the data collected. Thirdly, to achieve increased reliability in the data analysis, cross-coding was used in the coding process. Consequently, the interviews were transcribed by the interviewer, then coded separately by both researchers and finally cross-checked to agree on a final framework of difficulties and preconditions for each case. This is a good way in qualitative, interview-based research to increase the dependability of the resulting analysis (Bhattacharjee, 2012). Finally, the four main principles of rigor for interpretive research of were achieved: dependability (in the cross-checking), credibility (from transcriptions and triangulation), confirmability (with multi-practitioner, academic) and transferability (in multi-case approach and in-depth case descriptions) (Bhattacharjee, 2012).

3.10 Research ethics

During the conduct of this research, the ethical framework of Association for Information Systems (AIS) was followed and the key principles of these research ethics guidelines were fulfilled (Bhattacharjee, 2012). Firstly, voluntary participation was ensured with oral consent. Secondly, the interview protocol did not contain any questions that could cause any actual harm to the interviewees. Thirdly, the opportunity to both withdraw from the research and to be confidential in the research paper was given. Fourthly, consent was obtained before recording the interviews. Fifthly, the research aim was described prior the interview to avoid deception. Lastly, all relevant findings are presented in the empirical results (see section 4) to ensure that the whole picture of the research conducted is provided (weaknesses and issues included).

Zooming in specifically on qualitative research and the interpretive research approach, there were some important considerations to take into account to ensure that the research was performed in line with what interpretive research is founded on. The core of interpretive research is that knowledge of reality is socially constructed by human actors (Walsham, 2006) and therefore that the researcher plays an important role in discerning the meaning of collected data. The data was analysed iteratively (as the analysis is an exploration and learning process) and the data was seen as conversations in which the interviewer was a co-author (Kvale, 1996).

Further, when looking at the interview situation of this qualitative research approach, there were considerations accounted for to ensure that the handling of the interviewees was sound. As the interviews were held in private but the results will be published in public, the exposure of the private dialogue is prevalent (Brinkmann & Kvale, 2005). Arguably, all interviewees were public figures that have expressed themselves in research and in media before, so they ought to be familiar and comfortable in this situation. On top of that the replies were made confidential, which should further have relieved the risks of unsoundness.

Also, the power-asymmetry in the interview situation has to be reflected upon, an issue raised by Kvale (2006). The interview is often seen as a dialogue, but in reality it is more of a one-way dialogue in which the interviewer rules the instrumental dialogue to generate answers to the pre-formulated questions and has a monopoly over the interpretation (Kvale, 2006). Thus, to avoid the power-play and inflict as little as possible on the interviewee, only words or sounds of encouragement was used to encourage continuity, with neutral and open-ended questions. This further avoided the risk of manipulating the interviewees (Kvale, 2006). To minimize this power-asymmetry and to increase the validity of the data collected, the transcripts were also sent to the interviewees for validation.

4 Empirical results

Once all the data had been collected, transcribed and coded, the results were structured per initiative and perspective. First, the review of the framework of Smart People initiatives during the interviews resulted in an insightful evaluation of the framework that will be presented. Next, the practitioners' and the academics' perspective on the difficulties and preconditions for Smart People initiatives will be outlined separately.

4.1 Evaluation of the framework of Smart People initiatives

During the interviews, the Smart People initiative framework in itself was addressed in an evaluation of its constituents. The evaluation covered the types of initiatives, how they were defined, what they included and the inclusion and exclusion of some types.

4.1.1 Crowdsourcing vs. Crowdfunding

There seemed to be a question of definition or mix up in some of the interviews between Crowdsourcing and Crowdfunding. A couple of interviewees referred to Crowdsourcing as a way to gather funds for Smart City projects (I2S12:4²; I14S4:4).

... so this playground has been tailor-made to fit the needs of different disabled children, and the funding for this playground was done through crowdsourcing (General Director of Strategic Projects and Foreign Investments, I14S4:4).

According to the definition formulated in this research, Crowdsourcing is about outsourcing a task to a crowd to complete a task in collaboration (Schuurman et al., 2012; Hancke, Silva & Hancke, 2013: 414). Crowdfunding on the other hand, was not included in the framework as it deals only with collecting funds from a crowd (Mollick, 2014), without leveraging the citizens intellectually or using their input for ideas and innovations. Consequently, this seems to be a question of a misunderstanding rather than an actual critic to the framework.

4.1.2 Overlap Open Innovation/Crowdsourcing/sensing/Participatory eGovernance

As discerned from the definition of Crowdsourcing, it is very intertwined with Open Innovation (see section 2.2.10). This also meant that some initiatives implemented in the case cities fitted in both types (I4S14:1; I4S15:1). Some initiatives, that were very dynamic, could even fit into several types (I5S13:4; I5S29:1; I7S19:1; I13S4:1; I14S4:1; I16S6:1; I16S36:1; I19S22:1). However, as pure examples of each type was found this does not significantly support a change or merge of several types, as they clearly hold unique characteristics of their own (see section 2.2). The initiatives that could fit into several types, were placed in the most prevalent type based on their main purpose.

² The components of the interview reference are as follows: I2 = interviewee (where 2 is the interviewee number), S12 = section (where 12 is the section number) and :4 = the coded theme (where 4 is the code number).

4.1.3 Open Innovation/Crowdsourcing but *only* leveraging the citizens

Some initiatives seem to only leverage the citizens intellectually, in a way that made them not fit in perfectly in any of the types of initiatives. These initiatives are services that provide citizens with useful governmental information (similar to but not exclusively eServices) (I4S6:4; I14S77:4; I16S4:4).

... that is something I would like to be considered separately from crowdsourcing which is something that you want from the crowd. This is something we want to give to the crowd, pre-information of the development and perhaps maps, how do the land areas develop and what needs we have in the future and that kind of things (Municipality Project Services Manager, I16S4:4).

Seemingly, however these seem to always be intertwined somehow with one or several of the other types of initiatives, like Participatory eGovernance, and thus not completely independent. It was therefore decided not to create a separate type for these subtypes of initiatives.

4.1.4 Participatory eGovernance vs. eServices

Addressed uniquely by the academics, was the misfit of “participatory” in Participatory eGovernance when some of the initiatives only worked as eServices and did not actually ask the citizens to participate in any governmental activity but solely leveraged their usage of governmental services online (I3S62:4; I10S2:4; I21S62:4). This resulted in an adjustment to name the type of initiative Participatory eGovernance and eServices, to include the latter.

I do not know, to me that [requesting building permits online] does not fit under this heading [participatory e-Governance] at all because e-Governance are more related to basically how you run the city versus what type of services you provide. So I think there is a disconnect with your definition here or what they understood when you asked them. When you say participatory e-Governance services I am thinking about participatory budgeting or electronic planning like Public Participation GIS. (M.Soc.Sc., Project Researcher at University of Turku, I21S62:4)

4.1.5 Online Learning as an independent type of Smart People initiative or not

During the interviews no true Online Learning initiative seemed to have been implemented at all. The type, seemed to be regarded as excluded from the Smart City initiatives (I1S4:4; I2S16:4; I4S2:4; I4S19:4; I18S4:4) and delegated to other city institutions such as the Universities (I2S18:4; I7S19:4; I9S20:4; I14S10:4; I16S2:4).

But normally, what are you asking, because you are asking about the municipalities roles in this. Because normally, it would be the universities...
(Project leader – Green growth & Smart City, I2S18:4)

... Online Learning, I think this is more for the university. (City Manager, I7S19:4)

If learning was involved in another type of initiative, it was seen as included in the initiative and not as an initiative in itself. However, as the literature review showed (Plumb, Leverman & McGray, 2007; Gaved et al., 2012; Letaifa, 2015) specifically highlighting Online Learning initiatives in the case city of Timisoara (Andone, Holotescu & Grosseck, 2014; Holotescu, et al., 2016), Online Learning does seem to stand independently as a type of Smart People initiative. It will thus be kept in the framework of Smart People initiatives for future research to confirm. It will however, be excluded both from empirical results (as no such initiatives were identified) and the discussion of this paper.

4.1.6 Interactive Social/Virtual Networks/Platforms as a complement

When discussing the last type of initiative the Interactive Social/Virtual Networks/Platforms (ISVNP), no case city had a successful pure initiative in place. Several referred to Facebook, Twitter and LinkedIn as complementary platforms (I1S4:4; I2S22:4; I19S26:4) and the one case city that had tried to implement it intertwined in a Crowdsourcing mobile application failed as it, according to the interviewee, was not a natural form to communicate (I21S42:4). It was thus decided to exclude this type of initiative from the final framework, as it at least at the moment did not seem to qualify as a pure independent type of Smart People initiative. Consequently, this type of initiative will be excluded both from empirical results (as none was found) and the discussion of this paper.

4.2 Practitioner perspective on difficulties and preconditions within case

The main part of the interviews with the practitioners covered the difficulties they had encountered or could see emerging regarding the citizens and the preconditions that they had implemented or could see be required in order to address these difficulties or in general. This section will go through all these difficulties and preconditions per initiative per case. The section will end in a table summarizing the identified difficulties for each type of initiative (see Table 4.2.1, for preconditions for each difficulty see Appendix 10.1-10.7).

4.2.1 Living Labs

When implementing Living Labs in Copenhagen, the practitioners saw difficulties of citizen outreach, informing and unawareness (I1S14:2). The difficulties of finding the right content for the labs and creating a sense of communitarian belonging in order to engage the citizens were also identified (I1S18:2; I1S24:2). In order to achieve citizen engagement, the practitioners' saw citizens being involved and interested in the topic (I1S16:3; I1S20:3), and

thus asking citizens beforehand about their interests in the initiative in a survey or similarly, as preconditions (I1S26:3). Another, more general, precondition was to observe the citizens in these labs to understand their behaviour and needs (I2S107:3).

So when we test things in the city, we look at how people behave when they throw out wastes, when they go around in the city we are tracking them...
(Project leader – Green growth & Smart City, I2S107:3)

For Living Labs in Timisoara, the practitioners listed difficulties of location of the lab, being persistent and long-term and community collaboration (I9S34:2) with the suggested precondition to spring from established communities to get support from local administration (I9S34:3). The precondition of fulfilling basic needs (I9S36:3) and difficulties of changing rigid citizen mentality and the social/political context (I9S36:2) before expecting civic engagement, involvement and participation (I9S36:2) were also mentioned. Facilitating preconditions were also outlined as presenting successful results (success culture), employing a successive development of the initiative over time, citizen education, making the initiative into a win-win situation, ensuring awareness, communication, collaboration, actual citizen involvement, relevance to citizens and a multi-benefit approach (I9S38:3).

The preconditions suggested by the practitioners to succeed with Living Lab initiatives in Turku in general were: getting knowledge from other cities' experiences in cross-city learning, testing, citizen feedback (I19S38:3) and planning (I18S40:3). To more specifically handle the potential difficulty of citizen/participant resistance (I18S44:2), preconditions of pre-information and a motivational model to show the potential benefits were suggested (I18S46:3). See Appendix 10.1 for a concentrated presentation of the difficulties and corresponding preconditions regarding Living Labs.

4.2.2 Open Data

Under the Open Data initiative, the practitioners in Copenhagen encountered difficulties of privacy/security outcries, complexity (I1S28:2), poor data quality (I2S79:2) and lack of interest and motivation for citizens to explore and use the data (I2S77:2). In order to tackle these difficulties, suggested preconditions for the privacy/security outcry were to have a controlled involvement (not to hand out all the data to everyone at once) (I1S28:3) and to simply ask for permission to use the data (I2S65:3). Also, preconditions of making sure that the data is relevant, perceived as relevant to the citizens and employing a success culture, in which demonstrations of successful and meaningful usage of the data are performed, were presented (I1S32:3).

I think it also needs a success, we need to show them a true success of something that they can use, something that we've used their data to create some kind of intelligent initiative that can help their everyday (Industrial Ph.D. at CPH Solutions Lab, I1S32:3).

The practitioners in Helsingborg highlighted difficulties when opening up the municipal data to the public of making the data usable (I4S43:2), privacy restrictions (I5S47:2) and data complexity (I5S51:2). They emphasized making the data relevant (I4S43:3; I5S2:3) and interesting to the citizens (I4S43:3), increase the knowledge about it (I5S2:3) and communicate with potential users (I4S43:3) to ensure that it gets used. Moreover, rewards, acknowledgment to instil trust in the initiative and a systemized approach were brought up to encourage citizens to do something with the data (I4S43:3). The precondition for data complexity mentioned was using a pedagogical approach with visualizations (I5S51:3) to support citizen understanding.

The Open Data initiative is not yet properly established in Timisoara, but according to the practitioners, the initiative may be hindered by the social/political context, the complexity in the data and the resulting lack of participation (I9S46:2). Preconditions suggested for these difficulties were education, awareness, being transparent, communication (I5S46:3) and of course that the data is accessible (I5S46:3; I7S41:3).

The Open Data initiative in Tirana is suffering from difficulties of unrealistic expectations, municipal data protectiveness, transparency and its social/political context (I11S16:2). To counteract these, successive development has been employed and relevance in the data has been highlighted (I11S16:3). Some preconditions already in place that facilitated the Open Data were a vibrant community around Open Data and a political will with responsiveness (I12S16:3). However, further difficulties were listed as data quality (low amount) (I12S16:2), outreach, lack of communitarian belonging, initiative maturity and mistrust (I12S20:2) with persistency as a precondition (I12S20:3). Trust through acknowledging the citizens and re-establishing a citizen-municipal duo-power structure were both highlighted as preconditions for initiative success (I12S24:3) with the related difficulties of disempowerment, corruption, civic engagement and initiative maturity (I12S24:2). What was listed as necessary as preconditions were providing space for the citizens, a blank slate to build on to and in this way establish communitarian belonging and active citizenship (I12S24:3). Also being responsive and ensuring that the initiative and time spent is rewarding were highlighted (I12S24:3). In general, making the initiative focus relevant, employing a success culture (I12S34:3) and more basic requirements of literacy, accessibility and awareness (I14S30:3; I14S32:3) were all mentioned as key preconditions to succeed with Open Data initiatives.

Regarding the Open Data initiative in Turku, the practitioners outlined difficulties of data complexity (I18S22:2; I20S17:2), achieve data quality, being transparent (I18S24:2) and making sure that the data is up to date (data quality) (I18S26:2).

... it is too slow, it is too hard to make them open the data and of course if they do not open the data it is hard to find companies to utilize it if there is nothing to utilize (Director, Start-up services, I18S24:2).

Further difficulties presented were succeeding in being pedagogical regarding what the data is and how it can be used (I20S15:2), creating awareness of the Open Data concept amongst the common citizens (I20S17:2), outreach and lack of participation (I20S23:2; I20S37:2). Preconditions for these difficulties were identified as education (I20S17:3), building communities for Open Data (I20S21:3), advertising (I20S23:3; I16S28:3) through the right channel and using Universities as a channel to reach the citizens of students (I16S28:3; I20S23:3). In order to attract citizens, the practitioners suggested preconditions of drawcards (famous names, ambassadors or brands) (I20S27:3), using feedback that is oral and open-ended (I20S37:3), making the Open Data events informal, digestible and interesting with a continuous renewal of their content (I20S27:3), benefits and the opportunity of network-building (I20S31:3). Another difficulty mentioned was the issue of privacy and how it is a cultural issue (I16S22:2). Some general preconditions for Open Data success were outlined by the practitioners in Turku as being present, creating awareness, being available (I16S34:3), ensuring relevance in the data, that the data is interesting, to make a cost-benefit analysis to make sure that it is worth it (I19S12:3) and to employ cross-city learning (I20S35:3). See Appendix 10.2 for a concentrated presentation of the difficulties and corresponding preconditions regarding Open Data.

4.2.3 Open Innovation

When creating hubs and interrelated Hackathons for Open Innovation, the practitioners in Copenhagen highlight the difficulty of valorization (integrating solutions into the city) (I1S38:2). They also suggest a whole list of preconditions to support these types of initiatives success: involving the citizens (I1S34:3; I1S40:3) and maintaining their interest (I1S40:3; I1S44:3), making the venue physically accessible (I1S34:3; I1S36:3), highlighting it as a chance to co-produce the city (I1S34:3; I1S38:3) and in a sense be self-organizing, mixing activities at the location (I1S36:3) and finally ensuring that the solutions are properly acknowledged to instil trust in the initiative and that its outcomes are being taken seriously (I1S44:3).

I think, for them to lose interest I think if we don't take it serious. If we don't take it serious enough and don't allocate the right amount of funds, because there are not a lot of funds, to material or whatever or ignore what comes out of there if they have some really good solutions, if we fail to pick up on them and use the potential of it. Then it will also lose interest. (Industrial Ph.D. at CPH Solutions Lab, I1S44:3).

The Open Innovation initiatives in Helsingborg suffer from difficulties of getting citizens aware, engaged (I4S45:2), to participate and creating communitarian belonging in the area of the initiative (I4S14:2). The preconditions for these types of initiatives were identified as being present, providing a helping hand, communicating, being inspiring (I4S57:3), making it interesting, using the right channel and igniting with some playfulness to start the discussion (I4S89:3). Others were making it relevant somehow to the citizens and providing a blank

slate to create from (I4S59:3). Moreover, clear ground rules and early-phase collaboration were highlighted to create involvement (I4S61:3). But the Open Innovation arena was also said to require the city to be alive with an established connectivity, by mixing activities and people and self-organization (I4S61:3). Other key preconditions mentioned were achieving communitarian belonging, informing and raising awareness and education on democratic rights to make the citizen understand that they have a voice to be heard (I4S14:3). Obtaining some kind of momentum and critical mass were also presented as facilitating preconditions, to achieve participation (I4S45:3). Lastly, the preconditions of communicating expectations, instilling trust through both acknowledgement (I5S109:3) and viability in persistency were mentioned (I4S45:3; I5S109:3).

Considering the Open Innovation initiatives in Timisoara, the difficulty of persistency (sustaining participation) was identified (I9S54:2).

We still have a low ration. I mean for example we have 300 participants, but after 2-3 months we have maybe only 30 of them (President Smart City Association, I9S54:2).

To address this and to motivate the citizens to take part, preconditions of showing direct city output, employing a win-win approach and a success culture and motivation were suggested (I9S54:3). Also, the practitioners mentioned that these types of initiatives need maturity (I9S56:3), citizen passion, energy and belief, a shared vision, ambassadors and top-down support (I9S58:3). In Open Innovation contests, interest, data accessibility and data quality were all presented as difficulties needed to be addressed (I7S19:2; I7S49:2; I7S43:2). Preconditions for these contests were listed as relevance, rewards, shown appreciation for spend time and effort (I7S19:3), exploiting natural phenomenon, publicity, the right content, awareness, communication (I7S43:3), incentives, motivation and interest (I7S57:3).

In order to ensure a successful Open Innovation initiative, the practitioners in Turku highlighted being present, creating some kind of attraction (an event), gathering citizen feedback to adapt to that (I19S70:3), creating awareness and ensuring accessibility (an open door) (I19S72:3). A prevalent difficulty was to follow-through (doing what you said), as the initiative had been delayed (I19S91:2). The practitioners had also encountered difficulties of infeasibility of citizen solutions and the lack of understanding the need for complete inclusion (designing solutions for every citizen) (I16S40:2). Furthermore, employing a successive development, using ambassadors and the right channel (I16S40:3), being pedagogical, instilling trust through acknowledgement of citizen input and redirecting citizens to the right municipal department (I16S42:3) were presented as preconditions. Additional preconditions presented were testing and prototyping citizen solutions, observing citizen behaviour in public places to understand behaviour and needs, busting preconceptions by presenting the citizens with new ways to look at things (I16S44:3) and optimizing space-use by using spaces for daily activities during non-working hours (I16S46:3). See Appendix 10.3 for a

concentrated presentation of the difficulties and corresponding preconditions regarding Open Innovation.

4.2.4 Crowdsourcing

Regarding Crowdsourcing initiatives, the practitioners in Helsingborg saw difficulties of outreach (biased representation of citizens reached) (I5S13:2), finding the right content, privacy concerns (I5S39:2) and ensuring awareness of the initiative's existence (I5S15:2). The difficulty of a biased representation in outreach and participation was in turn relieved by offering another way to provide input as a citizen - not only reporting errors but also suggesting ideas (which made it more attractive and used) (I5S14:3). For the difficulties of finding the right content and privacy concerns - making the content relevant, interesting and communicating with the citizens to know what make them interested were presented as preconditions (I5S43:3). Also, sub-group personalization was suggested as a way to ensure interest from particular groups (I4S92:3) and providing rewards to reach out and increase participation (I5S115:3). In order to ensure awareness, preconditions were suggested of advertising, providing the context and showing citizens what the input will be used for by acknowledging it to achieve trust (I5S15:3). Lastly, to show long-term commitment, preconditions of communicating expectations, instilling trust through both acknowledgement and viability in persistency were mentioned (I5S109:3).

So every month we could have a hackathon, make it more viable in that way. Not just a happening once, to show of what we can makes things in a long-term working process. (Smart City Coordinator, I5S109:3).

Difficulties regarding Crowdsourcing initiatives in Timisoara include lack of motivation amongst citizens and being occupied (I7S19:2). To deal with these, the practitioners suggested being present, ensure accessibility through the right channel, such as a mobile or online application (I7S19:3). Further, lack of interest to use the initiative altogether, outreach and bad publicity were also mentioned (I7S71:2). To avoid these, preconditions of creating awareness, good publicity, marketing, a win-win approach (I7S71:3), responsiveness and time (I7S73:3) were outlined.

The Crowdsourcing initiatives in Tirana mean difficulties of transparency, lack of interest, initiative and citizenship maturity and making it relevant to the citizens (I11S26:2). In order to achieve interest and engagement, preconditions of trust through acknowledgement, relevance (I11S24:3), mixing activities and people and innovative methodologies (I11S32:3) were suggested. Furthermore, initiative maturity, relevance, presence, a helping hand as support, momentum, specific events and springing from already established and engaged communities (I11S52:3) were also suggested in order to succeed with the initiatives (I11S26:3). Some initiatives also suffer from citizen apathy, mistrust and a fixed mentality regarding the politicians and government (I11S44:2). To address these and the lack of interest, a bottom-up approach, ensuring interest and citizen relevance, task feasibility, citizen

empowerment and using the right channel of communication to pick up on the bottom-up ideas were suggested as preconditions (I11S46:3). Some other difficulties that the practitioners have experienced with these initiatives are ensuring responsiveness, answering to the input from the citizens (I13S14:2) and providing a personalized (not generic) response (I13S28:2).

... either the citizen would not get the answer in a short period of time which normally is one day or two days, or they will get a very generic answer and no problem-solving for them (Head of new Technology & Innovations at a telecommunication company, I13S28:2).

The precondition for these difficulties was identified as initiative coordination (I13S28:3). To make sure that the citizens actually are aware of the initiative, use it and use it right, the practitioners have enforced preconditions of a pedagogical approach, misuse restrictions to avoid errors, organizational channelling of the input (I13S20:3; I14S54:3), framing, categorization (I13S34:3), advertisement (I13S22:3), relevance (I13S32:3) and motivation in form of presenting the initiative's benefits (I13S24:3). There is also a general citizen scepticism towards input responsiveness and their input being realised (I13S40:2), with responsiveness as a natural precondition (I13S40:3). Moreover, multifunctionality in Crowdsourcing platforms and integration of these were suggested as a way to further motivate citizen usage (I13S46:3). Lastly, the difficulty of outreach to old people was mentioned (I14S62:2) with the precondition of communitarian belonging in the sense of getting second hand access through family and friends to the Crowdsourcing portals (I14S62:3).

Regarding Crowdsourcing initiatives in Turku, the practitioners mentioned difficulties of arrangements of events (I18S68:2), predicting the event turnout (I18S78:2), outreach (I20S43:2), participation (I17S54:2; I20S47:2), occupied citizens, lack of motivation and interest and quality of the data used in the challenges at the events (I20S47:2; I17S48:2). In order to ensure participation, preconditions of advertising, using the right channels (I18S74:3; I20S51:3), providing rewards and allure (I18S76:3; I20S58:3), education (I20S51:3) and springing from an established community (I18S78:3) had been put in place. Moreover, to increase the attraction of participants, preconditions of communitarian belonging, event variety, initiative persistency (I18S80:3), interest (I17S48:3; I18S82:3), creating awareness (I18S82:3), making the initiative economically interesting and drawcards (I17S58:3) were proposed.

The practitioners in Turku had also experienced the difficulties of some initiatives being *worn out* and the need for momentum (I17S40:2). To address these, the practitioners proposed mixing people and activities to create new formations, collaborating across initiatives, initiative maturity and persistency (I17S62:3). Furthermore, preconditions of growth-opportunities, providing a blank slate to create from, receiving feedback to ensure

that the initiative is going in the right direction, being present (I16S8:3; I16S52:3), testing, cross-district within-city learning (I16S52:3), trust through acknowledgement (I16S8:3; I16S56:3), citizen empowerment and communitarian belonging (I16S56:3) were highlighted.

... it is open discussion and they get also feedback for their ideas a lot and they see the progress. That is important for me that they see that this lead to somewhere and when I contribute this idea something happens it is not just a pool where we collect things but something happens actually. (Municipality Project Services Manager, I16S56:3).

However, the practitioners had encountered further difficulties of in/out groups (group-difference based conflicts in the community), prejudice and resistance towards the initiative, collaborating within the initiative (I16S58:2) and acting on fear (I16S60:2). These difficulties were minimized with the preconditions of establishing a common concern across the in/out groups and the communitarian belonging that was created as a result (I16S58:3). Further preconditions suggested to obviate these difficulties were creating awareness and providing pre-information in pre-discussions (I16S66:3). Also, the practitioners presented the difficulty of political blocking (expert inhibition in which citizens and their ideas were blocked in the presence of politicians with agendas) and that the citizens did not get an equal opportunity to participate (I16S6:2) and to give feedback (I16S6:3). Turku being a small city was also mentioned as a difficulty to achieve the livelihood needed (I19S22:2). Lastly, the practitioners in Turku listed preconditions to ensure a good relationship with the citizens in Crowdsourcing initiative success. These were actual participation (I16S8:3), being present (I16S8:3) media, pre-information, feedback, trust through acknowledgement, a pedagogical approach, early-phase collaboration to get early involvement and input and transparency of municipal activity (I16S16:3). See Appendix 10.4 for a concentrated presentation of the difficulties and corresponding preconditions regarding Crowdsourcing.

4.2.5 Crowdsensing

The difficulty presented with Crowdsensing initiatives in Helsingborg was getting the citizens to contribute with their sensor data (I5S79:2). In order to make it attractive to citizens to participate, preconditions of making it interesting, relevant, accessible (price-wise) and using a pedagogical approach on the most suitable channel were identified (I5S79:3).

But also we as a city can also use a lot of sensors and sensor data that could be attractive to the citizens as well, so if we do some they do some or the enthusiasts do some then we could maybe make more people interested in this (Smart City Coordinator, I5S79:3).

Also, the precondition of knowledge of what to do with the Crowdsensing data for own use/development was mentioned (I5S74:3). Lastly, the precondition of communicating the existence of initiative and its benefits to make the citizens aware was highlighted

(I5S61:3).³See Appendix 10.5 for a concentrated presentation of the difficulties and corresponding preconditions regarding Crowdsensing.

4.2.6 Innovation Districts

When addressing the Innovation District in Helsingborg, the practitioners brought up difficulties of getting people to pass by (I4S71:2) and to reach out to particular groups of people (I5S82:2). To get people to pass by, a more natural location was suggested as a precondition where connectivity between citizens can be established (I4S71:3) in a so called *third room* (with the home and the office being the first and the second rooms) (I4S71:4). Also, to reach out to particular groups such as *makers* (I5S82:3), a proof-of-concept (PoC) was suggested as a way to involve these groups by offering a start-sum to get them to try their solutions and prove that they work (I5S103:3).

Regarding the Innovation District in Timisoara, outreach, standing out amongst other activities and communicating the purpose of the initiative (I8S12:2) were mentioned as difficulties with using the right channel and clarity as preconditions (I8S12:3). Also mixing people and activities and enabling citizen growth were listed as preconditions (I8S14:3).

I think it is capital to have in a city like ours various contexts for these citizens to meet, to mingle, to discuss, to grow together as involved citizens (CEO at Timisoara Start-up Hub, I8S14:3).

Ambassadors were also used as way to ensure success of the initiative (I8S24:3; I8S28:3). The practitioners also mentioned the difficulty of citizens being risk-averse in the social/political context (I8S38:2). As preconditions to succumb these, creating communitarian belonging through locally generated funds to support the initiatives, organic growth and time were listed (I8S40:3). Moreover, the practitioners highlighted the precondition of the facilities of the Innovation District being affordable (I7S19:3). Furthermore, difficulties of occupied citizens, lack of motivation and interest, prioritization of activities in everyday life, the citizen mentality and fulfilling basic needs before being susceptible were identified (I9S64:2). To facilitate interest and motivation, the practitioners proposed preconditions of ambassadors, education, citizen growth, relevance, support and knowledge application (I9S72:3). Also, long-term motivation and boredom were highlighted as difficulties (I9S66:2) with energy, drive and motivation as preconditions to ensure this protractedness (I9S66:3). Other difficulties were value creation (I9S76:2), technological complexity, the required knowledge and how the latter hinders complete inclusion of citizens (I9S80:2).

³ In the other cities, Crowdsensing was not in place or was merely a subpart of initiatives that were placed in another more prevalent type as according to their main purpose. In other words, the Crowdsensing part of the initiative did not qualify as an independent pure initiative in itself.

The Innovation District in Tirana is not yet established. However, the difficulty of location has emerged (I14S68:2) and the precondition of assuring accessibility for everyone to ensure that citizens go there and participate was mentioned (I14S68:3). According to the practitioners, these types of initiatives in Tirana only have to be offered and then word-of-mouth (WoM) will ensure participation, as the opportunity is rare (I14S74:4). Also affordability was mentioned as a precondition (I14S74:4).

Regarding the Innovation District initiatives in Turku, the practitioners have encountered difficulties of low participation, biased representation in the participation (I19S56:2) with the desired precondition of a balanced representation of views (I19S56:3). In order to attract more citizens to the initiative (in order to avoid a biased representation) preconditions of momentum, being present where the citizens are, collecting feedback (I18S12:3; I19S58:3), placing the initiative in a natural location, advertising it, using the social media as a channel (I19S58:3), offering actual participation in the decision-making, planning (I19S14:3; I19S62:3), motivating, using an innovative approach and citizen interaction (I19S62:3) were suggested. However, as mentioned by the practitioners, there is a difficulty in finding the right channel and knowing how to communicate and advertise (I19S58:2). Moreover, difficulties of ensuring affordability in a natural location and to achieve a balanced location distribution of similar initiatives were highlighted (I19S22:3).

... there have been spaces and they have gone, and they have been rented out but the big challenge is who is going to pay for the rent, because nobody gives space for free, that is sure, especially in the middle, of the city (Project Manager (6Aika strategy), I19S22:3).

In general, preconditions of mixing people (I18S8:3) and early-phase collaboration (I18S16:3) to set the grounds for the initiative were mentioned. The practitioners had also experienced some difficulties regarding citizen resistance towards using their data in smart hubs in privacy/security outcries. The preconditions to minimize these difficulties were presented as being pedagogical and available to answer to questions or concerns (I16S74:3; I16S76:3). See Appendix 10.6 for a concentrated presentation of the difficulties and corresponding preconditions regarding Innovation Districts.

4.2.7 Participatory eGovernance & eServices

When implementing Participatory eGovernance & eServices in Copenhagen, the practitioners discuss the difficulty in making the public and environmental concerns matter to the citizens, in contrast to the closer more relatable local environment (I2S117:2).

No I think that people are really engaged, because it's local, when it's local it matters. Because when it's big, people don't matter, it doesn't really matter to their lives. But when it's in my backyard, I really want to raise my voice. (Project leader – Green growth & Smart City, I2S117:2).

To address this difficulty, it was suggested that the public concerns need to be highlighted on a local level or somehow be made local (I2S117:3).

The difficulties presented under this initiative by the practitioners in Helsingborg were the idea of trying to design for (I4S74:2) and reaching out to everyone in the city (I5S23:2), awareness (I5S23:2), being transparent (I4S82:2) and ensuring feasibility of the initiative and the input (I5S27:2). General preconditions for the initiative to be embraced altogether were presented as achieving momentum, establishing a trial-and-error culture (I4S74:3) and including the citizens in early-phase collaboration (I4S78:3). Also, for the transparency to be more successful, the trial-and-error culture was brought up as a precondition as it allows the practitioners to admit making mistakes and move on (I4S82:3).

... because it's really about having the courage to have your competence questioned. Okay, I'm a city planner and I put it up there, and people are gonna have a lot of opinions about it. And maybe some is gonna say that you're an idiot and think about it that way. And that goes to the heart right. It feels better, it's my plans, I'm gonna tell you when it's decided so I don't have to motivate to tell. That's not to be taken for granted, that's a mental transition too. (Digitalizing Director, I4S82:3).

The difficulties of outreach and awareness were dealt with through communication, accessibility, a natural location of the input channels (I5S23:3) and by using the right channels (I5S19:3). Being present and responsive to the citizen input were further advocated to facilitate these (I5S25:3). The question of feasibility was addressed by suggesting making the focus more relevant and interesting to the citizens and also to apply subgroup personalization of the focus (I5S27:3).

Because you we need to come closer to what people really matters about [...] I think we could be better just listening what do they say, what are the buzzwords and so on... (Smart City Coordinator, I5S27:3).

Regarding Participatory eGovernance and eServices, the practitioners in Timisoara mentioned the social/political context (I9S18:2) and governmental transparency (I9S20:2) as key difficulties with citizen growth, education, participation and using the right channels to communicate as preconditions (I9S20:3). General preconditions listed were making it interesting for the citizens and ensuring direct city output from the ideas inputted (I9S10:3). The practitioners in Tirana, mentioned preconditions of achieving citizen trust through acknowledgement, responsiveness (I14S34:3), creating awareness and ensuring accessibility through information and meetings (I14S38:3; I14S44:3) when implementing these types of initiatives. Also, playfulness, making it interesting (I14S40:3), placing the initiative in a natural location (I14S42:3; I14S83:3) were all preconditions suggested to attract the citizens.

Lastly, cross-city learning was brought up as a way to increase the probability of these initiatives to be successful (I14S85:3).

Under this initiative, Turku has some general digital eServices in place, and has experienced difficulties of digital illiteracy, citizen resistance towards the initiative (I16S94:2), fear and mistrust (I16S96:2) towards embracing this new way of interacting with the municipality. To facilitate these, the old channels of in-person communication is still in place (I16S94:3). See Appendix 10.7 for a concentrated presentation of the difficulties and corresponding preconditions regarding Participatory eGovernance & eServices.

4.2.8 General across initiatives

Looking at Smart People initiatives overall and difficulties surrounding them regarding the citizens, the practitioners in Copenhagen brought up finding the right content, involving the citizens, finding the right channel to reach them (I1S6:2), handling their lack of motivation and finally addressing the complexity in the data (I2S141:2). Continuing with some overall preconditions suggested, most of these overlap the initiative-specific preconditions. These were making it relevant to the citizens, finding the right content and channel to reach them, ensuring acknowledgement to instil trust and controlling the involvement (I1S57:3). The practitioners further mentioned a win-win approach, using a motivational model (I1S55:3) and ensuring actual participation as important preconditions (I2S141:3).

The practitioners in Helsingborg mentioned getting people into the city as a key difficulty overall (I4S63:2) and saw physical security, established connectivity, mixing people and activities, being a self-organized city, breaking wrong perceptions behind not wanting to go into the city (I4S63:3) and being visible in the system (I4S65:3) as important preconditions. Also general preconditions to ensure citizen engagement were brought up as instilling trust through acknowledgement, being persistent, ensuring accessibility (easy access) and that the initiatives are interesting (I4S91:3). Furthermore, the significant role of finding, approaching and supporting ambassadors to be out there and make initiatives happen and make the citizens *smarter* were highlighted, together with the precondition of necessary citizen education (I5S94:3).

... we need to be out there as well we need to find ambassadors that can make it happen as well and I think one important thing to realise is that we can't make it all by ourselves we need others to be involved in doing this [...] we need to find these catalysators. (Smart City Coordinator, I5S94:3)

Moreover, being transparent and open towards the citizens about what the ultimate end goal is were underlined (I5S121:3). Lastly, the HBG model as a motivational model for stakeholders, with rewards and regulations (I5S90:3) was also presented as a precondition to achieve a structured and motivational approach towards Smart People initiatives.

The general difficulties applicable over all Smart People initiatives mentioned by the practitioners in Timisoara were mistrust and availability heuristics (negative attitudes from past experiences colouring the current attitudes) (I9S24:2). Preconditions for these difficulties were listed as achieving momentum, focusing on quality (rather than quantity), showing direct results, employing a success culture and trust-building (I9S24:3). Several preconditions were also listed as advice to other Smart Cities. These were transparency, following-through (I9S90:3), involvement of citizens, establishing a shared vision, communication, a win-win approach, time, ambassadors to lead the initiatives, citizen growth, trust, persistency in the approach (I9S92:3), quality assurance and a feedback/responsiveness-system (I7S92:3).

[The second main thing is] to have a good feedback from the citizens regarding what is more important in their community [...] So it is really important to cooperate and communicate with them, because in this way they think they are appreciated and their ideas are taken in value. (City Manager, I7S92:3).

The difficulty in predicting all outcomes was also brought up (I7S92:2) with cooperation, communication, appreciation and trust through acknowledgement as preconditions (I7S92:3). Lastly, in order to encourage Smart City solutions and application amongst the citizens, providing the right context, relevance, mixing people giving purpose, knowledge, resources (I9S6:3) and putting in place a motivational model (I9S84:3) were all highlighted as preconditions.

Some general preconditions suggested to succeed with Smart People initiatives by the practitioners in Tirana were actual citizen participation, relevance, a bottom-up approach, citizen empowerment, mixing people and ensuring citizen interest (I11S76:3). Also, the general difficulties of mistrust, protests, to prove oneself as a municipality (I14S90:2), fixed mentalities in the social/political context (I11S72:2) were all addressed by the practitioners with the precondition of being transparent and employing a success culture, proving to the citizens that the initiatives are successful and solving problems (I14S90:3). More general advice across all types of initiatives by the practitioners were achieving early-phase media support and collaboration and engaging children (I14S92:3). The latter was described as if the initiative was embraced by children, it is easy to get their parents support as well and in the end the whole community (I14S92:3).

A general difficulty mentioned by the practitioners in Turku was predicting outcomes as there are a lot of influencing factors (I17S20:2). Preconditions to ensure Smart People initiative success were listed as collecting feedback (I17S20:3; I19S87:3), ensuring following-through to achieve trust through acknowledgement, being transparent and pedagogical (I19S87:3), clear goals, successive development of the initiative to reach the goal (I18S84:3), striving for complete inclusion of citizen perspectives through communication (I17S20:3), employing cross-city (I17S68:3) and cross-district (I19S14:3) collaboration, focusing on the purpose not

the solution of the initiatives, mixing people (I17S68:3), being available and present to talk to the citizens, acknowledging them and following-through on what was promised (I16S102:3).

Table 4.2.1: Difficulties with Smart People initiatives identified by practitioners

Smart People initiative	Difficulties identified by practitioners
Living Labs	awareness, civic engagement, communitarian belonging, community collaboration, content, engagement, information, involvement, location, mentality, outreach, participation, persistency, resistance, social/political context
Open Data	awareness, communitarian belonging, civic engagement, complexity (task), corruption, data usability, data/info quality, disempowerment, initiative maturity, interest, mistrust, motivation, municipal data protectiveness, outreach, participation, pedagogy, privacy restrictions, privacy/security outcry, quality of service, social/political context, transparency, unrealistic expectations
Open Innovation	awareness, communitarian belonging, complete inclusion, data accessibility, data quality, engagement, feasibility, following-through, interest, involvement, participation, persistency, shared vision, valorization
Crowdsourcing	acting on fear, apathy, arrangements, awareness, bad publicity, citizenship maturity, content, data quality, equal opportunity, in/out groups, initiative maturity, interest, mentality, mistrust, momentum, motivation, occupied citizens, outreach (biased representation), participation, personalization/generic response, political blocking (inferiority complex/expert inhibition), predicting turnout, privacy, relevance, resistance, responsiveness, scepticism, small city, transparency, worn-out initiatives
Crowdsensing	coordination, data contribution
Innovation Districts	advertisement, affordability, biased representation (long term), boredom, communication, communication (purpose), complete inclusion, complexity, finding the right channel, fulfilling basic needs, get people to pass by (location), interest, location, location distribution, long-term motivation, mentality, motivation, occupied citizens, outreach, outreach particular groups, participation, prioritization, privacy/security outcry, required knowledge, resistance, risk adversity, social/political context, standing-out
Participatory eGovernance	awareness, design for everyone, digital illiteracy, fear, feasibility (of the initiative and input), local vs. public (make it matter), mistrust (disbelief in acknowledging the citizens' input), outreach (reach everyone), resistance, social/political context, transparency

4.3 Academia perspective on difficulties and preconditions within case

The main part of the interviews with the academia covered the difficulties they had seen or could see emerging and the preconditions that they could see being required in relation to these and the practitioners' difficulties, or in general. This section will go through all these difficulties and preconditions per initiative per case. The section will end in a table summarizing the identified difficulties for each type of initiative (see Table 4.3.1, for preconditions for each difficulty see Appendix 10.1-10.7).

4.3.1 Living Labs

In Copenhagen, the academia saw the difficulty for Living Lab initiatives of privacy/security outcries (I3S6:2) with the involvement of citizens in forming the privacy policies as the precondition (I3S6:3). Further, the difficulties of relying on citizens actually being engaged, getting them to participate (I3S10:2), starting the initiative off, changing the citizens' mindsets of how to view the new ways of interacting with the elements of the Living Lab (I3S12:2) were mentioned with the precondition of time (I3S12:3). Also, the difficulty in negotiating the terms of the lab with the citizens was brought up (I3S12:2) with the

precondition of clear rules and a pedagogical approach (I3S12:3). Regarding the difficulties brought up by the practitioners in Copenhagen of outreach, creating awareness, having the right content, engagement and creating communitarian belonging (I3S13:5), the academia listed preconditions of planning the scope of the initiative and springing from established communities (I3S18:3). Also, scaling up these types of initiatives (I3S18:2) and making the citizens aware of the initiatives existence (I3S22:2) were mentioned as difficulties. To deal specifically with the difficulty of communitarian belonging, the academia suggested a bottom-up approach, finding a common concern for the citizens and making it relevant to them (I3S20:3). Moreover, the academia brought up difficulties of motivating the citizens and abstraction of public matters (trying to make citizens care for issues that are far away from them in time and space) (I3S22:2) with the precondition of ensuring some kind of moral meaning-making for the focus of the initiative (e.g. energy consumption) (I3S22:3).

The academia in Helsingborg brought up difficulties of ensuring correct experimental conditions and control in the Living Lab initiatives (I6S2:2) with proper experimental control as a precondition (I6S2:3). The academia further highlighted the importance of field testing in the real life settings (I6S2:3). Regarding citizen engagement and participation, the academia mentioned the opportunities of elderly people being especially receptive and having a lot of time and interest for exciting additions to their everyday life (I6S4:3). However, in the same context of elderly people, difficulties of digital illiteracy and scepticism towards new technology were identified (I6S4:2). Focusing on the initiative being daunting for elderly, or their scepticism towards it, the academia listed preconditions of education, pedagogy, successive development, using a motivational model explaining the benefits and employing rewards (I6S6:3). For the general citizen, difficulties of motivation and being occupied were mentioned (I6S4:2) with preconditions of multiple rewards, education and creating communitarian belonging with a norm-following system of wanting to fit in and therefore wanting to participate (I6S8:3).

... there has to be something that's gonna benefit them from outside, whether that be like financial or personal, but if they can also see how it's gonna benefit the city in general or future generations (Ph.D. in Psychology at Lund University, I6S8:3).

In Timisoara, the difficulty concerning Living Labs was citizens being occupied (I10S8:2). When being addressed with the difficulties presented by the practitioners of collaboration, civic engagement, rigid mentalities (I10S9:2), lack of participation and the social/political context (I10S9:2), the academia agreed with the two latter and highlighted the precondition that actually is in place, of a citizen resistance in shape of a local spirit to fight against political constraints (I10S14:2). Regarding the difficulty of lack of participation, the academia confirmed the difficulties of a rigid mentality, issue with achieving civic engagement and further added the issue of making the public spaces matter like the local spaces and the lack of communitarian belonging (I10S16:2). Preconditions to the lack of

participation were listed as involving NGOs (Non-Governmental Organizations), advertising the initiative to create awareness, being present, citizen involvement and employing a bottom-up approach with idea-testing (I10S18:3). For the difficulties brought up by the practitioners in Timisoara of initiative persistency and keeping citizens interested (I10S19:5), the academia suggested preconditions of intrinsic motivation (and to some extent extrinsic motivation), early-phase collaboration and rewards (I10S20:3). However, the difficulty of complexity in the initiative, making it difficult to include regular citizens, was also brought up (I10S20:2).

The academia in Turku listed preconditions of information, ensuring complete inclusion of participating citizens' perspectives, providing support and early-phase collaboration (I21S2:3). Also, the difficulty of lack of participation due to the physical and psychological state of the citizens in the lab environment (such as patients) was brought up (I21S2:2). A further difficulty mentioned was making the solutions citizen-focused (and not solely innovation-focused) (I21S2:2) with planning and having a shared vision of the expectations of the initiative as preconditions (I21S2:3). Moreover, outcome anticipation and handling sensitive data were highlighted as difficulties (I21S2:2; I21S18:2). In response to the difficulties listed by the practitioners in Turku of resistance to approach the new prototypes because it destabilizes the status-quo (I21S13:5), breaking the ice and communicate that they want to test something (I21S15:5), the academia added difficulties of innovation versus adoption (making the solution balanced in degree of innovation and adoptability), solution distancing from the citizen part towards start-up solutions (not being able to relate to the new start-up innovation), time (learning curve) and the citizens being occupied (I21S16:2). Preconditions for the distancing were identified as exposure, information and pedagogy (I21S16:3).

So I can very well relate to the fact that adoption of this kind of innovations or products that the start-ups come with is a little bit distancing, because what happens is that we learn a lot from using services or using tools for what we already know. If it is quite similar to products we can relate to, I think that the adoption probability will be much higher. But of course that [products are similar to existing ones] comes at the cost of innovation, because it might be that it does not really solve the most pressing problems that they identified.
(M.Soc.Sc., Project Researcher at University of Turku, I21S16:2; I21S16:3).

Further general preconditions for succeeding with the Living Lab initiative and dealing with the difficulties listed were suggested as creating a general understanding through reiterations in the lab (go back and update it and communicate expectations), creating a shared vision, provide information in combination with post-trial demonstrations (not to be influenced during the first trial) and experience/idea comparison with other participants to help the understanding of the initiative and its purpose (I21S18:3). See Appendix 10.1 for a

concentrated presentation of the difficulties and corresponding preconditions regarding Living Labs.

4.3.2 Open Data

Difficulties presented by the academia regarding Open Data in Copenhagen were comfort in trusting the government (not critically questioning it) (I3S30:2) and lack of interest (I3S26:2), with actual participation in using the data to influence something (e.g. participatory budgeting) and bottom-up approach as preconditions (I3S30:3). Regarding the difficulties presented by the practitioners in Copenhagen of privacy/security outcries and complexity in the data opened (I3S31:5), the academia highlighted that the data complexity is actually a difficulty of how to design the Open Data platform and represent the data (I3S32:2; I3S36:4; I3S38:2). Preconditions suggested for the privacy/security outcry were listed as anonymization, regulation of the data, a clear purpose and transparency of the authorities own data (I3S34:3). For the data complexity, structuring the data, communicating the purpose and controlling the manipulation/interaction with the data were listed as preconditions (I3S38:3).

For the Open Data initiative in Helsingborg, the academia saw difficulties in creating awareness of the existence of the initiative, actual citizen participating, complexity and data representation (I6S10:2).

... so I guess the difficulty is communication that this is the case that this is happening right? Yeah, it's all great amazing for that they're doing this, but if no one knows they're doing it, then you might as well not do it because if people aren't aware. (Ph.D. in Psychology at Lund University, I6S10:2).

To address the complexity and data representation, the academia suggested being pedagogical and ensuring data accessibility (I6S10:3). Further difficulties presented by the practitioners in Helsingborg were making the data usable, privacy concerns and data accessibility and complexity (I6S11:5). Dealing with the privacy concern, preconditions of anonymization, obtaining consent and considerations of cultural-differences (with some cultures being more concerned than others) were proposed (I6S12:3).

The academia in Timisoara firstly listed some preconditions for Open Data initiative success of having a clear goal, ensuring maintenance of the data platform, data quality, a pedagogical data structure and centralization of the data (I10S24:3). The difficulties of data representation (I10S24:2) and the quality of the service (I10S26:2) were highlighted in relation to these preconditions. When being approached with the difficulties encountered by the practitioners in Timisoara of data complexity (I10S27:5), the academia added the difficulties of digital illiteracy and the digital divide (I10S28:2). Moreover, the difficulty presented by the practitioners of lack of participation due to lack of interest (I10S29:5) was addressed by the academia by suggesting preconditions of relevance and being pedagogical in structuring the data on the platform (I10S30:3). Outreach was also highlighted as a difficulty (I10S30:2).

The academia in Tirana had previously seen difficulties regarding Open Data initiatives of the social/political context in Albania, making it difficult to access data freely as it is restricted (I15S4:2). Today, with the Open Data platform in place, the academia saw difficulties of mistrust, availability heuristics from negative experiences accessing eGovernance in the past, ensuring data quality, making the data relevant to the citizens, motivation, digital illiteracy and actual accessibility of the data that is of interest (I15S8:2). In response to the difficulties mentioned by the practitioners in Tirana of data quality, transparency, outreach and civic engagement (I15S9:5), the academia confirmed the difficulty of transparency, added the difficulty in being persistent (I15S10:2), suggested preconditions of using a bottom-up approach and highlighted the importance of being transparent (I15S12:3).

... a civic society organization that are working on this can push forward transparency and I also think that it should be very organized, meaning that, you know, there are certain things that should be improved on data accessibility...
(Former Chair of Social Science Research Center at University of New York Tirana, I15S12:3)

To address the practitioners' difficulties of making citizens interested in the data and the civic engagement (I15S13:5), the academia responded with preconditions of communicating what has been done using the right channel (such as social and visual media), creating awareness, being pedagogical in explaining how to use the platform by providing helping hand and being present to give the needed information and finally mobilizing the citizens (I15S14:3). The difficulties of mistrust and outreach to the citizens that experience the mistrust were mentioned (I15S14:2), and the preconditions of carefully planning the content and message delivered were suggested (I15S14:3). Furthermore, the difficulties of information overflow for ordinary citizens and making it relevant to them were brought up (I15S26:2), with preconditions of making the content relevant somehow, advertising it and its benefits for the citizens and collecting feedback (I15S26:3).

In Turku, the academia listed difficulties with the Open Data initiative of creating awareness of its existence, advertisement, the tech-heavy representation bias of the citizens attracted, actually getting citizens to participate and communicating the purpose (I21S22:2). In response to the difficulties brought up by the practitioners in Turku of outreach to ordinary citizen (biased representation), data complexity, creating awareness, data quality, privacy/security outcry and culture as a frame for these outcries (I21S23:5), the academia confirmed the difficulty of outreach to the ordinary citizens and added that the related difficulties are establishing new concepts like Open Data amongst ordinary citizens, uneducated citizens, inconsistent security attitudes and data illiteracy (I21S24:2). Addressing the data quality issue directly, the academia brought up the precondition of focusing on the purpose of using the data to solve problems (not the solution in itself) (I21S24:3). Focusing on the difficulty of outreach to the ordinary citizen (who is not tech-heavy), the academia

added difficulties of inclusion, citizen prejudice towards tech-heavy events and expert inhibition in the sense that the citizens feel like they will not be able to contribute in the context of tech-experts (I21S26:2). Also, the precondition of focusing on the problem at hand and the purpose and not the means or solution (like pure technology) with which to reach the goal was highlighted once more (I21S26:3).

So, in that regard [how to involve more people in hackathons, open data competitions] maybe the conversation should be like totally turned upside-down. It should not be at all about Open Data, it should be about what types of problems do you want to solve in this city and then on each team you would have somebody who knows how to code. That is how you solve it. (M.Soc.Sc., Project Researcher at University of Turku, I21S26:3).

See Appendix 10.2 for a concentrated presentation of the difficulties and corresponding preconditions regarding Open Data.

4.3.3 Open Innovation

The Open Innovation initiative brought up by the academia in Copenhagen, was addressed by the academia by listing difficulties of following through and being persistent (durability in the initiative) (I3S42:2). Preconditions to these were suggested as ensuring a structured administration of the initiative and providing a helping hand (support) (I3S42:3). The academia further added difficulties of long-term engagement (persistency) (I3S46:2), citizen time prioritization (I3S50:2) and citizen being occupied with their everyday life (I3S46:2; I3S50:2), with the precondition of using a bottom-up approach (I3S52:3). Further preconditions for success were listed as ensuring intellectual property rights for the citizens and making it relevant to them (I3S50:3). To address citizen motivation, the academia listed providing resources and space (I3S54:3).

Looking at the Open Innovation initiatives in Helsingborg that were placed in a specific area, the academia saw difficulties of outreach citizens outside this area, making it relevant to them and the concern of creating even more boundaries placing it in one area (I6S14:2), with preconditions of providing a centralized solution and achieving citizen communitarian belonging in the whole city (I6S14:3). To address the difficulties suggested by the practitioners in Helsingborg of lack of participation and engagement and creating awareness and communitarian belonging (I6S15:5), the academia added the difficulty of artificiality (initiatives not being naturally grown from the bottom-up) in these top-down initiatives with difficulties of lack of engagement and involvement (I6S16:2).

I think this is generally the issue when you have these like governmental initiatives or kommun [municipality] initiatives, they never work compared to the grass-root ones, where it starts itself and it gets this following like builds up. As soon as you like push it down on someone, it's like people, you know you

need this time for it to build up, and if the people around you are creating it and you're doing it together then it creates this spirit around it. But as soon as someone creates it, and it's like, then I don't think it has this same passion...
(Ph.D. in Psychology at Lund University, I6S16:2).

Preconditions suggested to obviate this artificiality were using a bottom-up approach to allow the citizens to build the initiative from the ground and from a blank slate, time (initiative maturity), communitarian belonging and going through ambassadors that have good ties within the community (I6S16:3). When focusing on another more general initiative directed towards all citizens, and the difficulties listed by the practitioners in Helsingborg of getting citizens to participate and to be engaged and creating awareness and a communitarian belonging (I6S23:5), the academia confirmed these difficulties and added difficulties of making it relevant to the citizens, reaching out and getting citizens involved (I6S24:2). Preconditions for these were suggested as using ambassadors, creating a hype, presenting success stories, using WoM, providing a blank slate and ensuring public awareness (I6S24:3). In order to actually get citizens to participate and have ideas, the academia suggested preconditions of having an event, creating a hype and using WoM (I6S26:3). Yet again, the academia iterated the difficulty of artificiality in a top-down approach (I6S26:2), with a bottom-up approach and initiative maturity as preconditions (I6S26:3).

The practitioners in Timisoara had experienced difficulties of outreach to ordinary citizen (I10S37:5) regarding their Open Innovation initiative, made up by Hackathons. Addressing this difficulty, the academia added the difficulties of complexity and a tech-heavy representation bias (I10S38:2), with preconditions of using a non-techy topic and making it relevant to the ordinary citizen (I10S40:3).

When being approached by the Open Innovation initiatives implemented in Turku, the academia brought up preconditions of having an established feedback-loop with the citizens with responsiveness and trust-through acknowledgement (I21S28:3). In response to the difficulties presented by the practitioners in Turku of occupied citizens, lack of participation, biased representation and complete inclusion of citizen perspectives (I21S29:5), the academia confirmed the occupied citizens and added the difficulties of evoking new interests, achieving the same concern for the public as for the local and in-between election participation (I21S30:2). Preconditions to these were suggested as springing from established communities that already have an interest, neighbourhood associations, marketing campaigns, using a grounded communication level when communicating with the citizens and achieving communitarian belonging (I21S30:3).

I think the most important thing is to speak to these people as you would speak to your own neighbour, you know and to approach them on a very personal level, in a way. I do not know what that way can be but in a sense that also helps them understand that they are working towards creating a better neighbourhood

for themselves and as a by-product increase the solidarity in the neighbourhood by working together with other citizens. (M.Soc.Sc., Project Researcher at University of Turku, I21S30:3).

Specifically to the difficulty of occupied citizens, the preconditions of placing the initiative in natural locations, where the citizens would naturally pass by was suggested (I21S30:3). See Appendix 10.3 for a concentrated presentation of the difficulties and corresponding preconditions regarding Open Innovation.

4.3.4 Crowdsourcing

Regarding the Crowdsourcing initiative in Helsingborg, the academia saw difficulties of impatience (I6S30:2) with the precondition of responsiveness, trust through acknowledgement, ensuring citizen benefits and purpose, enabling input and output to the citizens through the Crowdsourcing channel and making it multi-functional (I6S30:3). These preconditions addressed the difficulties brought up by the practitioners of participation, engagement, outreach, awareness and content (I6S31:5). The difficulty of outreach was confirmed and the difficulty in finding the right channel (I6S32:2) was added with preconditions of communication, reward (I6S34:3) and relevant content (I6S38:3). Also, the difficulty in creating common spirit was mentioned (I6S34:2), with the potential precondition of achieving communitarian belonging and using an ambassador with influential power in the community (I6S34:3). Lastly, to reach out to the citizens and get them to participate, WoM, centralization of the information, multi-functionality and a natural location (in this case online) were suggested (I6S38:3). In response to the practitioners difficulty in creating the right content (I6S30:2), the academia brought up preconditions of multi-functionality, making the content relevant to the citizens and creating a hype (I6S40:3).

I think that there needs to be this central app that have got a lot of stuff in it that people on for multiple reasons and then catch it on the side, and then like “oh that’s cool”, I think you can’t have like 4 different apps for HBG (Ph.D. in Psychology at Lund University, I6S38:3).

The academia in Timisoara highlighted preconditions for Crowdsourcing initiatives of feedback from the citizens (I10S42:3), however with time-loss and complexity as difficulties (I10S42:2). The academia also emphasized using citizens’ opinions for questions that they have insight into and knowledge about, and leaving the questions regarding urban development to the professionals, with the focus on the purpose of the solution and not the approach (I10S42:3).

It is very important to ask the population about their needs, about their expectations and so on but not strictly about one by one each aspect of urban development (Conf. univ. Dr. in Sociology at Western University of Timisoara, I10S42:3).

In response to the difficulties listed by the practitioners in Timisoara of occupied citizens and lack of motivation and participation (I10S43:5), the academia confirmed the difficulty of occupied citizens and continued with difficulties of a rigid mentality, creating civic engagement with a changing population (moving students) and changing habits (I10S44:2), with preconditions of time and maturity (I10S44:3). The precondition of a critical mass of citizens participating in the initiative was also highlighted in order to change the mentality and enforce change in habits (I10S44:3).

Looking at Crowdsourcing in Tirana, the academia saw difficulties of following-through (I15S44:2). In response to the difficulties listed by the practitioners of apathy, maturity, engagement, lack of interest, scepticism, transparency, fixed mentalities and collaboration (I15S45:5), the academia added difficulties of making it relevant to the citizens, the social/political context, time and confirmed the scepticism (I15S46:2). In order to facilitate, the academia suggested supporting duo-power structures to balance the political interest with citizen input (I15S46:3). Addressing specifically the mistrust or scepticism, the academia in Tirana brought up preconditions of communication, instilling trust by acknowledging the citizens, following-through by making things happen and time (patience) (I15S50:3). Moreover, focusing on the preconditions for the difficulties of lack of involvement, maturity, engagement, being innovative and aware that they can influence decisions as citizens (I15S53:5) and care for the larger community with civic engagement (I15S55:5), the academia mentioned fulfilling basic needs, using a local-level approach, providing a helping hand, being present, being pedagogical, providing information, building relationships, being persistent, providing skill-training to make participation possible and using a bottom-up approach (I15S56:3).

First of all, I would reach people, so if they need certain skills then I will work with them on neighbourhood level and discuss with them, show them certain things that maybe they should know and they are not informed about and they need to develop certain skills and also work with them to develop those skills. So people are very receptive at the local level. (Former Chair of Social Science Research Center at University of New York Tirana, I15S56:3).

Furthermore, the academia in Tirana saw difficulties of ensuring a polished product (I15S58:2; I15S64:2; I15S66:2; I15S70:2), the lasting first bad impression (I15S66:2; I15S74:2), mistrust and data quality (I15S70:2). When considering potential difficulties when the citizens were to approach the initiative, the academia listed the preconditions of instilling trust through acknowledgement and following-through to show that the participation makes a difference (I15S72:3; I15S74:3). The academia also mentioned the difficulty of the digital divide, of everyone having access to the technology required (I15S72:2), and mistrust that something actually will happen (I15S74:2). Lastly, some general preconditions for this type of initiative listed were responsiveness (I15S78:3), advertisement, being pedagogical with

demonstrations, building trust through acknowledgement and showing results through a success culture approach (I15S80:3).

When discussing the Crowdsourcing initiatives in Turku, the academia highlighted the preconditions of listening and following-through on the input (I21S36:3) and using a narrow focus of the top-down approach from the municipality to ensure focus in the communication with the citizens and to be transparent and communicate what is the result of the input to the initiative (I21S2:2). In response to the difficulties mentioned by the practitioners in Turku of in/out group conflicts and people acting on fear (I21S37:5), the academia mentioned the importance of having multiple views (I21S38:3), whilst also bringing up difficulties of complete inclusion of perspectives and eutrophication (becoming blind towards your environment) (I21S38:2) with balancing the views as a precondition (I21S38:3). Further, the academia confirmed the difficulty of the in/out groups (I21S38:2). When being approached by the difficulty mentioned by the practitioners of worn out initiatives (I21S39:5), the academia highlighted that whilst some citizens are very aware of these types of initiatives others are completely unaware (I21S40:6). Lastly, to address the difficulty of politicians pushing their agendas and inhibiting regular citizen ideas (I21S13:5), the academia suggested preconditions of mixing people, bringing new contrasting perspectives into the discussion, using a grounded communication level and communicating the purpose of the initiative (I21S16:3).

So basically one of the underlying ideas [in crowdsourcing] there is that the more diverse your crowd is the better ideas you can get out of it. So then that [meeting] would be pretty much the most fertile ground to have new ideas, but that then requires that somebody speaks up and people either build on each other ideas or bring contrasting views [...] I think it is much more fruitful if the ground is levelled [to discuss their ideas without any inhibitions] (M.Soc.Sc., Project Researcher at University of Turku, I21S16:3).

Furthermore, the academia in Turku had also taken an active role in one of the Crowdsourcing initiative projects, almost taking the role of a practitioner. Regarding this initiative the academia had experienced difficulties of not having a polished product, availability heuristics of lasting the first impression, inhibition towards official communication in a social media manner, representation bias in active citizens and creating an environment for peer-to-peer interaction (with social media incorporation) that was actually used (I21S42:2). In response to the difficulty of the initiative, brought up by the practitioner of Turku being a small city lacking the livelihood needed for initiative success (I21S43:5), the academia disagreed and said that the difficulties were rather availability heuristics from previous use of technology for other purposes than this initiative (I21S44:2) and the precondition for this of being exposed to this new purpose of use (I21S44:3). Also, the precondition of having a polished product was repeated (I21S48:2; I21S50:2) as the difficulty of a bad first impression (I21S50:2) was eminent.

...we grossly underestimated the importance of flawlessly working app. We, ourselves thought of it as a prototype but the users themselves were not forgiving with us at all. (M.Soc.Sc., Project Researcher at University of Turku, I21S50:2; I21S50:3)

See Appendix 10.4 for a concentrated presentation of the difficulties and corresponding preconditions regarding Crowdsourcing.

4.3.5 Crowdsensing

For Crowdsensing initiatives in Helsingborg, the academia saw difficulties of getting citizens to change their habits (I6S42:2) with preconditions of making the initiative stand out and be better than rival options, be relevant and be convenient (I6S42:3).

Getting people to change their habits. Like if people have used googlemaps before, they're gonna keep using it. And if you're gonna use this other app, it has to be superior, it has to be better than the one you're already using like the one you've been using before. People like what they're used to and they like the popular stuff and to change that is really really hard. (Ph.D. in Psychology at Lund University, I6S42:2; I6S42:3).

The academia also mentioned the difficulty of privacy/security outcries when sharing private information with the municipality (I6S42:2), with the preconditions to get citizens willing to share their information, be pedagogical and transparent about what and how the information is being used and explain how it will benefit the citizens and have a purpose for them (I6S44:3). The general difficulty in ensuring long-term motivation was also brought up (I6S44:2). See Appendix 10.5 for a concentrated presentation of the difficulties and corresponding preconditions regarding Crowdsensing.

4.3.6 Innovation Districts

The difficulties mentioned by the academia regarding the Innovation District initiative in Helsingborg, were outreach and creating awareness (I6S48:2), with preconditions of WoM, making it relevant to the citizens and ensuring benefits and a purpose for them (I6S48:3). In response to the difficulty brought up by the practitioners in Helsingborg of getting people to pass by (I6S49:5), the academia emphasized the precondition of giving the citizens an invitation, a purpose and relevance, making it natural for them to participate and to do so in groups, ensuring comfort (I6S50:3) and to handle the difficulties of fear and discomfort (feeling awkward) to participate (I6S50:2). The academia further highlighted the difficulty of the location being a bit off (I6S50:2).

... people don't like to go to things where they feel like they're gonna feel awkward, people hate that [...] so you have to give people a reason and

something that makes them feel comfortable to be there, kind of like a buffer if that makes sense. (Ph.D. in Psychology at Lund University, I6S50:2; I6S50:3)

When addressing the difficulties brought up by the practitioners in Timisoara of complete inclusion due to tech-heavy representation bias, fulfilling basic needs, maturity, civic engagement, long term motivation, prioritization of initiatives to participate in and the citizens being risk averse (I10S47:5), the academia agreed and added the difficulty of regulatory restrictions in place (I10S48:2). Addressing specifically the difficulty brought up by the practitioners of standing out amongst other activities (I10S51:5), the academia emphasized reaching a participation equilibrium between what is offered and public participation and giving time to the initiatives (I10S52:3).

The academia in Turku listed difficulties regarding Innovation Districts of occupied citizens, the novelty effect (an initiative being interesting initially but then losing interest over time) and the tiring effect as a result (I21S54:2). However, the precondition that has been put in place of a blank slate to creatively build on to was brought up and approved (I21S54:3). In response to the difficulties experienced by the practitioners in Turku of a biased representation of citizen perspectives, communication, finding the right channel and advertisement (I21S55:5), the academia emphasized the difficulty of the representation over-concern as it is impossible to achieve complete representation and long-term representation bias when building an area as citizens move and the population change (I21S56:2). Some preconditions suggested to alleviate the representation bias, were using multi-channels that reach out to more and different kinds of citizens (I21S42:3; I21S56:3), approaching community ambassadors and being transparent and honest about the bias in the information presented (I21S56:3). Furthermore, the academia in Turku mentioned the difficulty in creating awareness regarding the existence of these initiatives (I21S72:2), and the preconditions of having a low entrance barrier, mixing people and activities, using a natural location, communicating, springing from established communities to achieve the mix of people and using the right channel to reach the citizens (channels that are already established) (I21S72:3). See Appendix 10.6 for a concentrated presentation of the difficulties and corresponding preconditions regarding Innovation Districts.

4.3.7 Participatory eGovernance & eServices

The academia in Copenhagen, highlighted the difficulty regarding eServices of digital illiteracy (I3S62:2) and the preconditions of participatory eGovernance to be serious by following-through, allowing actual citizen participation in decision-making and instilling trust through acknowledging the citizen input (I3S62:3).

Looking at the participatory eGovernance initiatives in Helsingborg, the academia highlighted the difficulties of location (I6S56:2) with the precondition of placing the initiative in a natural location that matches the activity and is not a transit point (I6S56:3). Furthermore, the academia brought up the difficulties of mistrust (the disbelief from the

citizens in acknowledgement of their input) and individual input acknowledgement (I6S56:2) with the preconditions of instilling trust through proper acknowledgement and responsiveness (I6S56:3). Moreover, engaging children and using a playful approach was suggested as an approach to engage the citizens to give their input (I6S56:3). In response to the difficulties listed by the practitioners in Helsingborg of designing for everyone, government transparency, raising awareness and feasibility of the input (citizen having crazy ideas) (I6S57:5), the academia confirmed the difficulty in getting feasible input, and added following-through on the input and impatience amongst the citizens to see results (I6S58:2). The preconditions for these were proposed as focusing more on providing citizens with information than getting input (I6S58:3) and only allowing input for feasible and realisable areas (I6S58:3). Addressing specifically the difficulty in designing for everyone, the academia highlighted the preconditions of relevance and trust through acknowledging their input (I6S60:3) and the related difficulties of mistrust and individual-acknowledgement (I6S60:2). Lastly, the academia suggested a live-update feed to allow citizens to employ experience/idea comparisons with other citizens to see the activity and impact (I6S60:3).

Because I don't think people believe that that's the case, I don't think people believe that their voice is gonna be heard, them as a sole person [...] So maybe you would have to have that, like a live update where people are suggesting, they can see what other people are also suggesting, and then it's like people can like click and vote on that person's suggestion too. Like so they can see they're not the only one, who's thinking this. (Ph.D. in Psychology at Lund University, I6S60:2; I6S60:3)

In Timisoara, the academia approved the precondition of local community feedback as an approach (I10S54:3) but brought up the difficulties regarding Participatory eGovernance of long procedures as a result of bureaucracy, lack of political will (I10S54:2) and regulatory restrictions (I10S56:2).

Regarding Participatory eGovernance and eServices in Tirana, the academic firstly emphasized the precondition of offering a polished product that works from the beginning (I15S90:3). Moreover, the difficulties of duration of citizen customization, flawed infrastructure of missing addresses that obstructs the possibility to reach out to the citizens and offer actual participation (I15S90:2) were identified, with the precondition for the latter of informed participation (I15S90:3). Also, the academia mentioned the difficulties of the digital divide in Tirana of lacking access to the required technology and exclusion of citizens in the outskirts (I15S92:2), with preconditions of pedagogical communication and technology accessibility (I15S92:3).

In Turku, the academia emphasized the difficulty of eServices of the first-adoption problem with cross-digital context illiteracy when citizens are being used to doing services in one way and need to change it to a digital way (I21S62:2). In response to the difficulties experienced

by the practitioners in Turku of digital illiteracy, mistrust towards new technology and resistance towards the new way of performing the service (I21S63:5), the academia firstly repeated the difficulty of cross-digital context illiteracy and then added the inconsistent security attitudes held by citizens of caring about security in some forums but not others (e.g. google maps) (I21S64:2).

... there is also a bit of a disconnection on how citizens perceive this kind of things [public services online] because they use the internet for their private lives and there seems to be a barrier to use it for something else [...] I think that is, that is interesting because again it is imbalance in people use navigation on their mobile phone but then why would they not trust the [online] services that are provided by the city.(M.Soc.Sc., Project Researcher at University of Turku, I21S64:2)

See Appendix 10.7 for a concentrated presentation of the difficulties and corresponding preconditions regarding Participatory eGovernance & eServices.

4.3.8 General across initiatives or other of interest

The academia in Copenhagen highlighted the issue of using the word “smart” to describe Smart Cities and Smart People, the citizens in these cities as it opens up for ridiculing by the media and might exclude citizens that does not identify with “smart” (I3S76:4).

Addressing specifically the difficulty of outreach to particular groups (I6S51:2), the academia in Helsingborg mentioned the precondition of using the right channel (matching the already established natural channel used by that group) (I6S52:3). When being addressed by the trend in Smart Cities of both trying to divide the society into niche groups and address their needs and create something that fit them and trying to create communitarian belonging, the academia in Helsingborg emphasized focusing on achieving communitarian belonging and bringing everyone in (I6S66:3). However, difficulties of getting people to participate as people feel nervous and uncomfortable to show up were mentioned (I6S66:2), with preconditions of using ambassadors to increase comfort and the reason to show up and in this way create natural participation (I6S66:3). Finally, the academia brought up the perspective of people only doing things to fit in, to follow social norms and to be accepted in the group (I6S66:4).

As mentioned above, the academia in Turku was involved like a practitioner in one of the Crowdsourcing initiatives and had specifically applied gamification⁴ techniques in this initiative (one of the academia’s own research areas). Difficulties brought up when using this technique were matching the reward in the initiative environment with the Crowdsourcing task by balancing or employing extrinsic versus intrinsic rewards and a mismatch when using

⁴ Simply described as using game-elements in non-game contexts (Deterding et al., 2011)

gamification for more serious purposes (I21S74:2), with the precondition of using a concrete tangible reward (I21S74:3). Lastly, the academia highlighted the phenomenon of beautified concepts when some concepts (such as gamification) are founded in academic interests rather than in regular citizens' interests (I21S74:4).

Table 4.3.1: Difficulties with Smart People initiatives identified by academia

Smart People initiative	Difficulties identified by academia
Living Labs	awareness, changing mindsets, civic engagement, communitarian belonging, complexity, control, digital illiteracy, engagement, experimental conditions, innovation vs. adoption (citizen-focus), local vs. public, mentality, motivation, negotiating (terms), occupied citizens, outcome anticipation, participation, privacy/security outcry, scepticism, sensitive data, social/political context, solution distancing, start-off, time (learning curve), up-scaling
Open Data	advertisement, availability heuristics, awareness, comfort in trust, communicating purpose, complexity (task), data accessibility, data/info quality, digital illiteracy/digital divide (need for professional digital literacy), establishing new concepts, expert inhibition, inclusion, inconsistent security attitudes, information overflow, interest, mistrust, motivation, outreach, participation, persistency, prejudice (tech), relevance, social/political context, tech-heavy representation bias, transparency, uneducated citizens
Open Innovation	artificiality (top-down), awareness, boundaries, communitarian belonging, complexity, engagement, evoking new interest, following-through, in-between election participation, involvement, local vs. public, motivation, occupied citizens, outreach, participation, persistency, prioritization, relevance, tech-heavy representation bias
Crowdsourcing	availability heuristics, awareness, changing habits, changing population, civic engagement, communitarian belonging, complete inclusion, complexity, creating common spirit, data quality, digital divide, eutrophication, finding the right channel, first impression, following-through, impatience, in/out groups, mentality, mistrust, occupied citizens, official communication inhibition, outreach (biased representation), peer-to-peer communication (social media incorporation), polished product, relevance, representation bias, scepticism, social/political context, time (learning curve)
Crowdsensing	changing habits, long-term motivation, privacy/security outcry
Innovation Districts	awareness, biased representation (long term), blank slate, citizenship maturity, civic engagement, complete inclusion, discomfort, fear, fulfilling basic needs, location, long-term motivation, novelty effect, occupied citizens, outreach, prioritization, regulatory restrictions, representation over-concern, risk adversity, tiring effect
Participatory eGovernance	address infrastructure, bureaucracy, cross-(digital)context illiteracy (inconsistency), design for everyone, digital divide, digital illiteracy, feasibility (of the initiative and input), first-adoption problem/start-off, following-through, impatience (of citizens for results), inclusion, inconsistent security attitude, individual acknowledgement, location, mistrust (disbelief in acknowledging the citizens' input), participation, political will, regulatory restrictions, time (for citizen customization)

5 Discussion

After compiling all the findings from the literature and the empirical results, a framework with all difficulties and corresponding preconditions could be formed (see Appendix 10). The difficulties in the framework were then categorized into four categories: (1) difficulties across initiatives and cases, (2) difficulties that are initiative specific, (3) difficulties that are case specific and (4) particular difficulties. In addition, preconditions not directly related to any difficulties were also categorized into general and particular preconditions. The discussion was then formed around these four categories of difficulties and two categories of preconditions. The selection criteria for each category will commence each section below. In general, the theory and empirical results complemented and validated each other well. Therefore, the aim of the discussion is to merge the perspectives in a structured and comprehensible manner.

5.1 Difficulties with preconditions across initiatives and cases

From the framework (see Appendix 10), several difficulties can be seen to be repeated across both cases and types of initiatives. With the selection criteria of occurrence in at least three case cities and three types of initiatives, the first group of difficulties was categorized as general across cases and initiatives. In addition to these, difficulties that are strongly related to the difficulties in the categorized group were also added to the group.

5.1.1 *Participation, outreach and other related difficulties*

In an in-depth analysis of eGovernance, the European Union emphasized the need for democratic *participation*⁵ of citizens in the public life (Davies, 2015). However, besides the promised perks, participation is associated with several perils (Janssen, Charalabidis & Zuiderwijk, 2012; Lee, Hancock and Hu, 2014; Veeckman & Van Der Graaf, 2014). This is reconfirmed throughout the interviews, since participation is the most elaborated difficulty, mentioned by both practitioners and academia across all the five cases and all the seven types of initiatives.

Since participation as a predominant difficulty is settled, the attention shifts to the factors that may hinder and the preconditions that may facilitate it. Janssen, Charalabidis and Zuiderwijk (2012) identify that citizens' lack of skills or knowledge of how to contribute to the initiatives may decrease participation. In this context, the interviewees propose preconditions like education, pedagogy, a low entrance barrier, raising awareness, communication and advertising using the right channel. Lee, Hancock and Hu (2014) emphasize that participation can be incentivized through rewards. Similarly, rewards are mentioned throughout the interviews together with benefits and economic interests. Theodoridis, Mylonas and Chatzigiannakis (2013) emphasize that rewards should fit citizens' needs. Here, the

⁵ In section 5-6, the difficulties will be bold and in italics the first time they are mentioned to facilitate the reading.

interviewees differ between intrinsic and extrinsic motivations and how they are addressed by different rewarding schemes, with intrinsic rewards being more sustainable. Another more contemporary elaborated precondition in terms of rewards that is mentioned in the interviews is gamification (Wu & Luo, 2014; Mirri et al., 2016). However, the interviewees remind that gamification should be used with caution not to spoil the seriousness, relevance and main purpose of the initiative. It is of importance to emphasize the preconditions of responsiveness, transparency and acknowledging citizens input as a way to prove the seriousness of the initiative. Moreover, as according to the interviewees, the initiatives based on already established native communities have higher norm of participation.

The interviewees further emphasize that a clear purpose and well defined idea, rather than the technological artefacts, should be central to the initiative. Moreover, the purpose of the Smart People initiatives should preferably be harvested from the citizens' basket of needs. Interestingly, the interviewees mention the need to create a hype of the initiative through events, ambassadors, WoM and success stories. The need to catch the momentum and obtain a critical mass is also stressed. Literature (Farkas & Lendák, 2015) and interviewees agree on the need to conduct real-setting small-scale simulations and risk analysis to test the ideas before reaching the public as a way to measure the norm of participation. As far as lack of participation is concerned, *resistance* is mentioned in the interviews as an extreme condition. Suggestions to alleviate the resistance are motivational models, pre-information and pre-discussions, a pedagogical approach, availability, raising awareness, establishing common concerns and communitarian belonging and offering inclusive services (keeping the traditional face-to-face channels in place).

Nevertheless, Smart City literature (Paskaleva, 2009; Chourabi et al., 2012; Hollands, 2015) identifies the need to build stable networks of knowledge, skill sharing and co-production in the Smart City context. But these networks cannot be sustained by mere participation. Therefore, the challenges of *engagement* and *involvement* emerge. Engagement requires strong intrinsic motivation, interest and the establishing of a duo-power structure. Involvement can be facilitated by clear ground rules and early-phase collaboration. As emphasized in one of the interviews, before abstracting about higher forms of civic involvement, it is of relevance to face the reality and fulfil the basic needs of the citizens (minimum income, shelter, health, education) as traditionally demonstrated through the Maslow's pyramid of needs.

As described by Schuurman et al. (2012) the advantages of citizen-driven initiatives reside in the social capital embedded in the diversity of the crowd. When the crowd lacks diversity, the proposed solution might be biased. Indeed, *representation bias* is a highly emphasized difficulty, elaborated by both practitioners and academia across four cases and four types of initiatives. The representation bias can be addressed through advertisement, by placing the events in natural locations, by fostering citizens' interest and through motivation. A particular concern in Smart City context is the *tech-heavy representation bias*, where the initiatives are

supported and attended by professionals but not regular citizens. Relevance of the initiative and broader variety of themes are mentioned in the interviews as preconditions. Another challenge when involving citizens in envisioning and co-producing particular areas or neighbourhoods, is the *long-term representation bias*. What if the newcomers will find the solutions of the old dwellers unattractive and unable to satisfy their needs? Because of its evident complexity, this difficulty remained unaddressed. Interestingly, interviewees mention that representation bias is a natural phenomenon and should not lead to *over-concern* – it is sufficient to be aware of the limitations of the harvested ideas and be transparent when communicating results.

Connected to the concern for representation bias, both practitioners and academia mention the utopian aim of *complete inclusion* across two cases and three types of initiatives. The preconditions for the difficulty remain under-elaborated and the precondition of ensuring balanced representation of views is only mentioned in one case. However, as the precondition of a balanced representation does not aim to include everyone but just to achieve representation of all groups of stakeholders, it does not completely enable complete inclusion. The opposite solution of individually addressing each community may result in artificial *boundaries* between each community, as experienced in one of the cities. Between complete inclusion and separate addressing of each community, *inclusion* is elaborated. This difficulty can be addressed through pedagogy, communication, technology accessibility and focus on the purpose of the initiative rather than the technologic solution per se. Related to complete inclusion, the interviewees also identify the difficulties of *designing for everyone* and providing *equal opportunities*.

The concerns about representation bias and the need for a critical mass of participation lead Smart City practitioners to the concept of *outreach*. Outreach is a highly mentioned difficulty, elaborated by both practitioners and academia across all the five cities and six types of initiatives. Besides the aim to extend the pool of participants, outreach is also elaborated on as the aim to *reach everyone* or *particular groups* (also related to the *makers* that could be attracted through Proof of Concept). Addressing outreach, particular attention is given to exploiting and fostering social networks (spurring from established communities, using WoM, fostering communitarian belonging and offering collaboration rather than mere participation). Outreach is mentioned to be facilitated by *advertisement*, *information* and *communication* using the *right channel*. However, each of these preconditions also embody challenges that are elaborated on in the interviews as difficulties per se. In particular, an instance of a bad communication strategy can be the provision of *generic rather than personalized responses*. As seen in the interviews, this strategy can suggestively be improved through organizational coordination of local administration to ensure that each citizen concern is addressed by the right professional. Similarly, addressing the challenge of *acknowledging individual contributions* of citizens through responsiveness can improve outreach.

5.1.2 Motivation, interest and other related difficulties

Since urban spaces offer a variety of events, citizens need a strong *motivation* to spend time and effort on Smart City initiatives (Borges & Zyngier, 2014). This research reconfirms the necessity of citizen motivation to succeed with Smart City initiatives since motivation is elaborated as a challenge by both practitioners and academia across all five cities and six types of initiatives.

Borges and Zyngier (2014) emphasize that citizens are committed to Smart City initiatives when they are interested in the results of the projects or when they gain self-promotion. Similarly, in their field research Ertiö, Ruoppila and Thiel (2016) spot that citizens may be led by individualistic reasons (for instance to raise their voice) rather than common benefits. In this context, the interviewees propose the precondition of offering benefits to foster citizen motivation. Moreover, as described also by Ertiö, Ruoppila and Thiel (2016), according to the Technology Acceptance Model (TAM) theory, users' motivation to use technology decreases if the self-perceived skills in handling the artefact are low. Therefore, suitable preconditions of education, support, keeping the events digestible, providing resources and space become important as pinpointed by the interviewees.

Besides individualistic stances, both interviewees and literature (Perera et al., 2014) identify that moral-meaning making (ensure that the initiative is important from a moral stance), public value and relevance may motivate citizens to engage in Smart City initiatives. However, both practitioners and academia recognize *relevance* as a difficulty per se, with content, advertising, feedback, success stories and blank slate as preconditions to overcome the difficulty.

Also, the novelty effect - the curiosity for new technologies - can boost the motivation of the citizens to try out a new Smart City solution. But the curiosity does not lead to loyalty of use. (Ertiö, Ruoppila & Thiel, 2016). Similarly, the interviewees differ between motivation and *long-term motivation* which can be hindered by *boredom*. Interviewees address both difficulties with energy and drive. Interesting new results of this research are the concepts of ambassadors and drawcards that can be used to attract citizens to these events because of their popularity and knowledge.

Throughout the interviews an interesting link between motivation and the *citizens being occupied* is lingering. In four out of the six interviews where the difficulty of occupied citizens is mentioned, motivation is mentioned in the same sector. Occupied citizens is also a highly elaborated challenge, identified by both practitioners and academia across four cities and five types of initiatives. According to the interviewees, this difficulty can be obviated through bottom-up approaches, springing from established communities, communitarian belonging, neighbourhood associations and grounded communication level. Evidently, all the preconditions call for a native relation between the citizens and the initiative with underlying emotional and cultural bounds.

Interest is another highly elaborated difficulty, mentioned by both practitioners and academia across four cities and five types of initiatives. Interest can be facilitated through pedagogy, education, a helping hand, support and presence; communication, information and awareness; citizen mobilization and actual participation; empowerment, win-win solutions and the opportunity for knowledge application. Meanwhile, interest in Smart City initiatives may be hindered by the existence of other events. Smart City practitioners recognized the difficulty for the initiative to *stand-out* amongst rival events and recommended using the right channel, time and clarity to succeed. Interestingly, it is advocated in the interviews that Smart City practitioners should not be discouraged if the offer for participation exceeds citizens' demand in the short-run – this situation is very favourable to reach equilibrium in the long-run.

5.1.3 Digital divide, digital illiteracy and complexity

As identified by Deakin (2014), one of the most concerning issues is the inability of Smart City initiatives to challenge the inequalities in the knowledge economy. More often than not the initiatives merely reproduce the status quo of wealth and knowledge distribution and add little value to the already marginalized social groups. Similarly, Veeckman and Van Der Graaf (2014) emphasize the social and democratic inequalities that may derive from Smart City initiatives, which lack the envisioning of the social factor besides the technological one. In this context, the *digital divide* is one of the most addressed challenges of Smart City initiatives (Macintosh & Coleman, 2003; Davis, 2015). This research reconfirms the prominence of this challenge as it is mentioned by both practitioners and academia across three cities and four types of initiatives. In an in-depth analysis on eGovernance, the European Union (EU) attributed the digital divide to factors like citizens' (1) income level, (2) digital illiteracy and (3) domicile (Davies, 2015).

Nam and Pardo (2011a) merge the concept of income level with domicile, since economic segregation is usually reflected in a spatial division. The authors emphasize that Smart City initiatives may fail to reduce the distance-factor and instead produce (or hinder the development of) peripheral neighbourhoods marginalized by the digital divide. This issue is also identified in the interview with the academia in Tirana. However, it is interesting to emphasize that when elaborating on problematic peripheral neighbourhoods (in terms of economic level and social diversity), the interviews from Turku and Helsingborg show an eagerness to accentuate challenges of building communitarian belonging rather than the digital divide. This result recalls again for the prevalence of building social capital (in terms of density of collaboration, civic engagement and community spirit) rather than addressing technology-related challenges in the context of Smart City initiatives (Hollands, 2015). Moreover, in the above mentioned cities, the neighbourhoods were approached with personalized initiatives that were not highly technical (a local newspaper to foster community spirit and face-to-face meetings to pinpoint shared concerns). Therefore, the digital divide in already marginalized neighbourhoods may be the result of a wrong approach. Suggestively, these spaces and communities can be dealt with personalized solutions that can very well be traditional rather than novel. Similarly, literature (Clarke, 2013; Breuer, Walravens & Ballon,

2014) and interviewees identify the need to keep the traditional channels of communication and service delivery in place to support specific communities.

In contradiction to Nam and Pardo (2011a), Macintosh and Coleman (2003) emphasize that the digital divide is influenced by the socio-personal (behaviours, media use patterns, cultural and environmental context) rather than socio-economic (income level, employment, education) factors. Similarly, the research of Partridge (2004; 2007), only concerning internet usage, highlights the need to shift this view. The author (2007) reveal that the digital divide is mostly influenced by self-efficacy (the belief that the person can perform a particular behaviour or task) rather than socioeconomic factors. This finding shifts the discussion of the digital divide from socio-economic factors to digital skills and literacy.

Digital illiteracy is also a highly mentioned difficulty emphasized by both practitioners and academia across all the five cities and three types of initiatives. Komninos, Pallot and Schaffers (2013) mention digital illiteracy as one of the three most important gaps that cities must overcome (together with the gaps of creativity and entrepreneurship). To obviate this difficulty both literature (Davis, 2015) and interviewees call for digital skill training and education.

However, as identified in interviews, basic digital literacy does not skill-wise satisfy the needs of today's Smart City initiatives. In all the five cases and across five types of initiatives both practitioners and academia stress the difficulty of initiative or task **complexity**. This reconfirms the claims of Janssen, Charalabidis and Zuiderwijk (2012) and Balestrini, Diez and Marshall (2014). The interviewees mostly address complexity through pedagogy, communication, awareness, transparency and relevance.

In the context of digital illiteracy, it is important to emphasize the contextual nature of this phenomena. As identified in the interviews, citizens may choose to boycott the use of digital channels when receiving city services or communicating with officials even when they are regular users of technology for entertainment or their work. As described by Ertiö (2013) and the academia in Turku, the lack of familiarity and the availability heuristics of using technology for other purposes than governmental services may lead citizens to exhibit **cross-(digital) context illiteracy**. Accordingly, citizens may find it challenging to understand and use digital services with other purposes and functionality than the digital applications that they are already using, like social media applications or games.

5.1.4 Communitarian belonging and other related difficulties

When describing the *People and Communities* factor in their proposed framework of Smart Cities, Chourabi et al. (2012) call for the need to approach communities and their needs rather than solely citizens. Throughout the literature (Allwinkle & Cruickshank, 2011; Nam & Pardo, 2011a; Batty et al., 2012), the concept of Smart Communities is accepted as key to the development of Smart Cities. However, Hollands (2008) emphasizes that when

elaborating on Smart Communities, authors tend to automatically assume that there is a community consensus and engagement around Smart City initiatives. Actually, this research reconfirms the need to avoid the automatic assumption of the existence of strong communities when approaching citizens. *Communitarian belonging* is a frequently mentioned difficulty, elaborated by both practitioners and academia across four cities and four types of initiatives.

In order to avert the difficulty of communitarian belonging, bottom-up initiatives that spring from already established communities and focus on relevant, shared concerns are recommended in the interviews. Moreover, the preconditions of using ambassadors, success stories, WoM and creating a hype are mentioned. The interviewees also identify the preconditions of providing space and a blank slate for creativity, allowing time for citizens to mature and at the same time maintaining persistency. Related to the challenge of communitarian belonging, the difficulties of *creating common spirit* and fostering *community collaborations* are mentioned. These difficulties can also be addressed through the above mentioned preconditions.

5.1.5 Transparency, mistrust, privacy and other related difficulties

When elaborating on Open Data, Lee, Hancock and Hu (2014) identify that local administrations may resist the opening process and stressed that the principle of *transparency* needs to be revised in such administrations. This research reconfirms transparency as a challenge across Smart People initiatives, since this difficulty is mentioned by both practitioners and academia in four cases and three types of initiatives. To obviate this difficulty, Janssen, Charalabidis and Zuiderwijk (2012) propose establishing a *comply or explain* culture according to which departments and individuals of local administrations should comply with the strategy of opening or otherwise explain their stance through relevant regulations. Another strategy advocated by the interviewees that indirectly affects the transparency of a local administration is the establishment of a *trial-and-error* culture. This organizational culture encourages professionals to perceive failures as affordable and not as direct severe critique on a personal level. Therefore, professionals are more willing to publish their works and face other people's critique. A second strategy applied by the interviewees is that of *successive development* according to which the level of transparency and openness in local administrations should increase step-by-step. Other preconditions to the difficulty are relevance, citizen growth, education, participation and using the right channel. An instance of the principle of transparency is the installation of a *shared vision* between the stakeholders in the initiative. As Schaffers et al. (2011a) state, a shared vision will ensure clarity on the roles, contributions and responsibilities of each stakeholder preventing them from exploiting each-other's contributions and rights.

Besides transparency, *mistrust* is another obstacle in the relationship between citizens and local administrations (Paskaleva, 2009; Åström et al., 2015; Davies, 2015). Both practitioners and academia mention mistrust as a challenge across three cases and four types of initiatives.

Mistrust can be bridged through persistency, content, bottom-up approaches, interest, relevance, feasibility, citizen empowerment and using the right channel. Both literature (Åström et al., 2015) and interviewees recognise the disbelief in acknowledging citizens' input as a source of mistrust. In this context, preconditions like responsiveness and trust through acknowledgement are recommended. Interestingly, in three from five interviews where mistrust is mentioned in relation to governance, transparency proceeds as a precondition or related challenge demonstrating a potential link between the difficulties. However in some interviews, mistrust is attributed to technology rather than governance. In this case, inclusive services and the usage of traditional channels for service distribution are elaborated as preconditions.

Similarly to mistrust, *scepticism* is mentioned as a difficulty in the interviews. Here, preconditions like responsiveness, communication, building trust through acknowledgement, following-through, allowing time, rewards, education and pedagogy are identified on the citizens' side and successive development and establishing a motivational model are identified on the administration's side.

Related to the citizen-government relationship, Hernández-Muñoz et al. (2011) also identify the issues of security and privacy related to the existence of *sensitive data*. Similarly, this research reconfirms the challenge of *privacy/security outcry* in Smart People initiatives, since this difficulty is mentioned by both practitioners and academia across three cities and five types of initiatives. Literature (Calderoni, Maio & Palmieri, 2012; Hancke, Silva & Hancke, 2013; Balestrini, Diez & Marshall, 2014) calls for ownership policies and transparency of initiatives, preconditions also mentioned throughout the interviews. In addition to these, preconditions like controlled involvement, asking for permission and consent, anonymization, clear purpose and cultural-differences considerations are also emphasized. Literature (Mulligan & Olsson, 2013) and interviewees agree on the preconditions of pedagogy to foster trust and understanding and marketing the benefits, social values and usability of the harvested citizen's data. Besides the fear of their data being exploited unethically, citizens' also fear their *privacy* in terms of over-surveillance and lack of anonymity when participating in Smart People initiatives. This difficulty can be obviated through the above mentioned preconditions.

In connection to security/privacy outcry, both literature (Janssen, Charalabidis & Zuiderwijk, 2012; Lee, Hancock & Hu, 2014) and the interviewees, recognize following *regulatory restrictions* when handling open and citizen related data as a challenge per se. Moreover, regulatory restrictions are said to hinder transparency when unstable and unclear.

5.1.6 Data quality and other related difficulties

When elaborating on the adoption barriers of Open Data, Janssen, Charalabidis and Zuiderwijk (2012) mention *data quality* as an obstacle to citizen participation and willingness to use the released data. By reconfirming the presence of this difficulty in Open Data

initiatives, this research broadens the list of types of initiatives in which this difficulty may emerge, since data quality is identified by both practitioners and academia across four cities and three types of initiatives. To obviate the challenge, preconditions like bottom-up approaches and transparency are mentioned. Interestingly, another precondition is to emphasize the purpose of the data released rather than the data per se when approaching the citizens. Similarly to the data quality challenge, in one of the cases *data usability* is identified as a barrier with relevance, interest, knowledge and communication mentioned as facilitators.

However, Balestrini, Diez and Marshall (2014) identify that lack of data quality may be a challenge emerging from the citizens' side rather than the practitioners' side. Sometimes the data that is harvested by the citizens and inputted into the initiative channels may *lack reliability and meaningfulness*. Superficial rewarding schemas based on the quantity of the crowdsensed data may encourage citizens' to compromise the quality of the data in order to increase their rewards. Therefore, rewarding schemas should be based on quality and usefulness of data rather than mere quantity (Wu & Luo, 2014; Pouryazdan et al., 2016; Mirri et al., 2016). In this context, other considerations may be (1) increasing participation in order to allow for data reconfirmation (Mirri et al., 2014) and (2) reputation-based recruitment schemas where citizens are only allowed to continue their participation when they have high scores in terms of quality and usefulness of their harvested data (Pouryazdan et al., 2016).

5.1.7 Persistency and other related difficulties

Since Smart City initiatives are mostly developed as projects with limited funding and time-frames, they tend to be under-developed (Schaffers et al., 2011b; Schaffers & Turkama, 2012). As reconfirmed in this research this happens through the challenge of *initiative maturity*. Besides the organizational barriers, related difficulties of *citizens requiring time for customization* and for naturally traversing through the *learning curve* (both elaborated by the academia), have to be considered as obstacles to initiative maturity. Literature recommends a shared vision and the creation of a well-defined business-case before the initiative implementation as facilitators for reaching initiative maturity (Schaffers & Turkama, 2012). The practitioners complement with preconditions of instilling trust through acknowledgement, establishing duo-power structures and persistency.

However, *persistency* emerges throughout the interviews as a highly mentioned difficulty elaborated by both practitioners and academia across three cities and three types of initiatives. On the citizens' side persistency should be exhibited by targeting citizens' intrinsic and extrinsic motivation, enabling early-phase collaborations and bottom-up approaches, offering win-win turnouts for participation and providing direct city output and a helping hand. On the local administrations' side persistency may be achieved by establishing a success culture and structuring the administration to provide enough resources to sustain the initiatives.

5.1.8 Location and other related difficulties

A novelty challenge discerned in this research is the identification of the physical **location** where the initiative is placed, elaborated by both practitioners and academia across four cases and three types of initiatives. As preconditions, the location should be natural to the purpose and the target group, and additional means (for instance public transportation) should be provided to facilitate accessibility. Here, the academia accentuate that if the initiative requires citizens to actively provide input, a transit point might not be the natural location, as citizens most often are in a hurry. Similarly, in one of the cases this difficulty is formulated as the challenge of **getting people to pass by** with additional preconditions of an invitation, a purpose and relevance as facilitators. Interestingly, the interviewees emphasize that the initiative should provide a comfortable experience and encourage group and natural participation in order to get citizens to join.

In one of the cases, the interviewees mention the challenge of achieving a balanced **distribution of initiative locations** in order to equally empower and develop different areas of the city. Moreover, the balanced distribution may help alleviate the highly elaborated challenge of urban segregation.

5.1.9 Awareness

Awareness is also a highly mentioned difficulty, identified by both practitioners and academia across three cities and six types of initiatives. The interviewees advocate preconditions to address this difficulty of carefully planning the scope, relevance, right context, natural location to assure accessibility, responsiveness and presence. Moreover, facilitators of communication like advertising, using the right channel and using universities as channels are recommended. Investing in social capital through springing from established communities, using ambassadors, WoM and success stories, mixing people and activities and instilling trust through acknowledgement are also proposed to establish awareness. These preconditions demonstrate the power of face-to-face traditional channels in spreading news and fostering participation. Moreover, preconditions like providing benefits and a clear purpose, lowering the entrance barrier and providing a variety of functionalities are mentioned.

5.1.10 Across cases and initiatives summary

In conclusion, **participation** is the most elaborated difficulty in this research reconfirming the literature. The preconditions for this difficulty span from education, rewards and responsiveness to creating a hype. However, participation cannot enable the creation of stable networks of collaboration between Smart City organization stakeholders. Therefore **involvement** and **engagement** are mentioned as next-step challenges that can be dealt with through fostering motivation, interest and empowering citizens. However, **motivation** is a highly elaborated difficulty per se. Interviewees differ between intrinsic and extrinsic, short-term and long-term motivation and address them with different preconditions. There is a

strong link between the difficulty of motivation and the *citizens being occupied*. The latter can be addressed by building native bounds between citizens and the initiative. In relation, difficulties of *persistence* and *awareness* stand out as highly emphasized difficulties. Both challenges call for natural and comfortable experiences that involve citizens in early phases and make use of native communitarian connections (WoM, ambassadors, springing from established communities). Emphasizing the literature concern for socio-spatial segregation, interviewees elaborate on *location* as a challenge. Other instances of the challenge are finding natural locations that provoke casual visits of the citizen to the initiative. The prevalence of this group of difficulties emphasizes the need for thorough planning of initiatives from targeting, communicating to positioning. Importantly, citizens' participation and willingness should not be taken for granted, but need fostering campaigns fitted to the communities' needs and social situation.

General difficulties in the spotlight of the EU like *transparency*, *privacy/security outcry* and *digital divide* are confirmed in this research. As a novelty, this research identifies that the digital divide may be an artificial difficulty encouraged by a faulty approach. As a precondition, specific groups should be addressed through traditional channels and sometimes other social challenges should be resolved before addressing the issue of digital divide. Moreover, it should be highlighted that the digital divide is highly related to citizens' perceived self-efficacy when performing technologic tasks, meaning that digital literacy predominates socio-economic factors. Therefore, preconditions like skill-building, pedagogy and education are recommended. Transparency and privacy are both related to the city culture and the organizational structure. Interestingly privacy may be contextual to the solution and not related to a general attitude from the citizens. In this case, maturity and time for citizen customization to the use of technology for alternative purposes is elaborated as a precondition. This group of challenges call for awareness of the spillover effects of technologic solutions.

5.2 Difficulties with preconditions initiative specific

Several difficulties are tightly coupled with the specific characteristics of one or a few related types of initiatives. These difficulties are highlighted in the literature or interviews only under one type of initiative or a few, if these share common specific characteristics. Arguably, these are advantageously treated in relation to the initiative characteristics as it results in a more fruitful discussion and builds a foundation for initiative specific future research. These therefore make up the second category of difficulties.

5.2.1 Living Labs

Most difficulties relating directly to Living Labs, are difficulties regarding the structuring and persistence of the initiative. The difficulty in choosing the right *content* is mentioned in the interviews with carefully planning the scope and springing from established communities that already share interests as preconditions. This difficulty relates well with the challenge of creating solutions in Living Labs that are *innovation driven and yet adoptable and citizen-*

focused as mentioned in the interviews, for which planning is a precondition together with establishing a shared vision. If too innovation driven, as advocated by the academia, the risk of ending up with a *solution from which the citizens feel distant* is likely. But, as suggested, exposure to the solution, clear information and using a pedagogical approach help overcome the distancing.

In order to set the frame for the Living Labs initiatives, both the literature (Sanchez et al., 2014) and the academia accentuate that the *experimental conditions* need to be properly *controlled*. Also, the interviews show that clear rules and a pedagogical approach need to be used to set up the terms between the responsible and the citizens to deal with the *negotiation*. These terms need to account for the potential conflict of *intellectual property rights* of the solution (Schaffers & Turkama, 2012). As according to the interviews, all phases of the initiative may be cumbersome, with *start-off*, *anticipating the outcomes*, *polishing the product* and finally *up-scaling* it from the small-version lab. During the initiative, there is a pronounced challenge of *routine iterations* needed to properly lab test the solution and the *time-consumption* that follows from this (Cosgrave, Arbuthnot & Tryfonas, 2013). On a higher level, as identified by the academia, the initiative may require new ways of thinking and in turn the challenge of *changing the citizens' mindsets* follows. Therefore, time to adjust becomes an important factor.

Some general preconditions to succeed with Living Lab initiatives are also highlighted in the interviews. Almost defining Living Labs as an approach, the importance of field testing is accentuated with reiterations to ensure that the setting matures and is generating the true long-term results. Also, the academia maintain post-trial demonstrations as a key way not to let the demonstrations influence the first experience the citizens have with the Living Lab setting.

5.2.2 Open Data

The Open Data initiatives are evidently mostly about data, and so are their difficulties. *Data and information overflow*, *data decentralization* and the inability to *access data of quality* are highlighted in both the interviews and the literature (Janssen, Charalabidis & Zuiderwijk, 2012). The interviewees maintain that data overflow requires preconditions of advertising the content on the Open Data platform and its benefits, making the content relevant to the citizens and following-up by *collecting citizen-feedback* (a difficulty in itself) on how well these preconditions are achieved.

Related to this, is the challenge of employing a *pedagogical approach* when visualizing the data and dealing with the maturity level of the citizens. The maturity consists of *potential skill gaps* (Veeckman & Van Der Graaf, 2014), lack of platform *usage knowledge* (Janssen, Charalabidis & Zuiderwijk, 2012) and *lack of education* resulting in *tougher security attitudes* towards this platform than others (stated by the academia). Suggested in the interviews to succeed with the approach, is providing citizens with education, building

communities around the platform and yet again advertise it on the right channel (advantageously the university channel with an already established community). The academia also highlight the pronounced *prejudice* towards Open Data events and initiatives regarding them being solely *tech-focused* and the need to focus on the purpose of the initiative and not the means to fulfil it.

Hence, as maintained by the academia, *establishing new concepts* such as Open Data amongst regular citizens is a real challenge. Also, providing the platform without established *functional quality*, will risk that citizens do not return to give it another chance. As a response, the interviews show the importance of ensuring a clear goal with the platform, continuous maintenance and centralized data of quality shown in a pedagogical interface. Finally, in the very core of the initiative, risks of *counter-production* needs to be carefully considered so that civic rights and the relationship with the citizens are not jeopardized (Viitanen & Kingston, 2014).

Addressing Open Data initiatives more in general, the practitioners maintain establishing a vibrant community around them. This vibrancy can both allow for natural growth and attract other citizens to join.

5.2.3 Open Innovation

As Open Innovation encompasses both providing a contribution-friendly environment, gathering ideas and creating something from the ideas, the difficulties are quite scattered. Looking firstly at the citizens and their level of maturity, *evoking new interests* is brought up as a challenge in the interviews. To accomplish this, the interviewees list counteractions of using marketing campaigns, building up a sense of communitarian belonging by communicating with the citizens on a grounded level and using already established communities and neighbourhood associations to ground the interest for the initiative. Once interested, the academia emphasize using a bottom-up approach to obviate the challenge of making the citizens *prioritize* the Open Innovation initiative and to avoid the otherwise prevalent *artificiality* in the initiatives stemming from *top-down* definition. The artificiality can also be alleviated by providing a blank slate for the citizens to create from, letting the initiative mature and establishing communitarian belonging advantageously with the help of already connected and respected citizens (ambassadors).

Shifting focus to how the Open Innovation initiative is formed, there is a challenge of putting the *purpose of the initiative in focus rather than the solution* with which to reach it (Komminos, Pallot & Schaffers, 2013). To achieve this, the literature advocate sharing knowledge, creating a culture that embraces the durability of the solution and starting small scale and low-cost and reusing what has already been successful (Komminos, Pallot & Schaffers, 2013). Also, the difficulty in *accessing data of quality* to build the initiative and ideas on is mentioned in the interviews, which makes it challenging to create something meaningful. Baccarne, Mechant and Schuurman (2014) emphasize this meaningfulness, and

how it should be characterized by socio-economic value. They also highlight the need to constantly evaluate that the Open Innovation initiative is on the right course towards socio-economic-value not to end up in *short-termism*.

When dealing with the gathering of citizen ideas and realizing them, the interviewees acknowledge the difficulties of getting *feasible input* from the citizens and *following-through* on that input. To facilitate the latter, the interviewees follow up with the need to establish a structured administration to handle the input and to provide a helping hand for the citizens to provide the input properly. Ensuring inclusive decision-making (Paskaleva, 2011) to achieve *citizen empowerment* in the initiative therefore becomes vital (Lee, Hancock & Hu, 2014). In order to actually transform the input into valuable output, *valorization* is a highly relevant challenge mentioned both by the practitioners and in the literature (Walravens, 2015).

For Open Innovation initiatives, the interviewees emphasize several important general preconditions to ensure success. Firstly, enforcing a self-organizing city and city co-production approach with top-down support are suggested to build a ground for Open Innovation initiatives. Secondly, addressing citizen maturity, the citizens need to have a passion for the topic of the initiative and the responsible need to be inspirational. Also, the citizens may require democracy education to understand their right to contribute to the Open Innovation initiative and to be heard. The citizens may also hold some rigid preconceptions, about what areas and items in the city should be used for, that need to be busted so that the ideas can flow more freely. Another approach suggested to ensure citizen maturity, is to exploit already established natural phenomenon that are citizen-created and continue building on these. Finally, two more practical preconditions highlighted are properly redirecting the citizens input into the Open Innovation and optimizing the spaces in the city (e.g. use premises for daily activities for Open Innovation activities in the evening).

5.2.4 Crowdsourcing

Crowdsourcing initiatives as seen in the interviews are often organized as events. Therefore, event-based difficulties of choosing the *right content*, *predicting turnout* and *practical arrangements* are highlighted. Several characteristics surrounding the content are presented in the interviews. Firstly, it has to be relevant, interesting and beneficial to the citizens. Secondly, it has to have a purpose and be communicated clearly. Lastly, it ought to be multi-functional to be more attractive. The trial to *incorporate peer-to-peer communication* functionality to obtain increased participation turned out to fail. The academia suggest that this failure might result from the cross-(digital) context illiteracy mentioned above.

As forwarded in the interviews, the success of the initiative is also highly driven by the need for a *polished product* that works flawlessly to avoid a *first lasting bad impression*. *Momentum* may also help to achieve a successful commence of the initiative as according to the interviews. As suggested, this may however require mixing people and activities, using

cross-initiative collaboration and forming maturity and persistency in the initiative. Related to momentum, is the difficulty identified by the practitioners of *worn-out initiatives*, which applies specifically to Hackathons under the umbrella of Crowdsourcing initiatives. The same preconditions required for momentum are listed for the challenge or worn-out initiatives, with special focus on mixing people and activities and collaborating across initiatives to create something new and exciting.

Just like Open Innovation, Crowdsourcing initiatives are also driven by citizen input. The same and similar difficulties are identified. Firstly, there is a risk of not getting *feasible input* from the citizens (Baccarne, Mechant & Schuurman, 2014) and that the citizen input conflicts with the long-term goals of the Smart City (Schuurman et al. 2012; Breuer, Walravens & Ballon, 2014). Secondly, there is a challenge of establishing sufficient coordination to be *responsive* towards the input, *following-through* (seen in the interviews) on that input and *valorizing* it (Breuer, Walravens & Ballon, 2014). Furthermore, the process of *assessing the incoming ideas* is highlighted as a difficulty with a closed system as a precondition to increase objectivity in the assessment. Preferably, to avoid *top-down agency*, the initiatives also ought to be self-organized. (Schuurman et al., 2012).

Focusing instead on the maturity of the citizens, as declared in the interviews, there is a pronounced *impatience* towards seeing quick results. There is also a challenge surrounding *changing habits*, requiring time, maturity and a critical mass to be achieved. Also, the academia maintain that citizens tend to end up in a state of *eutrophication* (being blind to the surrounding environment) inhibiting the feedback process and requiring an enforcement of a balanced representation of views.

Looking instead at the more general preconditions discussed in the interviews, there are suggestions to both control and empower the citizens. On one hand, it is advised to frame the Crowdsourcing platform in a way not to allow the citizens to misuse it or make mistakes. This then facilitate the *behind-the-scene* coordination of the platform. Also a narrow focus is proposed for Crowdsourcing discussions to allow citizens to direct their focus and not be overwhelmed. On the other hand, establishing duo-power structures that allowed citizens to get their voice heard and providing growth opportunities are advocated. Seemingly, the citizen control applies until a certain basic level is reached and then the building of a more empowering structure for the citizens takes over.

5.2.5 Crowdsensing

As Crowdsensing is about gathering sensory data and using it to improve the city in different ways, the focus of the difficulties lies in this process. Regarding the input process, as highlighted in the interviews, the citizens may need to *change habits*. In order to motivate that, the initiative need to be convenient, relevant to the citizens and stand out amongst other initiatives. In order to enforce the habits, a balanced *acceptability* needs to be achieved in which the ubiquitous integration of the solution is balanced by an engaging experience

(Balestrini, Diez & Marshall, 2014). The practitioners also maintain that the citizens need to be prepared to *contribute with their data* and know how to.

Looking instead at the application of the data, *applicability* of the sensor data collected (Balestrini, Diez & Marshall, 2014) and *usability* of the Crowdsensing platform (Farkas et al., 2015) are identified in the literature. In order to achieve the latter, extensive risk analysis and real-setting simulations should be performed (Farkas & Lendák, 2015).

5.2.6 Innovation Districts

For Innovation District initiatives the main focus is building up communities and businesses around creative ideas and platforms. The difficulties therefore mainly relate to the prerequisites of building solutions, establishing networks and creating sustainable value. Firstly, in order to build solutions, the practitioners declare that citizens need the *required knowledge* to fill the potential skill gap of the skills required for the business. They also need *access to finance, workspaces, mentoring and management advice* as a helping hand (Nathan, Vandore & Whitehead, 2012) and, as the practitioners emphasize, the workspaces need to be *affordable*. The challenge of making the foundation for the citizens in Innovation Districts into a *blank slate* to creatively build their ideas and solutions on is further highlighted in the interviews. It is also stated that the Innovation Districts may suffer from the *novelty effect* and therefore end up in issues of *tiring effects* after the buzz has passed.

Secondly, networking before, during and after the implementation of ideas in Innovation Districts is a natural part of this initiative. However, as pinpointed by the academia, *discomfort* is a prominent hurdle to networking. The citizens need an official invitation and a relevant purpose to visit the Innovation District. In this way natural participation is achieved, alleviating the discomfort. Moreover, group participation also helps obviate the discomfort. Another key challenge to overcome, brought forward in the interviews, is to actually get the citizens to *prioritize* to participate in the initiative.

Lastly, as highlighted in the interviews, the outcomes of the initiative need to equal *value creation* in order to ensure initiative persistency. One of the most commonly encountered difficulties by citizens in Innovation Districts (entrepreneurs) that also hinders initiative persistency is *reaching business maturity* and have a stable ground to build on to (Nathan, Vandore & Whitehead, 2012). Hindering business maturity in Innovation Districts, is the lack of access to stable markets (Nathan, Vandore & Whitehead, 2012). Therefore, it might be of relevance for practitioners of Innovation Districts to consider the need to offer platforms that bridge the enterprises with their potential market, in order to decrease the dropout norm of unsuccessful start-ups.

In the end, focusing instead on succeeding with Innovation Districts on a more general level, Nathan, Vandore and Whitehead (2012) recommend establishing personalized growth

schemas to attract and withhold citizens in the initiative. Also, the practitioners highlight the precondition of providing a rare opportunity to the citizens that they cannot refuse.

5.2.7 Participatory eGovernance & eServices

As this type of initiative covers both participatory eGovernance and digitized governmental services (eServices), the difficulties cover both the relationship between the government and the citizens and citizen adoption. Firstly, the **organizational culture** of the initiative might be colouring the attitudes towards the citizens in a negative way (Alawadhi et al., 2012). There may be a prevailing **prejudice** amongst the officials that the citizen input is not useful enough (Åström et al., 2015) and that the input from the citizens is not **feasible** enough to **follow-through** on (as seen in the interviews). Also, from the citizens' perspective, perceptions may prevail that **top-down agency** is ruling, meaning that their input is down-prioritized (Kleinmans, Van Ham & Evans-Cowley, 2015). If these circumstances apply, the organizational culture needs to transform into being more service-friendly and participative-oriented (Alawadhi et al., 2012).

In order to tackle the challenge of obtaining feasible input, the interviewees list characteristics of the matter on which to give input. It should be both relevant and interesting to the citizens, and subgroup personalized to ensure niche relevance. The academia also specifically suggest focusing on providing valuable information rather than asking for feedback and allowing citizens to compare experiences and ideas with other citizens to both understand the scope and to see the realized outcomes.

Moreover, regarding citizen attitudes, the interviewees also experience an **inconsistency between security concerns** for this types of initiative and other everyday life applications used by the citizens, which in turn obstructs the adoption rate. The citizens seem more reluctant to freely trust and provide their personal data to the application of the initiative than to social media applications. Also, the interviewees identify the difficulty of **first-adoption** in general and an **impatience** from the citizens to see results. The preconditions to alleviate the impatience are the same as suggested for the feasibility of input - focus more on providing information than input and allowing citizens to compare their experiences and ideas. According to the literature, citizens may also suffer from **individualism** leading them to merely focus on providing input and not network and communicate with other citizens or officials on the platform (Ertiö, Ruoppila & Thiel, 2016). This difficulty can be coupled with the difficulty in achieving peer-to-peer communication in Crowdsourcing initiatives. Lastly, lack of citizen **loyalty** towards the initiative solution may exist and can be minimized by ensuring a polished and reliable product (Ertiö, Ruoppila & Thiel, 2016).

The general importance of local community feedback is further accentuated by the academia, to ensure local-level relevance and engagement. Also, to show the citizens that their input is accounted for, the academia vouch for a live-update feed that directly shows the citizens for what and where their input is being used.

5.3 Difficulties with preconditions case specific

Some difficulties are tightly coupled with the specific characteristics of one or a few cases. These difficulties are highlighted in the interviews only in one or a few cases (if these shared common specific characteristics). Arguably, these difficulties are advantageously treated in relation to the case characteristics as it results in a more fruitful discussion and builds a foundation for case specific or city-cultural future research. These therefore make up the third category of difficulties.

5.3.1 Timisoara and Tirana

Timisoara and Tirana are both Balkan cities but share more social, political and historic characteristics than just this geographic specification. Both cities are centres of political, economic and cultural life – a position that Tirana naturally inherits as the capital of Albania (Požani, 2010) whereas Timisoara earns it in Western Romania due to the significant distance of the region from the historical capital of Bucharest (Popa & Veschambre, 2008). The importance of the cities in their respective regions have made them vulnerable to the imposed agency of political regimes. Indeed, politicians have used significant cities as blank canvases to express their power and apply their agendas. Therefore, both cities inherit cultural characteristics from past political and economic regimes that still affect the development of the city. These particularities have emerged in this research as bounded to the cases per se rather than the Smart People initiatives and are therefore considered separately (see Appendix 1).

Firstly, the *social/political context* of the cities is seen as an obstacle for the success of Smart People initiatives. In terms of political context Tirana is frequently the scene of imbalanced political debates whereas Timisoara reflects possible national concerns like protests and revolts on a local level. Moreover, the interviewees identify the challenges of *corruption*, lack of *political will* to delegate managerial roles to citizens that have resulted in their *disempowerment* and *bad publicity* for top-down initiatives even in the case of Smart City solutions. This situation leads citizens to exhibit mistrust towards local governments. Here, the comparison of these cases with Copenhagen becomes interesting, where a diametrically different challenge has emerged. In contrast to Tirana and Timisoara, where citizens mistrust governments, the citizen participation in Copenhagen is low because they *trust their politicians too much*.

In terms of social context, both Tirana and Timisoara are characterized by a moving influx of new dwellers that seek to exploit the educational, career, employment opportunities that the cities provide (Požani, 2010; Bibu & Mos, 2012). However, the *changing population* obviates the stabilization of shared norms and belongingness, hindering citizens' motivation and participation. To address the challenges of the social/political context, preconditions like education, awareness, communication, relevance, transparency, successive development, communitarian belonging, organic growth and time are mentioned. Interestingly, locally

generated funds to support Smart People initiatives rather than external funding is mentioned as a strategy to foster communitarian belonging and ownership of the initiative resulting in engagement and intrinsic motivation.

Secondly, the culture of the citizens in terms of *citizenship maturity* is addressed as challenge. Difficulties like *apathy*, low *civic engagement* and fixed *mentality* are elaborated on as barriers to the participation of citizens in initiatives. As specified during the interviews, the citizens have difficulties to embrace general social concerns that emerge from outside their home-work routine. Moreover, they seem to be *risk averse* and avoid taking responsibilities in bottom-up approaches. Interviewees attribute these difficulties to the past communist regimes established in Albania and Romania. Similarly, literature acknowledges the fact that totalitarian regimes (like the one established in Albania and Romania the second half of the past century) destroy the social capital. This social capital is however necessary to flourish bottom-up approaches in terms of social norms, trust and participation. (Chloupkova, Svendsen & Svendsen, 2003; Holotescu et al., 2016). Moreover, the interviewees identify the challenge of *fulfilling basic needs* of citizens before aiming to involve them in higher levels of civic engagement. Citizenship maturity is addressed through preconditions like providing a helping hand and skill-training; being present and pedagogical and persistency; empowerment and establishing duo-power structures; ensuring relevance, a blank slate and informing citizens using the right channel. Moreover, the recommendation to exploit bottom-up approaches, address citizens through their local-level concerns and instilling trust through acknowledgment are elaborated. In these terms, the need for the practitioners to build sustainable relationships with the communities in the Smart City is emphasized in order to gain their trust and achieve greater participation.

Thirdly, the imbalanced political context in both countries is reflected in the organizational culture of the local administrations that tend to be slow in embracing changes with *bureaucracy* and *municipal data protectiveness* in connection to the opening of data. These barriers make common Smart People initiatives' goals resemble *unrealistic expectations*. Above all, technical difficulties of poor infrastructure (like lack of proper *addressing system* in Tirana) challenges the sustainability of Smart People initiatives. For the organizational challenges, preconditions like successive development and relevance are recommended.

In conclusion, particular characteristics of social and political context may hinder Smart People initiatives. In Tirana and Timisoara these challenges spring from the imbalanced political situation and the totalitarian past, prevalent in Eastern Europe the second half of the past century. As preconditions fostering human capital, time and successive development are advocated.

5.3.2 Turku

One specific challenge encountered only in the city of Turku is *in-between election participation* related to the necessity for citizens to continuously participate in decision-

making and not solely through their elected politicians. Preconditions like communitarian belonging, springing from established communities, grounded level of communication, neighbourhood associations, marketing campaigns are recommended to encourage citizens to participate in-between elections.

Another Turku-bounded difficulty was the *small size* of the city linked by the practitioners to a lack of livelihood and enthusiastic participation. However, when asked to elaborate on this difficulty, the academia in Turku denied the small size of the city being a challenge overall. Therefore the size of the city as a difficulty requires further validation.

5.4 Particular difficulties

There are some difficulties identified that are neither general across initiative and cases nor particularly coupled with case nor initiative characteristics. Instead they are more generally related to the targeting of citizens in Smart Cities by either leveraging them intellectually or using their input for ideas and innovations. These are very interesting to discuss from a more particular perspective with support from the Behavioural Science literature to enrich the discussion and ought to contribute with valuable input for future Smart People research and initiatives. These therefore make up the fourth category of difficulties.

5.4.1 *Local versus public concerns*

In several of the cities and across several types of initiatives, however not mentioned in the literature, was a pronounced difficulty to *make public concerns matter like the local concerns*. This difficulty corresponds to the Construal-level theory (CLT) coined by Trope and Liberman (2010), which states that the further away a concern is in time and space, the more abstract it is to people and the less it matters to them. The abstractness make people ego-centric, as they instead emphasize what is here and now in their close environment (Trope & Liberman, 2010). Consequently, ways to bring the concerns closer to people and more concrete ought to alleviate this difficulty. In line with this theory, the interviewees themselves suggest establishing moral-meaning making as a way to give weight to the public concern and couple it with the citizens' morale. Another suggestion is using a grounded communication level when approaching the citizens and highlighting *the local* in the concern when marketing it, to ensure that they understand the importance to them and their community even if the concern is large-scale. To properly root the public concern in something concrete and local, the approach to spring from already established communities, using neighbourhood associations and in this way create communitarian belonging around the concern are also maintained.

5.4.2 *Availability heuristics colouring the present*

Identified in both the literature and the interviews, is the challenge of citizens' previous experiences colouring their attitudes of what they encounter in the present. Previous oversight of citizen input and failed initiatives linger on and make the expectations regarding new

interactions and initiatives low. This phenomenon is called *availability heuristics* (Tversky & Kahneman, 1975). Helping people to judge the present, are clues from past experiences. This process allows faster processing of the current situation but sometimes makes people end up in false conclusions. (Tversky & Kahneman, 1975). To tackle this challenge, the interviewees suggest repeated exposure to the new situation to show and constantly prove themselves and that this time is different.

5.4.3 Expert inhibition blocking citizen input

In situations where citizens are mixed with experts or other citizens who are perceived as more knowledgeable, the interviews show that the citizen *input is inhibited*. The inhibition is either literal, where the experts interrupt and take over the discussion, or figurative, where the citizens experience an inferiority towards the experts and do not feel important enough to contribute to the discussion. What the interviewees find frustrating, is that the citizens are not invited to give their expert opinion (unlike the actual experts) but to give their personal insight. Still, the inhibition is persistent. To alleviate this issue, the academia emphasize the importance of communicating the purpose of the discussion on a grounded level instead of focusing on the solution with which to fulfil the purpose. In other words, if the citizens perceive that the discussion will cover how to build a technical solution to achieve the goal product, they will either not show up or be inhibited during the discussion if they lack technical skills. However, if the citizens instead perceive that the discussion will cover what the product should be or include, they will most likely feel as competent as the technical experts. Therefore, the interviewees also pinpoint mixing people and activities during these discussions (not to make two camps) and to bring in new perspectives. These new perspectives may very well be assigned critical thinkers to ensure a multi-perspective discussion, much alike the theory of Groupthink (Janis, 1982). According to this theory, groups of likeminded people get inhibited in the decision-making process. The inhibition stems from that the discussion lacks new and critical perspectives, which results in biased decision-making. To mitigate this bias, the role of one or several critical thinkers can be assigned to ensure that every decision is questioned consciously. (Janis, 1982). Much in line with the preconditions suggested by the academia of bringing in new perspectives.

5.4.4 Fear as a troublemaker

A common feeling experienced when encountering new and unpredictable situations is *fear*. People feel it to a lower or a higher degree, but the unpredictability of what will happen next in a situation evokes most people's fear-response. (Gray, 1987). Smart People initiatives require citizens to face new situations, types of people and technologies. Thus, fear is a likely recurring feeling amongst the Smart City citizens. The interviewees highlight these three types of fears: (1) the fear to participate in new situations, (2) the fear to interact with unknown people and (3) the fear for the new digital ways.

Firstly, participation may be socially awkward for the citizens as they have not found their place in the new situation. A formal invitation, clear purpose and relevance to participate may

5.6 General and particular preconditions

The interviewees also present several general preconditions, which were not specifically coupled with a difficulty, as advice for other Smart Cities to succeed with Smart People initiatives. Most of these preconditions are reiterations of what has been identified throughout the initiatives. However, some are particular, firstly introduced as advice to other cities or in a particular context. To cover both groups of preconditions, a ranked top list for the reiterating preconditions (the preconditions of an occurrence of at least 4 across initiatives and cases) will be presented and a discussion of the more particular preconditions will follow.

5.6.1 General preconditions

Looking at the general preconditions identified during the interviews, the preconditions that occurred at least 4 times across the cases and perspectives (practitioners and academia) can be illustrated (with the weight score visualized as font-size in Figure 5.6.1.1). As can be discerned from the illustration, all preconditions are repetitions of the preconditions that address the initiative specific difficulties identified in section 5.1-5.4. This illustration may help to understand the most vital preconditions that ought to be in place when implementing Smart People initiatives.



Figure 5.6.1.1: General preconditions across cases and perspectives

5.6.2 Particular preconditions

Looking instead at general preconditions across cases and initiatives that are not mentioned in relation to any of the difficulties identified and are more particular, a short but interesting list can be presented and discussed.

Some of the practitioners advocate *controlling and restricting the involvement of the citizens*⁶ to ensure that the initiative does not get out of hand. Also, this precondition is recommended to avoid unrealistic expectations from the citizens of how much they can actually influence. As stated above, the importance of ensuring following-through on citizen input and keeping promises are of high relevance to ensure persistency of the initiative and to instil trust. Here, the interviewees promote *quality before quantity* in the amount of initiatives implemented and to not simply implement initiatives for the sake of

⁶ In this section (5.6.2), the preconditions are in italics and bold to facilitate the reading.

implementation. The interviewees also highlight the importance of establishing the amount of initiatives that allow the practitioners to follow-through and make a real impact. Moreover, *early-phase media collaboration* is suggested to ensure good publicity and marketing of the initiative.

An interesting but elementary precondition is advocated by the interviewees, the need for *physical security*. On a basic level, in order to get people into the city and to join the different Smart people initiatives, they have to feel physically safe to be in the city and to meet other citizens. Thus, the physical security has to be both established and experienced. As suggested by the practitioners, this can be achieved by providing sufficient lighting, surveillance and mixing people and activities to decrease the fear experienced from in/out groups. Finally, the case city of Helsingborg presents their own, but generally applicable *HBG-model* as a precondition. This is a model consisting of frameworks of how to publish Open Data, how to encourage others to contribute with their data, data security and rules of how others can make a money-generating services of the data. This model provides standards to follow and build onto in order to meet expectations and ensure citizen motivation to participate in the initiatives.

6 Conclusion

Lately, practitioners and academia have acknowledged the importance of bottom-up approaches in envisioning urban spaces. As futuristic and innovative as they can be, top-down approaches tend to fail in matching citizens' needs, culture and mentality. This results in artificial solutions with a low norm of adoption, social segregation and imbalanced duo-power structures between the citizens and the local administration. Therefore, Smart People, Smart Communities and Quadruple Helix have emerged as important concepts under the Smart City label. Smart People are citizens that are actively involved in managing, envisioning and collectively co-producing their city (Walravens, 2015). Smart Communities are networks of citizens and other stakeholders linked by norms, values and goals (Batty et al., 2012). These communities are in the core of Smart Peoples' sustained involvement (Batty et al., 2012) as one of the parts of the Quadruple Helix (Arnkil et al., 2010). In the Smart City context, citizens can be (1) leveraged intellectually and (2) used as a source of input for ideas and innovation. Either way, the citizens' involvement in envisioning their common habitats will foster their social capital in terms of sustainability of networks, civic engagement, active participation, trust and communitarian belonging (Bakici, Almirall & Wareham, 2013). This fostering of social capital is one of the most precious results of Smart City initiatives since it directly contributes to the wealth (Caragliu, Del Bo & Nijkamp, 2011), employment level (Shapiro, 2006), competitiveness (Coe, Paquet & Roy, 2001) and even happiness of urban areas (Ballas, 2013).

Acknowledging the power that resides in bottom-up approaches, this research aims to pinpoint how Smart City organizations can succeed with Smart People initiatives. However, in order to fulfil this aim, the research had to follow a D-route by firstly determining a Smart People initiative framework as this was missing in the literature. Consequently, the research questions that served as focal points for this research are:

1. What are the types of Smart People initiatives?
2. What are the difficulties and preconditions for Smart People initiatives?

After the empirical validation of the Smart People framework, the types of Smart People initiatives could be categorized into: Living Labs, Open Data, Open Innovation, Crowdsourcing, Crowdsensing, Innovation Districts, Participatory eGovernance & eServices and Online Learning (see Figure 6.1). First, Living Labs are particularly characterized by (1) user-centric innovation methodologies and (2) natural-setting experimentation (Ballon et al., 2011; Schaffers & Turkama, 2012; Cosgrave, Arbuthnot & Tryfonas, 2013). Second, Open Data is data that is freely available to everyone to use and republish as they wish, without restraints from privacy restriction, copyright, patents or other mechanisms of control (Dameri & Rosenthal-Sabroux, 2014). Third, Open Innovation are citizen-driven approaches that aim to align innovation policies with the goals of urban development and share visions, knowledge, skills, experience and strategies (Paskaleva, 2011). Fourth, Crowdsourcing modernizes and applies the concepts of *wisdom of crowds* and *collective intelligence* in Smart

City settings, resulting in platforms that connect groups of people, or crowds, in an attempt to collaboratively complete tasks more quickly (Hancke, Silva & Hancke, 2013). Fifth, Crowdsensing stands for the gathering and tracing of infrastructure, environmental and spatial information of urban spaces using citizens to collaborate through their mobile devices and the Internet. (Cardone et al., 2013; Hancke, Silva & Hancke, 2013; Gabrys, 2014). Sixth, Innovation Districts are clusters of start-up companies, creative industries and inter-firm collaborations, often organically located in large, skilled, well-connected urban environments benefiting from governmental incentives and stimulation to achieve stable growth and innovation (Nathan, Vandore & Whitehead, 2012). Seventh, Participatory eGovernance is defined as the electronic delivery of governmental services with the underlying objective of including citizens in the policy development process (Macintosh & Coleman, 2003). Last, Online Learning encompasses education deriving from multiple sources in the city to reach individuals in their settings (Christopoulou & Ringas, 2013). As shown in the literature review (see section 2.2.1-2.2.9), the types of Smart People initiatives differ in terms of how they are organized physically and digitally, how citizens are engaged and how they provide value.



Figure 6.1: Illustration of the Smart People framework

With a particular interest in the difficulties and preconditions for these initiatives, this research examined five European case cities (Copenhagen, Helsingborg, Timisoara, Tirana and Turku) through twenty-one interviews with practitioners and Behavioural Science academia. Hence, the final aim was to initiative-wise understand the difficulties and preconditions for Smart People initiatives.

Even if citizens may have a natural inclination to contribute in co-creating their habitats (Veeckman & Van Der Graaf, 2014:3), **participation** is the most elaborated challenge mentioned across all cases and all types of initiatives. This reconfirms Hollands' (2008) concern of an artificial assumption of natural engagement when accounting for citizens in the context of Smart City initiatives. The preconditions for this difficulty span from education, rewarding and responsiveness to creating hype. However, participation alone cannot enable the creation of stable networks of collaboration between Smart City organization stakeholders. Therefore **involvement** and **engagement** are mentioned as next-step challenges that can be achieved by provoking interest, empowering citizens and fostering motivation. Interestingly, **motivation** is the second most emphasized difficulty strongly linked to other difficulties of **relevance**, **citizens being occupied** and **interest**. Here, the interviewees differ between intrinsic and extrinsic motivation, how they can be achieved in different ways and achieve different levels of commitment. **Transparency**, **mistrust** and **privacy/security outcry** create the third group of highly mentioned difficulties identified in the relationship between citizens and the local administration. These difficulties were foremost addressed with preconditions regarding culture, organization and trust-building, specifically persistency, following-through, instilling trust through acknowledgement, responsiveness and empowerment. **Awareness** was also a highly mentioned difficulty, surprisingly accounted for with preconditions that demonstrate the power of traditional face-to-face channels in spreading news and fostering participation. More specifically the preconditions were listed as using WoM, success stories, ambassadors and springing from established communities. The focus on the **digital divide** and other related difficulties of **digital illiteracy** and **complexity** was also prevalent. Here the emphasis on socio-personal, rather than socioeconomic factors of the phenomena was advocated. As this research identifies, the digital divide may be an artificially provoked challenge, resulting from a wrong approach methodology. In particular, specific groups should be addressed through traditional channels and sometimes other social challenges should be resolved before addressing the digital divide. Further, **communitarian belonging** is a highly mentioned difficulty coupled with preconditions of bottom-up approaches and allowing time for citizenship maturity. **Location**, **persistency**, **data quality** follow this list.

However, a strong contribution of this research resides in the identification of initiative-wise difficulties as thoroughly presented in section 5.2. This calls for the need to acknowledge the differences between the types of Smart People initiatives and to investigate them separately. Moreover, this research emphasizes city culture, historic and organizational agents as influencers to the success of Smart People initiatives. This was particularly shown in the case cities of Tirana and Timisoara, the Balkan metropolis, where similar difficulties of **social/political context** and **citizenship maturity** (especially related to **risk adversity** and **civic engagement**) emerged. This emphasized the need to consider local particularities when adopting or initiating Smart People initiatives.

On the other hand, among the plethora of preconditions mentioned, instilling trust through acknowledgment flourished across initiatives and cases. This finding recalls for seriousness of the local administrations when considering citizens' input and feedback. Here, the top preconditions of communication, feedback, following-through and transparency becomes important. Basic virtues of awareness, accessibility, relevance and interest follow the list of emphasized preconditions. These all help alleviate the above mentioned challenge of establishing a balanced duo-power structure and an involving relationship by acknowledging that citizens may need time to mature. Similarly, the heavily accentuated preconditions of presence, persistency, pedagogy and early-phase collaborations also help establish and sustain the bridge between citizens and local administrations. Interesting strategies, like using community ambassadors and mixing people and activities are also in the list of top preconditions. This recalls the need for native solutions that are not artificial to the community, but still new and diverse. The establishment of a success culture with motivational models was also a key general advice to build a stable and motivating foundation for citizen involvement. Completing the list of top preconditions was the important facilitator of cross-district/city collaboration/learning. This precondition synergizes well with the pan-European projects of a shared Smart City infrastructure and emphasizes that across-city collaboration it is not a utopic top-down agenda of the European Union, but a sincere need for European cities to enable sharing, reuse and helping each-other grow.

Emphasis from the Behavioural Science perspective put light on some of the more particular difficulties found in this research. This perspective helps ground and develop the understanding of the difficulties and their preconditions in a citizen-centric and socially psychological stance. The social psyche of the citizens were explored and shown to hinder the success of the Smart People initiatives. The notion of *public matters being less important to citizens than local matters* as these are experienced as abstract and unrelatable made it difficult to achieve engagement and participation for these matters. Bringing these issues closer to the citizens and making them more concrete is therefore advisable. Also, the citizens past negative experiences coloured and grounded negative judgements of current experiences through the power of *availability heuristics*. Further, being constantly placed in situations with (often technically) knowledgeable people in the Smart City context built a barrier for the input-generating types of initiatives. The citizens were and felt *inhibited in these contexts in the presence of experts*, as the experts dominated the discussion and the citizens downgraded the value of their own ideas and input. Finally, being exposed to these contexts and other new contexts evoke the feeling of *fear* - fear for the new situation, the new interactions and the new digital ways. This is a natural response, but one that needs to be addressed seriously. Allowing citizens to feel comfortable and have a natural purpose to participate, building common concerns through preparatory discussions and allowing the old channels to withstand until not requested are all preconditions worth implementing.

In the end, seeing these patterns of difficulties with Smart People initiatives emerge, some clearly stand out more than others (see an overall weighted map of all difficulties in Figure

mapping idiosyncratic and social-contextual characteristics across cases. This in turn allows generalizing findings from the within-analysis to the across-analysis and finally to other comparable Smart Cities.

A more particular limitation in this research is the inability to confidently confirm or reject the two types of Smart People initiatives of Online Learning and Interactive Social/Virtual Networks/Platforms (ISVNP). This limitation stem from the restriction in the empirical findings to the types of initiatives that the interviewed practitioners had been involved in or had experiences of.

6.2 Suggestions for further research

In order to confirm the framework of Smart People initiatives and the found patterns of difficulties and preconditions, post-confirmatory interviews and surveys with experts in the Smart City field should be performed. Here, a quantitative approach with mass-data input surveys from Smart City practitioners all over Europe may advantageously complement a more in-depth qualitative interview approach. In this follow-up research, specific focus should be placed on trying to confirm or reject the two types of Smart People initiatives, Online Learning and Interactive Social/Virtual Networks/Platforms (ISVNP), for which conclusions were found inconclusive in this research.

It could furthermore be insightful to conduct focused action research field studies in the Smart City context, validating the patterns of difficulties and preconditions found. These could zoom in on one type of Smart People initiative and investigate the difficulties regarding the citizens found in a before-and-after preconditions intervention approach. In this way, both more in-depth insight of each type of initiative could be formed and the validity of the preconditions to actually disencumber the difficulties could be confirmed.

Finally, seeing that Behavioural Science research helped shed light on the encountered Smart People initiative difficulties from a citizen-centric stance, it is naturally advised to follow-up and deepen this perspective. To achieve a fuller complementary and even more citizen-driven view of the difficulties and preconditions, in-depth future research of the general, case and initiative specific and more particular difficulties could be done from the perspective of the Behavioural Science to investigate the found difficulties. This research should also gather data directly from the citizens, through surveys and interviews, to validate the theoretical findings of difficulties and preconditions. As iteratively promoted throughout this paper, the emphasis on the citizens' perspective and the bottom-up approach cannot be advocated enough. Therefore, an interdisciplinary approach stemming from Information Systems and Behavioural Science seems like the evident route to take for future research in order to provide valuable input for practitioners to succeed with Smart People initiatives.

Appendix 1 - Case descriptions

1.1 Copenhagen

Copenhagen, the capital of Denmark located on eastern shore of the island of Zealand, is a historic regional centre of power in Scandinavia. Tracing back in the X century as a dwelling location, the city was developed in urban terms in the XII century and remains the capital of the nation since the XV century. In its early ages the city mostly thrived as a merchant focal point, until the inauguration of the University of Copenhagen in 1479 that was followed by the stock exchange and other edifices of economic, governmental and cultural importance. In the XVIII century plague and destructive fires impaired the city's urban and social capital, but also allowed for the establishment of a new architectural style during the rebuilding. Post-world war decades are also periods of expansions for Copenhagen whose biggest results are the Finger Plan introduced in 1947 (Knowles, 2012) and the pedestrian-friendly zones initiated in 1962 by the highly acknowledged architect Jan Gehl. The avant-garde vision of this architect enriched Copenhagen with one of the biggest pedestrian conversions in Europe, Strøget that did not only serve as an additional leisure area but as an open space where citizens could exhibit their political or cultural thoughts. Moreover, the pedestrian zones prolonged the outdoor seasonality and turned the city in a destination of its own right. People would visit downtown not merely for shopping or meeting officials but just *to be in the city*. As acclaimed by Jan Gehl himself, Copenhagen now would serve its most important function to citizens – become a meeting point. (Gehl, 2007).

After a grey economic period characterized by high unemployment rates, high welfare costs, segregation, suburbanization, deindustrialization, poor housing quality, lack of fresh air and lightning, Copenhagen resurged in the '90 showing stable growth in vital variables as jobs, income and inhabitants. During that period the city detached from a past of industrial-based development to become a pioneer in sustainable urban development becoming the first municipality to achieve the EU Eco-Management and Audit Scheme (EMAS) certification in 1998 (Anderberg & Clark, 2013). Andersen and Winther (2010) attribute this rise to the development and spatial spread of service- and knowledge- based economy which still employ the vast majority of the citizens. Copenhagen is rich in innovative clusters focused in R&D in the sectors of smart city solutions, biotechnology, ICT, pharmaceuticals and life science developed in close collaboration between companies and the seven local universities. A key strategy for fuelling the growth of the city has been the constant attraction of global capital in form of foreign investments or creative social class (Larsen & Hansen, 2008). In close collaboration with Malmö, Copenhagen established the Øresund region brand – the example of cross-border political and economic collaboration based on sustainability and quality of life. However, lately Copenhagen is more interested in promoting a self-centred city region brand, detaching from Øresund-focused strategies (Valdalisio & Wilson, 2015).

However, the highly educated, metropolitan, wealthy and energetic citizens are the most authentic part of Copenhagen. Inspired by the constant debate on eroded social capital in the beginning of the new millennia, Torpe (2003) localized a research in Denmark to measure the social capital in the dimensions of civic norms, social trust, civic involvement and social networks. The research revealed that the social capital of the nation was not weakened, phenomena that Torpe (2003) linked to the supporting civic society infrastructure, especially the welfare system, and the structure of the institutions. However, the research stressed that civic engagement is higher in rural areas and small towns in comparison to major cities, fact that can be of high relevance when evaluating the success of Smart City initiatives involving citizens in Copenhagen.

Even if Copenhagen is a city of high quality of life, social phenomena that demonstrate for imbalance and inequality are present in the city. For instance, frequently the PISA test results demonstrate a significant segregation between Danes and immigrants of first or second generation, fact that Rangvid in her consecutive studies of (2006) and (2007) link to the low encouraged and expected achievements from immigrant pupils rather than the socio-economic differences. This is an interesting fact of how overall low social segregation does not necessarily translate into low/moderate segregation in daily social activities. Another purely-authentic Copenhagen phenomena is the Freetown Christiania dating back in the '70, a self-proclaimed autonomous district in the edge of informality and drug smuggling or a new version of self-governing and self-sustaining society.

1.2 Helsingborg

Helsingborg, lying in the right of Øresund strait, is the ninth biggest city of Sweden and the traditional centre of North-Western Scania. Helsingborg is one of the oldest Swedish settlements, dating back in the XI century and constantly growing as an important hub for economic and industrial transactions between Scandinavia and the rest of Western Europe. The geographic position of the city made it constant scene of dramatic political events between Sweden and Denmark whose political-administrative maps interchangeably recaptured Helsingborg. Helsingborg was also scene of the final act in the prolonged conflict between the neighbouring states, the battle of Helsingborg fought in 1710 that permanently fostered the current borders (Municipality of Helsingborg, 2016). However, the natural proximity and the shared development agenda

have twinned Helsingborg with the Danish town of Helsingør to the extent that the cities put more interest in establishing a fixed connection between one-another rather than having a particular stance in the praised Øresund economic region to whom both belong (Valdaliso & Wilson, 2015).

Helsingborg has for a long time invested in its image of eco-city in order to attract investors and enterprises as stated in the mission of Energy Strategy 2035 (Municipality of Helsingborg, 2012). Actually, sustainable development strategies and innovative environmental initiatives characterize the cities in the Øresund economic region that since the beginning of the collaboration was envisioned to become one of the cleanest regions in Europe (Anderberg & Clark 2013). Since then, Helsingborg have always been part of ambitious environmental activities like the ECO-City project funded by the European Union spanning between 2005 and 2012 (ECO-City, 2013). The project which developed in two phases focused on increasing the energy-efficiency of the existing edifices in the city and on building new developments based on strict energy efficiency standards. To assist the project which is widely referred as a success case (Joss, 2011; Joss, Tomozeiu & Cowley, 2013; Kapnopoulou et al., 2015) an educational centre with focus on renewable energy was opened in the city. Kapnopoulou et al. (2015) state that one of the most crucial principles that contributed in the success of the initiative was the thorough involvement of stakeholders (housing associations, building developers, residents, tenants, owners) since the early phases of the project as collaborators to ascertain acceptability and social response – a practice of high relevance in Smart City initiatives.

For decades now Helsingborg is facing a strong influx of immigrants or asylum seekers from Eastern Europe and Africa which have altered the homogeneity in the city and brought employment and the need to remodel the welfare system. According to Mingione and Oberti (2003) the newcomers in the city have experienced problems of work insertion and social integration.

1.3 Timisoara

Timisoara, the capital of Timis county lying on the southeast edge of the Banat plain near the divergence of the Timiș and Bega rivers, has always been the biggest urban centre in the Western part of Romania. The considerable distance from the historical capital of Bucharest has empowered the city with significant influence in the economic, cultural and scientific life of Western Romania (Popa & Veschambre, 2008). The existence of the dwelling place is recorded since the late XIII century but the city is known to be developed in urban terms a century later. After the liberalization from the Ottoman domination in 1716 the city was almost demolished with the final aim to be reconstructed to resemble Western European urbanism and architecture trends (Nadolu, Dinca & Luches, 2010). In the forthcoming decades the city would stand at the leading edge of progress and novelty in Romanian society. In the XIX century the city was the second worldwide (after New York) to install street lamps and one century later from the same streets of Timisoara began the democratic revolution that overthrew the communist dictator and set Romania on the path to freedom. Nowadays, Timisoara is again leading Romania but in the novel field of sustainable development. (Tirrell & Belci, 2011).

World Bank studies have emphasized three key dimensions of economic development: (1) density of economic resources, (2) connecting position to centres of economic growth and (3) facilitation of cross-border trade with international markets. The possession of all three attributes has facilitated Timisoara in becoming a constant attraction for foreign investors. (Iacoboaia, Luca & Nica, 2015). By the end of the XIX century Timisoara became a developed industrial city with more than sixty plants. However, the instauration of the communist regime ceased the entrepreneurial spirit of the dwellers and Western contacts generating, besides terror and fear, a *grey* artificially planned city (Nadolu, Dinca & Luches, 2010). After the fall of the communist regime, Timisoara regained focus from German, Austrian, Italian and other multi-national companies that besides cheap labour cost found well-educated, open-minded and vibrant citizens (Isbasoiu, 2006). Actually, Timisoara has historically been a large academic centre hosting nowadays four public universities and four private ones, creating a very good relation between research, environmentalism and businesses (Popa & Veschambre, 2008). Nowadays the city is home to three of the biggest economic clusters in Romania: the Automotivest cluster in automotive industry, the regional ICT cluster that aims to support companies in the field of information and urbanism and the sustainable energy cluster ROSNEC active in the field of renewable resources and energy efficiency. Besides being an academic and economic pole, Timisoara is a city of particular cultural importance in the region, possessing the biggest assembly of historical buildings in Romania in the districts of Cetate, Iosefin and Fabric (Sava & Coroamă, 2010).

According to Tirrell and Belci (2011) Timisoara is receiving approximately 70 million euros in EU structural funds for infrastructure and urban development project in the current years. This fact might have revitalized the debate on the sustainable development of the city intriguing local academics to take stances. Radoslav et al. (2012) proposes the idea of *urban alliances* where the citizens, officials, entrepreneurs and financiers involved in the process of building the city simultaneously in social, economic and ecological terms. Tirrell and Belci (2011) also advocate for community-based approach to the urban planning of Timisoara. However, literature acknowledges the fact that totalitarian regimes, like the one established in Romania the second half of the past century, destroy the social capital (necessary to flourish bottom-up approaches) in terms of social norms, trust and participation (Chloupkova, Svendsen & Svendsen, 2003; Holotescu et al.,

2016). Moreover, knowing the multi-ethnic demographics of the city and the constant flux of new dwellers, usually foreign students in local universities, the article by Bibu and Mos (2012) brings the interesting insight that in diverse societies leadership development is important. Therefore, the authors envision strong leaders as agents of change that would reform the city. Currently these bottom-up and top-down approaches are establishing their relevance in the city and history will judge what is the best choice that would lead Timisoara to regaining its momentum.

1.4 Tirana

Tirana is the capital of Albania, the biggest city of the nation that hosts almost half the population and centre of the political, economic, and cultural life of the country. Founded since the XVII century but developed in urban terms only in the XX century, Tirana has served many times as a free canvas for different political regimes to express their power and apply their agenda. The first master plan of the city was consulted in 1923 by Austrian architects, three years after the city was acclaimed capital. However, as soon as 1926 the self-proclaimed king Zog of the Albanians invited two well-known Italian architect that created an western urbanistic isle in the centre of the city totally detached from the neighbouring areas that still mirrored the long Ottoman invasion in Albania. The influence of the Italian rationalist architecture continued during the Italian invasion but ceased after WWII when an exceptionally repressive communist regime was established in Albania. Consequently, new utilitarian edifices and mono-functional buildings emerged in the city to revitalize the social and cultural life and pay tribute to the power of the dictator. (Pojani, 2010).

Nowadays, Tirana is constantly characterized by a moving influx of new dwellers that seek to exploit the educational, career, employment opportunities that this city provides better than any other Albanian one. Since the merging of this unpredicted and difficult to control trend, which started with the liberalization of population movement inside the country after the fall of the communist dictatorship, Tirana has experienced a quasi-chaotic urbanization driven by instant needs and traded interests. (Pojani, 2010). Presently, Tirana embodies all these historic urbanism layers offering to the dwellers or visitors an open chronological museum of political agendas (Triantis, 2008).

In terms of social and political context, Tirana is a very interesting case study. The city hosts seven public universities and more than fifteen private ones and other professional schools of secondary education. The presence of skilled and educated people, vital students and the trend of a daily growing consumption demand have attracted foreign investments in the city and by the end of 2016 the Albanian Institute of Statistics (INSTAT, 2017) recorded 3019 foreign enterprises in Tirana and 4122 enterprises of shared (Albanian and foreign) ownership. Besides being the educational and entrepreneurial capital of Albania, Tirana eclipses every other Albanian city in terms of cultural activities. What makes the city further more interesting, but also challenging for its officials is the cultural, educational, income, civic engagement diversity of the citizens that come from all over Albania to fulfil in Tirana their goals or wishes for a better life (Pllumbi, 2013). Moreover, Tirana is scene of frequently imbalanced political debates due to the huge importance that the governance of the city has for the political parties – the position of the Mayor of Tirana is one of the most coveted political positions in Albania, fact that have been as beneficial as damaging for the city.

In 2016, through GoTirana, a conference of donors organized in close collaboration with UNDP, the Municipality of the city presented a set of fundable projects aiming to improve the performance of the city in terms of (1) mobility, (2) economy, (3) society, (4) living and (5) rural life. As stressed in the word of the actual mayor of the city E.V. the conference focuses:

[...] beyond flagging gaps to filling them in with innovative ideas for investments and interventions that revive the city. (Municipality of Tirana, 2016)

GoTirana is the first big strategy ever formulated in Tirana to approach this multiple-faceted city with Smart City initiatives. Obviously, a strategy for sustainable development is needed to obviate the social segregation in the city, address the urbanism challenges of self-sufficient centralized city and balance toward constructivism the frequently toxic political debate. Since the initiatives are young and many of the projects still in paper, time will judge the sustainability, coherence and vision of this strategy.

1.5 Turku

Turku, the city on the southwest coast of Finland at the mouth of the Aura river, represents the roots of Finland's culture, well-being and economy. Founded in the XIII century, Turku was for centuries the administrative, academic, economic and cultural capital of Finland. The city lost its dominance in 1812 when the conflict between Sweden and Russia for the hegemony over Finland ceased with the winning of the eastern country which opted for a new capital nearer the Russian borders. As if this fact was insufficient to eclipse the city, fifteen years later Turku was almost destroyed by an unprecedented fire. The second defacement of Turku happened among the '50 and '60 of the last century when old historic or cultural buildings were sacrificed to make space for new edifices that would satisfy the high demand for apartments. Besides these scandalous defacements, the city remained an important node in the northern European growth zone, which

extends from Stockholm through Turku and Helsinki till Saint Petersburg (Municipality of Turku, 2014).

Turku is particularly acknowledged for its various and successful academic activities that trace back in 1640 when the city became home of the first Finn university. Nowadays, there are two universities in the city that service 35 thousand students. However, in contrast to every other Finnish city whose universities usually serve to regional economic purposes and have a purely-regional profile, the universities of Turku emerge in national scale. (Srinivas & Viljamaa, 2008). Throughout their existence, these institutions have been fruitfully involved in the development of the city, becoming a crucial catalyser of Turku's economy particularly via technological innovations. Examples of this collaboration are the shared R&D units with companies in the field of biotechnology that have resulted in a sustainable biotechnology cluster or the intersection of ICT and start-up oriented associations in Turku Science Park with the University of Applied Sciences (Turku Science Park, 2017).

Turku Science Park is the renewed engine that from mid-2016 pushes forward the economic development of the city by hosting and offering free of charge consultancy for more than three hundred businesses focused especially in the field of biotechnology, future technologies, chemical industry and experience industries (Turku Science Park, 2017). As envisioned in the Turku 2029 city strategy, besides the pro-entrepreneurial procedures and regulations high competitiveness is what makes Turku especially attractive to new companies that join the city (Municipality of Turku, 2014).

Without being able to escape the trend of the inner-outer city divisions, Turku have increasingly become segregated as generally European cities are nowadays (Lähdesmäki, 2013). According to Himmelroos & Leino (2015) there are five neighbourhoods in Turku where one in five citizens speaks a foreign native language, whereas native-born Finns are very likely to reside in extremely homogenous neighbourhoods in terms of ethnic composition. Similarly, through his research Egharevba (2006) advocates that Turku is not an exceptionally welcoming city for immigrants. The respondents of Egharevba's (2006) research claimed to have frequently encountered racially motivated harassments and intimidations even in schools and universities. Moreover, the research revealed that the immigrants were sceptical to address their issues to local police due to a perceived distance with the authorities. Himmelroos & Leino (2015) attribute the negative sentiments toward immigrants to prejudices cultivated in neighbourhood scale, especially during regressive economic periods when the newcomers are considered competitors in the restricted labour market.

Nowadays, Turku is sharing its social, economic, academic challenges with the other five biggest city in Finland (Helsinki, Espoo, Vantaa, Tampere, Oulu) in the 6Aika project initiated in 2014 that aims:

[...] society's development towards a greater sense of community, openness and accessibility and the creation of a functional city community consisting of citizens, companies, research and development operators and the authorities. (6Aika, 2015:3).

Appendix 2 - Smart People framework

Smart People initiative	References as support for the types of Smart People initiatives
Living Labs	Angelidou (2014); Åström et al. (2015); Baccarne, Mechant, & Schuurman (2014); Bakıcı, Almirall, & Wareham (2013); Ballon et al. (2011); Batty et al. (2012); Breuer, Walravens & Ballon (2014); Calderoni, Maio & Palmieri (2012); Cosgrave, Arbuthnot & Tryfonas (2013); Dameri & Rosenthal-Sabroux (2014: 8, 75, 160, 161, 166–168, 170, 172, 177, 221, 228–233); Gil-Castineira et al. (2011); Hielkema & Hongisto (2013); Komninos, Pallot & Schaffers (2013); Letaifa (2015); Paskaleva (2011); Sanchez et al. (2014); Schaffers et al. (2011a); Schaffers et al. (2011b); Schaffers & Turkama (2012); Schuurman et al. (2011); Veeckman & Van Der Graaf (2014); Walravens (2015)
Open Data	Albino, Berardi & Dangelico (2015); Andone, Holotescu & Grosseck (2014); Angelidou (2014); Baccarne, Mechant & Schuurman (2014); Bakıcı, Almirall & Wareham (2013); Batty et al. (2012); Breuer, Walravens & Ballon (2014); Christopoulou, Ringas & Garofalakis (2014); Clarke (2013); Cocchia (2014); Dameri & Rosenthal-Sabroux (2014: 39, 63, 64, 68, 78, 82, 83, 90, 92, 96, 159, 165, 166, 171, 172, 174, 175, 177, 179, 210); Domingo et al. (2013); Haque (2012); Hielkema & Hongisto (2013); Holotescu et al. (2016); Janssen, Charalabidis & Zuiderwijk (2014); Jäppinen, Toivonen & Salonen (2013); Komninos, Pallot & Schaffers (2013); Lee, Hancock & Hu (2014); Kanter & Litow (2009); Meijer & Bolivar (2016); Mirri et al. (2014); Theodoridis, Mylonas & Chatzigiannakis, (2013); Veeckman & Van Der Graaf (2014); Viitanen & Kingston (2014); Walravens (2015)
Open Innovation	Allwinkle & Cruickshank (2011); Baccarne, Mechant & Schuurman (2014); Ballon et al. (2011); Batty et al. (2012); Chesbrough (2006); Dameri & Rosenthal-Sabroux (2014: 8, 162, 163, 179, 221, 224, 225, 228, 230, 232); Gil-Castineira et al. (2011); Hernández-Muñoz et al. (2011); Hielkema & Hongisto (2013); Kitchin (2014); Komninos, Pallot & Schaffers (2013); Lee, Hancock & Hu (2014); Letaifa (2015); Paskaleva (2011); Schaffers, et al. (2011a); Walravens (2015); Westerlund & Leminen (2011)
Crowdsourcing	Alawadhi et al. (2012); Albino, Berardi & Dangelico (2015); Angelidou (2014); Baccarne, Mechant & Schuurman (2014); Bakıcı, Almirall & Wareham (2013); Balakrishna (2012); Borges & Zyngier (2014); Boulos & Al-Shorbaji (2014); Breuer, Walravens & Ballon (2014); Calderoni, Maio & Palmieri (2012); Celino & Kotoulas (2013); Christopoulou, Ringas & Garofalakis (2014); Clohessy, Acton & Morgan (2014); Dameri & Rosenthal-Sabroux (2014: 166, 204, 211, 231); Hancke, Silva & Hancke (2013); Haque (2012); Hielkema & Hongisto (2013); Jollivet (2011); Komninos, Pallot & Schaffers (2013); Lee, Hancock & Hu (2014); Letaifa (2015); Mirri et al. (2014); Quirino et al. (2016); Schuurman et al. (2012); Theodoridis, Mylonas & Chatzigiannakis (2013); Walravens (2015)
Crowdsensing	Alawadhi et al. (2012); Albino, Berardi & Dangelico (2015); Balakrishna (2012); Balestrini, Marshall & Diez (2014); Calderoni, Maio & Palmieri (2012); Cardone et al. (2013); Celino & Kotoulas (2013); Chon et al. (2013); Christopoulou, Ringas & Garofalakis (2014); Dameri & Rosenthal-Sabroux (2014: 204, 211); Farkas et al. (2015); Farkas & Lendak (2015); Gabrys (2014); Hancke, Silva & Hancke (2013); Gil-Castineira et al. (2011); Hernández-Muñoz et al. (2011); Hu et al. (2014); Jin, David & Chalon (2013); Khan & Kiani (2012); Kitchin (2014); Komninos, Pallot & Schaffers (2013); Lea & Blackstock (2014a); Lea & Blackstock (2014b); Mirri et al. (2014); Mitton et al. (2012); Mulligan & Olsson (2013); Perera et al. (2014); Pouryazdan et al. (2015); Ratti & Townsend (2011); Roitman et al. (2012); Sun et al. (2016); Theodoridis, Mylonas & Chatzigiannakis (2013); Wu & Luo, (2014)
Innovation Districts	Albino, Berardi & Dangelico (2015); Baccarne, Mechant & Schuurman (2014); Batty et al. (2012); Coe, Paquet & Roy (2001); Cosgrave, Arbuthnot & Tryfonas (2013); Glaeser & Berry (2006); Hollands (2015); Kitchin (2014); Lee, Hancock & Hu (2014)
Participatory eGovernance	Alawadhi et al. (2012); Alawadhi & Scholl (2013); Albino, Berardi & Dangelico (2015); Aldama-Nalda et al. (2012); Allwinkle & Cruickshank (2011); Andone, Holotescu & Grosseck (2014); Åström et al. (2015); Baccarne, Mechant & Schuurman (2014); Bakıcı, Almirall & Wareham (2013); Ballon et al. (2011); Baron (2012); Caragliu, Del Bo & Nijkamp (2011); Celino & Kotoulas (2013); Clarke (2013); Cocchia (2014); Coe, Paquet & Roy (2001); Dameri & Rosenthal-Sabroux (2014: 139, 141, 147, 148, 152, 153); Deakin (2014); Ertiö (2015); Ertiö, Ruoppila & Thiel (2016); Gil-Castineira et al.

	(2011); Garau (2014); Gil-Garcia et al. (2013); Hollands (2008); Khan & Kiani (2012); Khansari, Mostashari & Mansouri (2013); Kleinhans, Van Ham & Evans-Cowley, 2015); Lee & Lee (2014); Lee, Hancock & Hu (2014); Lombardi et al. (2011); Lombardi et al. (2012); Meijer & Bolivar (2016); Theodoridis, Mylonas & Chatzigiannakis (2013); Nam & Pardo (2011b); Paskaleva (2009); Piro et al. (2014); Walravens (2015)
Online Learning	Albino, Berardi & Dangelico (2015); Allwinkle & Cruickshank (2011); Andone, Holotescu & Grosseck (2014); Christopoulou & Ringas (2013); Christopoulou, Ringas & Garofalakis (2014); Coe, Paquet & Roy (2001); Garau (2014); Gil-Castineira et al. (2011); Holotescu et al. (2016); Kanter & Litow (2009); Kitchin (2014); Letaifa (2015),
Interactive Social/Virtual Networks/Platforms	Allwinkle & Cruickshank (2011); Andone, Holotescu & Grosseck (2014); Baccarne, Mechant & Schuurman (2014); Calderoni, Maio & Palmieri (2012); Coe, Paquet & Roy (2001); Gil-Garcia et al. (2013); Harrison & Donnelly (2011); Hernández-Muñoz et al. (2011); Hu et al. (2014); Jin, David & Chalon (2013); Jin et al. (2014); Kanter & Litow (2009); Komninos, Pallot & Schaffers (2013); Letaifa (2015); Theodoridis, Mylonas & Chatzigiannakis (2013)

Appendix 3 - Email sent to potential interviewees

Dear [interviewee full-name],

Our names are Amanda Jungstrand and Polina Çeço, both Master students from the institution of Informatics at Lund University, Sweden. We are writing to you because we encountered information about the Smart City of [case city].

We are currently conducting research for our Master's Thesis and are very interested in the Smart City initiatives of [case city], especially the ones that are targeting Smart People (the citizens). It is so interesting to see how subtle the lines are between failure and success in these types of projects, as they involve different perspectives.

We saw that you are [role], and we think that your insight and knowledge into Smart City initiatives in [case city] would help us a lot in our research.

Would you be interested in having an interview with us to share your valuable experience and knowledge?

Thank you so much for your time and good willing.

We look forward to your answer!

Best Regards,
Amanda Jungstrand and Polina Çeço

PS: Please find attached our CV, if you would like to know more about our experience and academic interests.

PSS: Please find the e-mail contact of our supervisor Paul Pierce, a researcher within the Smart City topic, if you would like to know more about our research (paul.pierce@ics.lu.se).

Appendix 4 - The pilot practitioner interview protocol

City name:
 Name of interviewee:
 Place and date:
 Type of interview:
 Pre-comments:

Name: _____ Organizational role:
 Time the interview started:

Smart People initiatives, are Smart City initiatives that target the citizens with the final aim to (1) leverage citizens intellectually and (2) use citizens as a source of input for ideas and innovation.

Smart People initiative	Definition
Living Labs	<i>An extension of laboratory experiments, aiming to get more accurate and naturalistic user information by having more long-term data and allowing observation of everyday activities coupled with active involvement of citizens in innovation process</i>
Open Data	<i>Data that is freely available to everyone to use and republish as they wish, without restrictions from privacy restriction, copyright, patents or other mechanisms of control which support civic engagement.</i>
Open Innovation	<i>A citizen-driven approach based on networking and cross-institutional relations that aims to align innovation policies with the goals of urban development and share visions, knowledge, skills, experience and strategies</i>
Crowdsourcing	<i>Consists of outsourcing tasks to a group of people, or crowd, in an attempt to collaboratively completing tasks quickly. A combination between open innovation and wisdom of crowds.</i>
Crowdsensing	<i>Gathering and tracing of infrastructure, environmental and spatial information for urban spaces using citizens to collaborate through their mobile devices and internet</i>
Innovation District (Smart hub/park)	<i>Cluster of start-up companies, creative industries and inter firm collaborations, often organically located in large, skilled, well-connected urban environments benefiting from governmental incentives and simulations to achieve stable growth and innovation</i>
Participatory eGovernance	<i>Electronic delivery of governmental services with the underlying objective of including citizens in the policy development process</i>
Online Learning	<i>Education deriving from multiple sources in the city to reach individuals in their settings, aiming at leveraging human capital in terms of contextual learning, technology literacy and city goals and vision (environmentality, sustainability, social inclusion ...)</i>
Interactive Social/Virtual Networks/Platforms	<i>Cyberspace of forums, meetings, virtual spaces that empower a ubiquitous intelligent network of people collaborating, participating and sharing</i>

1. Which of the types of initiatives listed in the table have you or are you in the near future initiating?
2. Do you think, that there are there any types of initiatives targeting citizens missing from the table? If so, state the type of initiative.
3. Please, list the projects in each of the types of initiatives that you have or are initiating.
4. For each of the listed projects above:
 - A. Explain the implementation process of the project
 - B. How does the project contribute to the citizens (leveraging and/or using)?
 - C. Regarding the citizens, were there any difficulties **during** the project implementation?
If so, describe them
 - D. Regarding the citizens, were there any difficulties **after** the project implementation?
If so, describe them
 - E. Regarding the citizens, were there any preconditions needed to be fulfilled **before** the project implementation?
If so, describe them
 - F. Regarding the citizens, what preconditions do you think you **could** have done before the project implementation to avoid the above mentioned difficulties?
 - G. Regarding the citizens, what preconditions would you advise another Smart City that is to implement this type of initiative?

Time the interview ended:

Appendix 5 - The pilot academia interview protocol

City name:

Name of interviewee:

Place and date:

Type of interview:

Pre-comments:

Name:

Organizational role:

Time the interview started:

Smart People initiatives, are Smart City initiatives that target the citizens with the final aim to (1) leverage citizens and (2) use citizens as a source of input for ideas and innovation. Your Smart City is or has implemented a number of Smart People projects.

The first project is:

1. According to your perspective, could there be any difficulties with this project during or after the implementation? If yes, which?
2. The project responsible involved in the initiative have presented the following difficulties during or after the implementation: ...
3. According to your perspective, what could be solutions to the difficulties stated by you and/or the project responsible?
4. According to your perspective, what are some preconditions that could have avoided the difficulties stated by you and/or the project responsible?

The following project is:

(Repeat question 1-4)

Time the interview ended:

Appendix 6 - Pilot testing resulting changes

6.1 Practitioners interview

1. Oral highlighting of the definition of Smart People initiatives as the reference to “leveraging and/or using” throughout the interview became unclear otherwise
2. Change from using the term “project” to initiative as highlighted by interviewee, initiatives do not have the same boundary definition as a project (with finite start and end): *“Well, it’s not a project, it’s more. Because that’s really hard, when you talk about SC as well, it’s not a project it’s a box of many initiatives. [...] I think you tend to think about it as it or a project, in most cases it’s more of a process, it’s quite different right. It doesn’t have a very clear start or a very clear end. And it’s not going to be so clear on exactly how things came to be. Or who did actually do what. It’s for me of a dynamic way that it has forming over time...”* (I4S13:4; I4S37:4)
3. Clarifying introduction to section on difficulties and preconditions added as: *“Can I ask before we continue, what is the overall research question, or objective of your thesis? Because maybe that helps me sort in how I answer. To give you valuable input.”* (I4S30:4).
4. Merged question 4C and 4D as they overlapped in scope
5. Changed question 4G to more general “key advice question regarding citizens to other Smart Cities implementing similar initiatives” as otherwise overlapping with question 4F

6.2 Academia interview

1. Merged question 3 and 4 as overlapping in scope

Appendix 7 - The practitioner interview protocol

City name:
 Name of interviewee:
 Place and date:
 Type of interview:
 Pre-comments:

Name: _____ Organizational role: _____
 Time the interview started: _____

Smart People initiatives, are Smart City initiatives that target the citizens by (1) leveraging them and (2) using them as a source of input for ideas and innovation.

Smart People initiative	Definition
Living Labs	<i>An extension of laboratory experiments, aiming to get more accurate and naturalistic user information by having more long-term data and allowing observation of everyday activities coupled with active involvement of citizens in innovation process</i>
Open Data	<i>Data that is freely available to everyone to use and republish as they wish, without restrictions from privacy restriction, copyright, patents or other mechanisms of control which support civic engagement.</i>
Open Innovation	<i>A citizen-driven approach based on networking and cross-institutional relations that aims to align innovation policies with the goals of urban development and share visions, knowledge, skills, experience and strategies</i>
Crowdsourcing	<i>Consists of outsourcing tasks to a group of people, or crowd, in an attempt to collaboratively completing tasks quickly. A combination between open innovation and wisdom of crowds.</i>
Crowdsensing	<i>Gathering and tracing of infrastructure, environmental and spatial information for urban spaces using citizens to collaborate through their mobile devices and internet</i>
Innovation District (Smart hub/park)	<i>Cluster of start-up companies, creative industries and inter firm collaborations, often organically located in large, skilled, well-connected urban environments benefiting from governmental incentives and simulations to achieve stable growth and innovation</i>
Participatory eGovernance	<i>Electronic delivery of governmental services with the underlying objective of including citizens in the policy development process</i>
Online Learning	<i>Education deriving from multiple sources in the city to reach individuals in their settings, aiming at leveraging human capital in terms of contextual learning, technology literacy and city goals and vision (environmentality, sustainability, social inclusion ...)</i>
Interactive Social/Virtual Networks/Platforms	<i>Cyberspace of forums, meetings, virtual spaces that empower a ubiquitous intelligent network of people collaborating, participating and sharing</i>

1. Which of the types of initiatives listed in the table have you or are you in the near future initiating?
2. Do you think, that there are any types of initiatives targeting citizens missing from the table? If so, state the type of initiative.
3. Please, list the initiatives in each of the types of initiatives that you have or are initiating.

Introduction of next section...

4. For each of the listed initiatives above:
 - A. Explain the implementation process of the initiative.
 - B. How does the project contribute to the citizens (leveraging and/or using)?
 - C. Regarding the citizens, have there been any difficulties (during or after the implementation) with the initiative?
 - D. Regarding the citizens, were there any preconditions needed to be fulfilled **before** the initiative implementation?
If so, describe them
 - E. Regarding the citizens, what preconditions do you think you **could** have done before the initiative implementation to avoid the above mentioned difficulties?
5. Regarding the citizens, what preconditions would you advise another Smart City that is to implement this type of initiatives?

Time the interview ended:

Appendix 8 - The academia interview protocol

City name:
Name of interviewee:
Place and date:
Type of interview:
Pre-comments:

Name: _____ Organizational role: _____
Time the interview started: _____

Smart People initiatives, are Smart City initiatives that target the citizens with the final aim to (1) leverage citizens and (2) use citizens as a source of input for ideas and innovation. Your Smart City is or has implemented a number of Smart People initiatives.

The first initiative is:

1. According to your perspective, regarding the citizens could there be any difficulties with this initiative during or after the implementation? If yes, which?
2. The initiative responsible involved in the initiative have presented the following difficulties during or after the implementation: ...
3. According to your perspective, regarding the citizens what are some preconditions that could have avoided the difficulties stated by you and/or the initiative responsible?

The following initiative is:
(Repeat question 1-3)

Time the interview ended:

Appendix 9 - Colour-coding theme guide

Coding colour	Coding number	Coding label
	1	The initiative
		Description of the initiative
	2	Difficulties
	3	Preconditions
	4	Other of interest
text		Organizational/technological difficulties - out of scope
	5	Difficulties brought up by practitioners addressed in academia interviews

Appendix 10 - Final framework of difficulties with preconditions

10.1 Living Labs

Difficulties	Literature	Literature preconditions	Practitioner	Practitioner preconditions	Academia	Academia preconditions
awareness (creating)			CPH		CPH	plan scope, spring from established communities (CPH)
changing mindsets					CPH	time (CPH)
civic engagement			TIM	fulfilling basic needs (TIM)	TIM	constrain resistance (TIM)
communitarian belonging			CPH		TIM	plan scope, spring from established communities, bottom-up, common concern, relevance (CPH)
community collaboration			TIM	spring from established communities (TIM)		constrain resistance (TIM)
complexity	(Sanchez et al., 2014)				TIM	
content			CPH			plan scope, spring from established communities (CPH)
control					HBG	proper experimental control (HBG)
digital divide (as spill-over effect)	(Veeckman & Van Der Graaf, 2014)					
digital illiteracy					HBG	
engagement			CPH	involvement, interest, asking people (survey) (CPH)	CPH	plan scope, spring from established communities (CPH), time, interest (HBG)
experimental conditions	(Sanchez et al., 2014)				HBG	proper experimental control (HBG)
information			CPH			
initiative maturity	(Schaffers & Turkama, 2012; Schaffers et al., 2011b)	shared vision between stakeholders(Schaffers & Turkama, 2012),				

		well-defined business-case,				
innovation vs. adoption (citizen-focus)					TUR	planning, shared vision (TUR)
intellectual property rights	(Schaffers & Turkama, 2012)	well-defined business case				
involvement			TIM	fulfilling basic needs (TIM)		
local vs. public					CPH, TIM	moral meaning-making (CPH)
location			TIM			
mentality			TIM		TIM	constrain resistance (TIM)
motivation					CPH, HBG	moral meaning-making (CPH)
negotiating (terms)					CPH	clear rules, pedagogy (CPH)
occupied citizens					HBG, TIM, TUR	reward (multi), education, communitarian belonging (norms) (HBG)
outcome anticipation					TUR	
outreach			CPH			plan scope, spring from established communities (CPH)
participation	(Veeckman & Van Der Graaf, 2014)	creative toolkits, intrinsic motivations	TIM	fulfilling basic needs (TIM)	CPH, TIM, TUR	time, interest (HBG), constrain resistance, NGO involvement, advertising, awareness, presence, involvement, bottom-up, idea-testing (TIM)
persistence			TIM			intrinsic motivation, early-phase collaboration, reward (extrinsic only ST) (TIM)
polished product	(Veeckman & Van Der Graaf, 2014)					
privacy/security outcry					CPH	involvement in privacy policies (CPH)

resistance			TUR	pre-information, motivational model (TUR)		
routine iterations	(Cosgrave, Arbuthnot & Tryfonas, 2013)					
scepticism					HBG	education, pedagogy, successive development, motivational model, reward (HBG)
sensitive data					TUR	
social/political context			TIM		TIM	constrain resistance (TIM)
solution distancing					TUR	exposure, information, pedagogy (TUR)
start-off					CPH	time (CPH)
time (learning curve)					TUR	
time-consuming	(Cosgrave, Arbuthnot & Tryfonas, 2013)					
up-scaling					CPH	
general preconditions			CPH, TIM, TUR	observation (CPH), success culture, successive development, time, education, win-win, awareness, communication, collaboration, involvement, relevance, multi-benefits (TIM), cross-city learning, testing, feedback, planning (TUR)	HBG, TUR	field testing (HBG), information, complete inclusion, support, early-phase collaboration, reiterations, shared vision, understanding, post-trial demonstration, experience/idea comparison (TUR)

10.2 Open Data

Difficulties	Literature	Literature preconditions	Practitioner	Practitioner preconditions	Academia	Academia preconditions
advertisement					TUR	
availability heuristics					TIR	
awareness			TUR	education, building communities, advertising, right channel, University as channel (TUR)	HBG, TUR	

civic engagement			TIR	trust through acknowledgement, re-establish duo-power structure, space, blank slate (TIR)		bottom-up, transparency, communication, right channel, awareness, pedagogy, helping hand, presence, information, citizen-mobilization (TIR)
comfort in trust					CPH	
communicating purpose					TUR	
communitarian belonging			TIR	persistence, space, blank slate (TIR)		
complexity (task)	(Janssen, Charalabidis & Zuiderwijk, 2012)	help desks (Janssen, Charalabidis & Zuiderwijk, 2012), explanations, clear metadata, tooling support, evidencing the potential of the data, visualization tools (Domingo et al., 2013), people-driven innovation models (Komninos, Pallot and Schaffers, 2013)	CPH, HBG, TIM, TUR	pedagogy (visualizations) (HBG), education, awareness, transparency, communication, data accessibility (TIM)	actually = data representation (CPH), HBG, TIM	structured data, communicate purpose, interaction control (CPH), pedagogy (HBG, TIM), data accessibility (HBG), clear goal, maintenance, data quality, data centralization (TIM)
corruption			TIR	trust through acknowledgement, re-establish duo-power structure (TIR)		
counter production (as spill over effect)	(Viitanen & Kingston, 2014)					
data accessibility					TIR	
data overflow	(Janssen, Charalabidis & Zuiderwijk, 2012)					
data usability			HBG	relevance, interesting, knowledge, communication (HBG)		

data/info quality	(Janssen, Charalabidis & Zuiderwijk, 2012)		CPH, TIR, TUR		TIR	bottom-up, transparency (TIR), purpose vs. solution (TUR)
digital illiteracy/digital divide (need for professional digital literacy)	(Veckman & Van Der Graaf, 2014)				TIM, TIR, TUR	
disempowerment			TIR	trust through acknowledgement, re-establish duo-power structure (TIR)		
establishing new concepts					TUR	
expert inhibition					TUR	purpose vs. solution (TUR)
feedback	(Janssen, Charalabidis & Zuiderwijk, 2012)					
fragmented architecture (decentralization)	(Janssen, Charalabidis & Zuiderwijk, 2012)	centralized architecture				
inclusion					TUR	purpose vs. solution (TUR)
inconsistent security attitudes					TUR	
information overflow					TIR	content, advertising, benefits, feedback (TIR)
initiative maturity			TIR	persistence, trust through acknowledgement, re-establish duo-power structure (TIR)		
interest			CPH		CPH	actual participation, bottom-up (CPH), relevance (TIM), pedagogy (TIM, TIR), communication, right channel, awareness, helping hand, presence, information, citizen-mobilization (TIR)
mistrust			TIR	persistence (TIR)	TIR	content (TIR)

motivation			CPH	drawcards, feedback, oral/open-ended feedback, informality, digestible, interest, renew, benefits, network-building (TUR)	TIR	
municipal data protectiveness			TIR	successive development, relevance (TIR)		
occupied citizens	(Janssen, Charalabidis & Zuiderwijk, 2012)					
outreach			TIR, TUR	persistence (TIR), education, building communities, advertising, right channel, University as channel (TUR)	TIM, TIR, TUR	bottom-up, transparency, content (TIR)
participation (& use)	(Janssen, Charalabidis & Zuiderwijk, 2012)	evidencing the potential of the data, education, events, rewards, low-barrier entrance, clear strategy, pre-defined topics, interesting topics, purpose vs. solutions	TIM, TUR	reward, trust through acknowledgement, systemized approach (HBG), education (TIM, TUR), awareness, transparency, communication, data accessibility (TIM), building communities, advertising, right channel, University as channel (TUR)	HBG, TUR	relevance, pedagogy (TIM)
pedagogy			TUR	education, building communities, advertising, right channel, University as channel (TUR)		
persistence					TIR	
prejudice (tech)					TUR	purpose vs. solution (TUR)
privacy restrictions			HBG			

privacy/security outcry			CPH, TUR	controlled involvement, asking for permission (CPH)		anonymization (CPH, HBG), data regulation, clear purpose, transparency (CPH), consent, cultural-differences considerations (HBG)
quality of service			TIM			clear goal, maintenance, data quality, pedagogy, data centralization (TIM)
regulatory restrictions	(Janssen, Charalabidis & Zuiderwijk, 2012)	privacy/security concerns addressed (Batty et al., 2012; Domingo et al., 2013; Baccarne, Mechant & Schuurman, 2014; Meijer & Bolivar, 2015),				
relevance					TIR	content, advertising, benefits, feedback (TIR)
skill gap	(Veckman & Van Der Graaf, 2014)					
social/political context			TIM, TIR	education, awareness, transparency, communication, data accessibility (TIM), successive development, relevance (TIR)	TIR	
tech-heavy representation bias					TUR	
transparency	(Lee, Hancock & Hu, 2014)	comply or explain (Janssen, Charalabidis & Zuiderwijk, 2012)	TIR, TUR	successive development, relevance (TIR)	TIR	
uneducated citizens					TUR	
unrealistic expectations			TIR	successive development, relevance (TIR)		

usage knowledge	(Janssen, Charalabidis & Zuiderwijk, 2012)					
general preconditions				relevance (CPH, TIR, TUR), success culture (CPH, TIR), vibrant community, political will, responsiveness, reward, literacy, accessibility (TIR), awareness (TIR, TUR), presence, availability, interest, cost-benefit analysis, cross-city learning (TUR)		

10.3 Open Innovation

Difficulties	Literature	Literature preconditions	Practitioner	Practitioner preconditions	Academia	Academia preconditions
artificiality (top-down)					HBG	bottom-up, blank slate, initiative maturity, communitarian belonging, ambassadors (HBG)
awareness			HBG		HBG	ambassadors, hype, success stories, WoM, blank slate, awareness (HBG)
boundaries					HBG	centralization, communitarian belonging (HBG)
citizen empowerment	(Lee, Hancock & Hu, 2014)	inclusive decision-making (Paskaleva, 2011)				
communitarian belonging			HBG		HBG	ambassadors, hype, success stories, WoM, blank slate, awareness (HBG)
complete inclusion			TUR			
complexity					TIM	non-techy topic, relevance (TIM)
data accessibility			TIM			
data quality			TIM			
engagement			HBG		HBG	ambassadors, hype, success stories, WoM,

						blank slate, awareness (HBG)
evoking new interest					TUR	spring from established communities, neighbourhood associations, marketing campaigns, grounded communication level, communitarian belonging (TUR)
feasibility			TUR			
following-through			TUR		CPH	structured administration, helping hand (CPH)
in-between election participation					TUR	spring from established communities, neighbourhood associations, marketing campaigns, grounded communication level, communitarian belonging (TUR)
initiative maturity	(Baccarne, Mechant & Schuurman, 2014)					
interest			TIM			
involvement			HBG	clear ground rules, early-phase collaboration (HBG)	HBG	ambassadors, hype, success stories, WoM, blank slate, awareness (HBG)
local vs. public					TUR	spring from established communities, neighbourhood associations, marketing campaigns, grounded communication level, communitarian belonging (TUR)
mistrust	(Hernández-Muñoz et al., 2011)					
motivation					CPH	resources, space (CPH)
occupied citizens					CPH, TUR	bottom-up (CPH), spring from established communities, neighbourhood

						associations, marketing campaigns, grounded communication level, communitarian belonging, natural location (TUR)
outreach					HBG, TIM	centralization, communitarian belonging, ambassadors, hype, success stories, WoM, blank slate, awareness (HBG)
participation	(Lee, Hancock & Hu, 2014)	rewards	HBG			
participation			HBG	momentum, critical mass (HBG)	HBG	event, ambassadors, hype, success stories, WoM, blank slate, awareness (HBG)
persistence			TIM	direct city output, win-win, success culture, motivation (TIM)	CPH	structured administration, helping hand, bottom-up (CPH)
political will	(Hernández-Muñoz et al., 2011)					
prioritization					CPH	bottom-up (CPH)
purpose vs. solutions	(Komninos, Pallot & Schaffers, 2013)	sharing vs recreating, forward-looking culture, low-cost solutions, starting small scale, reusing proven solutions				
regulatory restrictions	(Lee, Hancock & Hu, 2014)	inclusive decision-making (Paskaleva, 2011)				
relevance					HBG	centralization, communitarian belonging, ambassadors, hype, success stories, WoM, blank slate, awareness (HBG)

security/privacy outcry	(Hernández-Muñoz et al., 2011)					
shared vision	(Schaffers et al., 2011b)	sustainable partnerships, clear goals (Schaffers et al., 2011b)	TIM			
short-termism	(Baccarne, Mechant & Schuurman, 2014)	socio-economic value, and constant evaluation (Baccarne, Mechant & Schuurman, 2014)				
tech-heavy representation bias					TIM	non-techy topic, relevance (TIM)
valorization	(Walravens, 2015)		CPH			
general preconditions				involvement, city co-production (CPH), accessibility (CPH, TUR), trust through acknowledgement (CPH, HBG, TUR), mixing activities/people (CPH, HBG), self-organizing city (CPH, HBG), interest (CPH, HBG, TIM), presence (HBG, TUR), helping hand, inspiration, playfulness, blank slate establish connectivity, communitarian belonging, information, democracy education, communicating expectations, persistency (HBG), right channel (HBG, TUR), awareness (HBG, TIM, TUR), relevance (HBG, TIM), communication (HBG, TIM), initiative maturity, passion, energy, belief, shared vision, top-down support, reward, appreciation, exploiting natural phenomenon, publicity, content, motivation (TIM), ambassadors (TIM, TUR), attraction (event), feedback, successive development, redirection, pedagogy, testing/prototyping, observation, busting preconceptions, optimizing space-use (TUR)		intellectual property rights, relevance (CPH), feedback/responsiveness-loop, trust through acknowledgement (TUR)

10.4 Crowdsourcing

Difficulties	Literature	Literature preconditions	Practitioner	Practitioner preconditions	Academia	Academia preconditions
acting on fear			TUR	common concern, communitarian belonging, awareness, pre-information, pre-discussions		multiple views
apathy			TIR	bottom-up approach, interest, relevance, feasibility, empowerment, using the right channel		
arrangements			TUR			
assessment of ideas	(Schuurman et al., 2012)	closed system of assessment				
availability heuristics					TUR	exposure
awareness			HBG	advertisement, context, trust through acknowledgement	TUR	responsiveness (HBG), trust through acknowledgement, benefits, purpose, input/output, multi-functionality
bad publicity				marketing, win-win, responsiveness, time		
hanging habits					TIM	time, maturity, critical mass
changing population					TIM	time, maturity
citizenship maturity			TIR			fulfilling basic needs(TIR), local-level approach, helping hand, presence, pedagogy, information, build relationships, persistency, skill training, bottom up
civic engagement					TIM	time (TIM), maturity, fulfilling basic needs(TIR), local-level approach, helping hand, presence,

						pedagogy, information, build relationships, persistence, skill training, bottom up
communitarian belonging					TIM	time, maturity
complete inclusion					TUR	balanced representation of views
complexity					TIM	
conflict with goals/ long envisioning	(Schuurman et al. 2012; Breuer, Walravens & Ballon, 2014)					
content			HBG	relevance, interest, communication		benefits, purpose, multi-functionality, relevance, interesting, communicating
creating common spirit					HBG	communitarian belonging, ambassadors,
data quality			TUR		TIR	
digital divide	(Hancke, Silva & Hancke, 2013; Breuer, Walravens & Ballon, 2014)	educational services, training, alternative means of participation			TIR	
equal opportunity			TUR			
eutrophication					TUR	balanced representation of views
feasibility	(Baccarne, Mechant & Schuurman, 2014)					
finding the right channel					HBG	communication, rewards, relevance (content)
first impression					TIR, TUR	polished product
following-through					TIR	
impatience					HBG	
in/out groups			TUR	common concern, communitarian belonging,	TUR	multiple views

				awareness, pre-information, pre-discussions		
information	(Schuurman et al., 2012)					
initiative maturity			TIR			
interest			TIM, TIR, TUR	awareness (TIM), publicity, marketing, win-win, responsiveness, time, trust through acknowledgement (TIR), relevance, mixing people/activities, innovation, bottom-up approach, interest, feasibility, empowerment, using the right channel		subgroup personalization (HBG)
mentality			TIR	bottom-up approach, interest, relevance, feasibility, empowerment, right channel	TIM	time, maturity, critical mass
mistrust			TIR	bottom-up approach, interest, relevance, feasibility, empowerment, right channel	TIR	
momentum			TUR	mixing people/activities, (cross-initiative) collaboration, maturity, persistence		
motivation	(Borges & Zyngier, 2014)	relevance of results, self-promotion	TIM, TUR	presence (TIM), accessibility, right channel,		
occupied citizens			TIM, TUR	presence (TIM), accessibility, right channel,	TIM	
official communication inhibition					TUR	
outreach (+biased representation)			HBG, TIM, TIR, TUR	collaboration (not reporting) (HBG), awareness (TIM), publicity, marketing, win-win, responsiveness,	HBG	responsiveness, trust through acknowledgement, benefits, purpose, input/output, multi-functionality,

				time, communitarian belonging/second hand access (TIR)		WoM, centralization, right channel, rewarding
participation		rewards (Calderoni, Maio & Palmieri, 2012; Theodoridis, Mylonas & Chatzigiannakis , 2013), rewards compatible to citizen needs (Theodoridis, Mylonas & Chatzigiannakis , 2013), gamification	TUR	advertisement, using the right channel, rewards/allure, education, springing from established groups, communitarian belonging, event variety, persistency, interest, awareness, economically interesting, drawcard,		responsiveness (TUR), trust through acknowledgement, benefits, purpose, input/output, multi-functionality, WoM, centralization, natural location, rewards (HBG)
peer-to-peer communication (social media incorporation)					TUR	
personalization/generi c response			TIR	coordination		
polished product					TIR, TUR	
political blocking (inferiority complex/Group think/Expert inhibition)			TUR			mixing people/activities, new perspectives, grounded communication level, communicating purpose
predicting turnout			TUR			
privacy	(Calderoni, Maio & Palmieri, 2012)		HBG	relevance, interest, communication		relevance, interesting, communicating
relevance			TIR		HBG, TIR	
representation bias					TUR	
resistance			TUR	common concern, communitarian belonging, awareness, pre-information, pre-discussions		
responsiveness			TIR	coordination		
scepticism			TIR	responsiveness	TIR	communication, trust through acknowledgement, following-through, time
small city			TUR			

social/political context					TIR	
time (learning curve)					TIR	
top-down agency	(Schuurman et al., 2012)	self-organizing structures				
transparency			TIR			
valorization	(Breuer, Walravens & Ballon, 2014)					
worn-out initiatives			TUR	mixing people/activities, (cross-initiative) collaboration, maturity, persistence		
general preconditions			HBG, TIR, TUR	Communication (HBG), trust through acknowledgement, persistency, maturity (TIR), relevance, presence, helping hand, momentum, events, spring from established communities, pedagogy, misuse restrictions, advertisement, motivation, coordination, framing, categorization, multifunctionality, integration (centralization), Growth-opportunities (TUR), blank slate, feedback, presence, testing, cross-district learning, trust through acknowledgement, empowerment, communitarian belonging, actual participation, media, pre-information, feedback, pedagogy, early-phase collaboration, transparency	TIM, TIR, TUR	Feedback (TIM), professional vs civic opinions, purpose vs. solutions, duo-power structure (TIR), trust through acknowledgement, following-through, responsiveness, advertisement, pedagogy, success culture, demonstrations, building trust, Listening (TUR), following-through, narrow focus, transparency, communicating purpose, polished product

10.5 Crowdsensing

Difficulties	Literature	Literature preconditions	Practitioner	Practitioner preconditions	Academia	Academia preconditions
acceptability (balance)	(Balestrini, Marshall and Diez, 2014)	undisruptive/ubiquitous technology, engaging experience				
applicability (troubleshooting advice)	(Balestrini, Marshall and Diez,					

	2014)					
changing habits					HBG	stand out, relevance, convenient
complexity	(Balestrini, Marshall and Diez, 2014)					
coordination			HBG			
data contribution			HBG			
engagement	(Cardone et al., 2013)	combine social rewards with monetary rewards (intrinsic motivation)				
long-term motivation					HBG	
participation	(Chon et al., 2013; Farkas et al., 2015)	extensive risk analysis (Farkas and Lendak, 2015), real-setting stimulations, rewards (Calderoni, Maio & Palmieri, 2012; Pouryazdan et al., 2015), awareness on benefits (Perera et al., 2013), gamification (Mirri et al., 2016; Wu and Luo, 2014)				
privacy/security outcry	(Calderoni, Maio & Palmieri, 2012; Hancke, Silva & Hancke, 2013; Balestrini, Marshall & Diez, 2014; Farkas & Lendak, 2015; Sun et al., 2016)	well-established procedures, clear regulations pedagogy, transparency, trust, social value (Mulligan, 2013), usability on both ends (Perera et al., 2013) , change management system,			HBG	pedagogy, transparency, benefits, purpose

reliability and meaningfulness of the data (data quality)	(Balestrini, Marshall & Diez, 2014)	quality and usefulness based rewarding schemas (Wu & Luo, 2014; Pouryazdan et al., 2015; Mirri et al., 2016), high participation (Mirri et al., 2014), reputation-based citizen recruitment (Pouryazdan et al., 2015)				
usability (adaptability)	(Farkas et al., 2015)	extensive risk analysis, real-setting stimulations,				
general preconditions	(Hancke, Silva & Hancke, 2013), (Pouryazdan et al., 2016), (Perera et al., 2014)	Pedagogy, undistruptive technology, feedback, polished product, standardization	HBG	interest, relevance, accessibility, pedagogy, right channel, knowledge, communication		

10.6 Innovation District

Difficulties	Literature	Literature preconditions	Practitioner	Practitioner preconditions	Academia	Academia preconditions
access to finance	(Nathan, Vandore & Whitehead, 2012)					
advertisement			TUR			
affordability			TUR			
awareness					HBG, TUR	WoM (HBR) relevant, benefits, purpose, low entrance barrier (TUR), mixing people/activities, natural location, communication, spring from established communities, best channel (match established/natural channel)

biased representation (+long term)			TUR	representation, momentum, presence, feedback, natural location, advertisement, social media as channel, actual participation, motivation, innovative approach, interaction	TUR	multi-channels (for representation bias), ambassadors, transparency
blank slate					TUR	
boredom			TIM	energy, drive, motivation		
citizenship maturity					TIM	
civic engagement					TIM	
communication			TUR			
communication (purpose)			TIM	right channel, clarity		
complete inclusion			TIM		TIM	
complexity			TIM			
discomfort					HBG	invitation, purpose, relevance, natural participation, group participation, comfort
fear					HBG	invitation, purpose, relevance, natural participation, group participation, comfort
finding the right channel			TUR			
fulfilling basic needs			TIM		TIM	
get people to pass by (location)			HBG	natural location, established connectivity,		invitation, purpose, relevance, natural participation, group participation, comfort
interest			TIM	ambassadors, education, citizen growth, relevance, support, knowledge application		

location			TIR, TUR	accessibility (TIR)	HBG	
location distribution			TUR			
long-term motivation			TIM	energy, drive, motivation	TIM	
mentality			TIM			
mentoring and management advice (helping hand/support)	(Nathan, Vandore & Whitehead, 2012)					
motivation			TIM	ambassadors, education, citizen growth, relevance, support, knowledge application		
novelty effect					TUR	
occupied citizens			TIM		TUR	
outreach			TIM	right channel, clarity	HBG	WoM, relevant, benefits, purpose
outreach particular groups			HBG	PoC (for makers)		
participation			TUR			
prioritization			TIM		TIM	
privacy/security outcry			TUR	pedagogy, availability		
reaching business maturity	(Nathan, Vandore & Whitehead, 2012)					
regulatory restrictions					TIM	
representation over- concern					TUR	
required knowledge			TIM			
resistance			TUR	pedagogy, availability		
risk adversity			TIM	communitarian belonging, locally generated funds, organic growth, time	TIM	
skill gap	(Nathan, Vandore & Whitehead,					

	2012)					
social/political context			TIM	communitarian belonging, locally generated funds, organic growth, time		
standing-out			TIM	right channel, clarity		participation equilibrium, time
tiring effect					TUR	
value creation			TIM			
workspace access and cost	(Nathan, Vandore & Whitehead, 2012)					
general preconditions			TIM, TIR, TUR, (Nathan, Vandore & Whitehead, 2012)	mixing people/activities, citizen growth, ambassadors (TIM), affordability (TIM, TIR), rare opportunity (TIR), mixing people, early-phase collaboration (TUR), personalized growth schemas (lit)		

10.7 Participatory eGovernance & eServices

Difficulties	Literature	Literature preconditions	Practitioner	Practitioner preconditions	Academia	Academia preconditions
address infrastructure					TIR	informed participation
availability heuristics (previous dissatisfaction with government responsiveness)	(Kleinhans, Van Ham & Evans-Cowley, 2015)					
awareness			HBG	communication, accessibility, natural location (of the input channels), right channels, presence, responsiveness		
bureaucracy					TIM	
cross-(digital)context illiteracy (+ inconsistency)	(Ertiö, Ruoppila & Thiel, 2016)				TUR	
design for everyone			HBG		HBG	relevance, trust through acknowledgement

digital divide	(Coe, Paquet & Roy, 2001; Clarke, 2013; Deakin, 2014; Davies, 2015; Ertiö, 2015)	inclusive services (old channels in place) (Clarke, 2013) skill training (Coe, Paquet & Roy, 2001; Davies, 2015)			TIR	pedagogy, communication, technology accessibility
digital illiteracy			TUR	inclusive services (old channel in place)	CPH	
fear			TUR	inclusive services (old channel in place)		
feasibility (of the initiative and input)			HBG	relevance, interesting, subgroup personalization of the focus	HBG	more out (information) than input, experience/ideas comparison (allowing input for feasible and realisable areas)
first-adoption problem/start-off					TUR	
following-through					HBG	
impatience (of citizens for results)					HBG	more out (information) than input, experience/ideas comparison (allowing input for feasible and realisable areas)
inclusion					TIR	pedagogy, communication, technology accessibility
inconsistent security attitude					TUR	
individual acknowledgement					HBG	trust through acknowledgement, responsiveness
individualism	(Ertiö, Ruoppila & Thiel, 2016)					
local vs. public (make it matter)			CPH	local vs. public (highlight the local level)		
location					HBG	natural location
loyalty	(Ertiö, Ruoppila & Thiel, 2016)	polished product (Ertiö, Ruoppila & Thiel, 2016)				
mistrust (+ disbelief in acknowledging the citizens' input)	(Paskaleva, 2009; Åström et al., 2015; Davies, 2015)		TUR	inclusive services (old channel in place)	HBG	trust through acknowledgement, responsiveness

motivation	(Kleinhans, Van Ham & Evans-Cowley, 2015)	rewards, gamification, constant two-ways communication, presence in already established channels, acting-on citizens feedback (Kleinhans, Van Ham & Evans-Cowley, 2015); curiosity (novelty effect), public value (Ertiö, Ruoppila & Thiel, 2016)				
organizational culture	(Alawadhi et al., 2012)	service-friendly organizational culture, participative-oriented organizational culture				
outreach (reach everyone)			HBG	communication, accessibility, natural location (of the input channels), right channels, presence, responsiveness		
participation					TIR	
political will					TIM	
prejudices regarding the usefulness of citizens' input	(Åström et al., 2015)					
privacy	(Ertiö, 2013; Davies, 2015)					
regulatory restrictions					TIM	
resistance			TUR	inclusive services (old channel in place)		
social/political context			TIM	citizen growth, education, participation, right channels		
time (for citizen customization)					TIR	

top-down agency	(Kleinhans, Van Ham & Evans-Cowley, 2015)					
transparency			HBG, TIM	trial-and-error culture (HBG), citizen growth (TIM), education (TIM), participation (TIM), right channels (TIM)		
general preconditions			HBG, TIM, TIR,	momentum (HBG), trial-and-error culture, early-phase collaboration, Interesting (TIM; TIR), direct city output(TIM), trust through acknowledgement (TIR), responsiveness, awareness, accessibility (through information and meetings), playfulness, natural location, cross-city learning	CPH	trust through (HBG), acknowledgement, playfulness, following-through(CPH), actual participation, engaging children, live-update feed (HBG), polished product (TIR), local community feedback (TIM)

10.8 Online Learning

Difficulties	Literature	Literature preconditions	Practitioner	Practitioner preconditions	Academia	Academia preconditions
unequal power structures	(Plumb, Leverman & McGray, 2007), (Gaved et al., 2012), (Andone, Holotescu & Grosseck, 2014)	experts, citizen-centred approach, address multiple concerns				

10.9 Interactive Social/Virtual Networks/Platforms

Difficulties	Literature	Literature preconditions	Practitioner	Practitioner preconditions	Academia	Academia preconditions
mistrust (disbelief in acknowledging the citizens' input)	(Coe, Paquet & Roy, 2001)	win-win solutions, engagement				
civic engagement, digital divide	(Coe, Paquet & Roy, 2001)					
digital divide	(Coe, Paquet & Roy, 2001)					

References

- 6Aika. (2015). *The six city strategy - Open and smart services*. Available Online: https://6aika.fi/wp-content/uploads/2015/11/6Aika-strategia_p%C3%A4ivitys_2015_EN.pdf [Accessed: 25.03.2017].
- Alawadhi, S., Aldama-Nalda, A., Chourabi, H., Gil-Garcia, J. R., Leung, S., Mellouli, S., ... & Walker, S. (2012, September). Building understanding of smart city initiatives. In *International Conference on Electronic Government* (pp. 40-53). Heidelberg, Berlin: Springer.
- AlAwadhi, S., & Scholl, H. J. (2013). Aspirations and realizations: The smart city of Seattle. In *2013 46th Hawaii International Conference on System Sciences, IEEE Computer Society*, 1695–1703.
- Albanian Government. (2017). *European Union Integration*. Available Online: <http://www.kryeministria.al/en/program/european-union-integration> [Accessed: 22.05.2017].
- Albino, V., Berardi, U., & Dangelico, R. M. (2015). Smart cities: Definitions, dimensions, performance, and initiatives. *Journal of Urban Technology*, 22(1), 3-21.
- Aldama-Nalda, A., Chourabi, H., Pardo, T. A., Gil-Garcia, J. R., Mellouli, S., Scholl, H. J., . . . Walker, S. (2012). Smart cities and service integration initiatives in North American cities: A status report. In *Proceedings of the 13th Annual International Conference on Digital Government Research*, 289-290.
- Allwinkle, S., & Cruickshank, P. (2011). Creating smart-er cities: An overview. *Journal of Urban Technology*, 18(2), 1-16.
- Anderberg, S., & Clark, E. (2013). Green and sustainable Øresund region: Or eco-branding Copenhagen and Malmö. In I. Vojnovic (Ed.), *Urban sustainability: A global perspective* (pp. 591–610). East Lansing: Michigan State University Press.
- Andersen, H. T., & Winther, L. (2010). Crisis in the resurgent city? The rise of Copenhagen. *International Journal of Urban and Regional Research*, 34(3), 693-700.
- Andone, D., Holotescu, C., & Grossecck, G. (2014). Learning communities in smart cities. Case studies. In *2014 International Conference on Web and Open Access to Learning (ICWOAL)*.
- Angelidou, M. (2014). Smart city policies: A spatial approach. *Cities*, 41, S3-S11.
- Arnkil, R., Järvensivu, A., Koski, P., & Piirainen, T. (2010). Exploring the quadruple helix. In *Report of Quadruple Helix Research for the CLIQ Project*. Tampere: Work Research Centre, University of Tampere.
- Åström, J., Ruoppila, S., Ertiö, T., Karlsson, M., & Thiel, S. K. (2015). Potentials and challenges of a living lab approach in research on mobile participation. In *2015 ACM International Joint Conference on Pervasive and Ubiquitous Computing and Proceedings of the 2015 ACM International Symposium on Wearable Computers*, 795-800.
- Baccarne, B., Mechant, P., & Schuurman, D. (2014). Empowered cities? An analysis of the structure and generated value of the smart city Ghent. In R. P. Dameri & C. Rosenthal-Sabroux (Eds.), *Smart city: How to create public and economic value with high technology in urban space* (pp. 157–182). Heidelberg, Germany: Springer.
- Bakıcı, T., Almirall, E., & Wareham, J. (2013). A smart city initiative: the case of Barcelona. *Journal of the Knowledge Economy*, 4(2), 135-148.
- Balakrishna, C. (2012). Enabling technologies for smart city services and applications. In *2012 6th International Conference on Next Generation Mobile Applications, Services and Technologies (NGMAST)*.
- Balestrini, M., Diez, T., & Marshall, P. (2014). Beyond boundaries: the home as city infrastructure for smart citizens. In *Proceedings of the 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing*, 987-990.
- Ballas, D. (2013). What makes a ‘happy city’? *Cities*, 32, S39-S50.
- Ballon, P., Glidden, J., Kranas, P., Menychtas, A., Ruston, S., & Van Der Graaf, S. (2011). Is there a need for a cloud platform for european smart cities? In *eChallenges e-2011 Conference Proceedings, IIMC International Information Management Corporation*.
- Banerjee, M. (1995). *Organization behaviour*. New Delhi: Allied Publishers.
- Baron, M. (2012). Do we need smart cities for resilience? *Journal of Economics & Management*, 10, 31-46.

- Batty, M., Axhausen, K. W., Giannotti, F., Pozdnoukhov, A., Bazzani, A., Wachowicz, M., . . . Portugali, Y. (2012). Smart cities of the future. *The European Physical Journal Special Topics*, 214(1), 481-518.
- Benouaret, K., Valliyur-Ramalingam, R., & Charoy, F. (2013). CrowdSC: Building smart cities with large-scale citizen participation. *IEEE Internet Computing*, 17(6), 57-63.
- Bhattacharjee, A. (2012). *Social science research: Principles, methods, and practices*. Tampa, Florida: Global Text Project.
- Bibu, N., & Mos, A. L. (2012). Leadership Style in the Romanian Public Institutions-the Case of City Halls. *Review of International Management Comparative*, 13(1), 81-87.
- Borges, J., & Zyngier, C. (2014). Crowdsourcing. A citizen participation challenge. *TeMA. Journal of Land Use, Mobility and Environment*.
- Boulos, M. N. K., & Al-Shorbaji, N. M. (2014). On the internet of things, smart cities and the WHO healthy cities. *International Journal of Health Geographics*, 13(1), 10.
- Bowerman, B., Braverman, J., Taylor, J., Todosow, H., & Von Wimmersperg, U. (2000). The vision of a smart city. Paper presented at the workshop "2nd International Life Extension Technology Workshop", Paris, France, September 28, 2000.
- Breuer, J., Walravens, N., & Ballon, P. (2014). Beyond defining the smart city. Meeting top-down and bottom-up approaches in the middle. *TeMA. Journal of Land Use, Mobility and Environment*.
- Brinkmann, S., & Kvale, S. (2005). Confronting the ethics of qualitative research. *Journal of Constructivist Psychology*, 18(2), 157-181.
- Calderoni, L., Maio, D., & Palmieri, P. (2012). Location-aware mobile services for a smart city: Design, implementation and deployment. *Journal of Theoretical and Applied Electronic Commerce Research*, 7(3), 74-87.
- Caragliu, A., Del Bo, C., & Nijkamp, P. (2011). Smart cities in Europe. *Journal of Urban Technology*, 18(2), 65-82.
- Cardone, G., Foschini, L., Bellavista, P., Corradi, A., Borcea, C., Talasila, M., & Curtmola, R. (2013). Fostering participation in smart cities: a geo-social crowdsensing platform. *IEEE Communications Magazine*, 51(6), 112-119.
- Celino, I., & Kotoulas, S. (2013). Smart Cities [Guest editors' introduction]. *IEEE Internet Computing*, 17(6), 8-11.
- Chesbrough, H. W. (2006). *Open innovation: The new imperative for creating and profiting from technology*. Boston, Massachusetts: Harvard Business School Press.
- Chloupkova, J., Svendsen, G. L. H., & Svendsen, G. T. (2003). Building and destroying social capital: The case of cooperative movements in Denmark and Poland. *Agriculture and Human values*, 20(3), 241-252.
- Chon, Y., Lane, N. D., Kim, Y., Zhao, F., & Cha, H. (2013). Understanding the coverage and scalability of place-centric crowdsensing. In *Proceedings of the 2013 ACM International Joint Conference on Pervasive and Ubiquitous Computing*.
- Chourabi, H., Nam, T., Walker, S., Gil-Garcia, J. R., Mellouli, S., Nahon, K., . . . Scholl, H. J. (2012). Understanding smart cities: An integrative framework. In *2012 45th Hawaii International Conference on System Science (HICSS)*.
- Christopoulou, E., & Ringas, D. (2013). Learning activities in a sociable smart city. *Interaction Design and Architecture(s) Journal - IxD&A*, 17, 29-42.
- Christopoulou, E., Ringas, D., & Garofalakis, J. (2014). The vision of the sociable smart city. In *Distributed, Ambient, and Pervasive Interactions - Second International Conference, DAPI*, 545-554.
- Clarke, R. Y. (2013). Smart cities and the internet of everything: The foundation for delivering next-generation citizen services. *Alexandria, VA, Tech. Rep.*, Oct. 2013.
- Clohessy, T., Acton, T., & Morgan, L. (2014). Smart City as a service (SCaaS): A future roadmap for e-government smart city cloud computing initiatives. In *Proceedings of the 2014 IEEE/ACM 7th International Conference on Utility and Cloud Computing*, 836-841.

- Cocchia, A. (2014). Smart and digital city: A systematic literature review. In R. P. Dameri & C. Rosenthal-Sabroux (Eds.), *Smart city: How to create public and economic value with high technology in urban space* (pp. 13-43). Heidelberg, Germany: Springer.
- Coe, A., Paquet, G., & Roy, J. (2001). E-governance and smart communities: A social learning challenge. *Social Science Computer Review*, 19(1), 80-93.
- Corbett, J., & Mellouli, S. (2017). Winning the SDG battle in cities: How an integrated information ecosystem can contribute to the achievement of the 2030 sustainable development goals. *Information Systems Journal*.
- Corbin, J. M., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative Sociology*, 13(1), 3-21.
- Cosgrave, E., Arbuthnot, K., & Tryfonas, T. (2013). Living labs, innovation districts and information marketplaces: A systems approach for smart cities. *Procedia Computer Science*, 16, 668-677.
- Dameri, R. P., & Rosenthal-Sabroux, C. (2014). Smart city and value creation. In R. P. Dameri & C. Rosenthal-Sabroux (Eds.), *Smart city: How to create public and economic value with high technology in urban space* (pp. 1-12). Heidelberg, Germany: Springer.
- Davies, R. (2015). e-Government: Using technology to improve public services and democratic participation. *European Parliamentary Research Service*.
- Davies, T. (2010). *Open data, democracy and public sector reform: A look at open government data use from data.gov.uk*. MSc Dissertation at Oxford Internet Institute.
- Deakin, M. (2014). Smart cities: the state-of-the-art and governance challenge. *Triple Helix*, 1(1), 7.
- Deterding, S., Sicart, M., Nacke, L., O'Hara, K., & Dixon, D. (2011). Gamification: Using game-design elements in non-gaming contexts. In *CHI'11 Extended Abstracts on Human Factors in Computing Systems*, 2425-2428.
- Diez, T. (2012). Personal fabrication: Fab labs as platforms for citizen-based innovation, from microcontrollers to cities. In *Digital Fabrication* (pp. 457-468). Basel: Springer.
- Dillman, D. A. (1978). *Mail and telephone surveys: The total design method* (Vol. 19). New York: John Wiley and Sons.
- Domingo, A., Bellalta, B., Palacin, M., Oliver, M., & Almirall, E. (2013). Public open sensor data: Revolutionizing smart cities. *IEEE Technology and Society Magazine*, 32(4), 50-56.
- Easton, G. (2003). One case study is enough. *Academy of Marketing Annual Conference*, Aston University, Birmingham, UK.
- EC. (2006). *European Network of Living Labs: Human Dimension of Technology*. Available Online: <https://ec.europa.eu/digital-single-market/en/news/european-network-living-labs-human-dimension-technology> [Accessed: 10.04.2017].
- EC. (2009). *Malmö Ministerial Declaration on e-Government*. Available Online: <https://ec.europa.eu/digital-single-market/sites/digital-agenda/files/ministerial-declaration-on-e-government-malmo.pdf> [Accessed: 14.04.2017].
- EC. (2011). *Citadel...on the move*. Available Online: http://cordis.europa.eu/project/rcn/191903_en.html [Accessed: 10.04.2017].
- EC. (2012). *ICT Policy Support Programme as part of the Competitiveness and Innovation framework Programme (CIP)*. Available Online: http://ec.europa.eu/information_society/activities/ict_psp/index_en.htm [Accessed: 10.04.2017].
- EC. (2015a). *E-Participation*. Available Online: <https://ec.europa.eu/digital-single-market/en/e-participation> [Accessed: 14.04.2017].
- EC. (2015b). *ICT - Information and Communication Technologies*. Available Online: http://cordis.europa.eu/fp7/ict/home_en.html [Accessed: 10.04.2017].
- EC. (2017a). *EU Commission's Open Data Strategy*. Available Online: <https://www.iprhelphdesk.eu/node/690> [Accessed: 10.04.2017].
- EC. (2017b). *European eGovernment Action Plan 2016-2020*. Available Online: <https://ec.europa.eu/digital-single-market/en/european-egovernment-action-plan-2016-2020> [Accessed: 14.04.2017].

- ECO-City. (2013). Joint ECO-City developments in Scandinavia and Spain. Available Online: <http://www.ecocity-project.eu/> [Accessed: 25.03.2017].
- Edwards, M. (2001). Participatory governance into the future: roles of the government and community sectors. *Australian Journal of Public Administration*, 60(3), 78-88.
- Egharevba, S. (2006). Do African immigrants in Turku experience more racist harassment in Finland? A victim-oriented-approach. *International Review of Victimology*, 13(1), 71-98.
- Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of management review*, 14(4), 532-550.
- Ertiö, T. (2013). M-participation: the emergence of participatory planning applications. *Turku Urban Research Programme's Research Briefings*, 6b.
- Ertiö, T. P. (2015). Participatory apps for urban planning—space for improvement. *Planning Practice & Research*, 30(3), 303-321.
- Ertiö, T. P., Ruoppila, S., & Thiel, S. K. (2016). Motivations to use a mobile participation application. In *International Conference on Electronic Participation*, 138-150.
- Farkas, K., Feher, G., Benczur, A., & Sidlo, C. (2015). Crowdsending based public transport information service in smart cities. *IEEE Communications Magazine*, 53(8), 158-165.
- Farkas, K., & Lendák, I. (2015). Simulation environment for investigating crowd-sensing based urban parking. In *2015 International Conference on Models and Technologies for Intelligent Transportation Systems (MT-ITS)*, 320-327.
- Gabrys, J. (2014). Programming environments: Environmentality and citizen sensing in the smart city. *Environment and Planning D: Society and Space*, 32(1), 30-48.
- Garau, C. (2014). From territory to smartphone: Smart fruition of cultural heritage for dynamic tourism development. *Planning Practice & Research*, 29(3), 238-255.
- Gaved, M., Jones, A., Kukulska-Hulme, A., & Scanlon, E. (2012). A citizen-centred approach to education in the smart city: incidental language learning for supporting the inclusion of recent migrants. *International Journal of Digital Literacy and Digital Competence*, 3(4), 50-64.
- Gehl, J. (2007). Public spaces for a changing public life. In C. Ward Thompson & P. Travlou (Eds.), *Open space: People space* (pp. 3-9). Abingdon, UK: Taylor and Francis.
- Geller, A. L. (2003). Smart growth: A prescription for livable cities. *American Journal of Public Health*, 93(9), 1410-1415.
- Giffinger, R., & Gudrun, H. (2010). Smart cities ranking: An effective instrument for the positioning of the cities? *ACE: Architecture, City and Environment*, 4(12), 7-26.
- Gil-Castineira, F., Costa-Montenegro, E., Gonzalez-Castano, F., López-Bravo, C., Ojala, T., & Bose, R. (2011). Experiences inside the ubiquitous oulu smart city. *Computer*, 44(6), 48-55.
- Gil-Garcia, J. R., Pardo, T. A., & Aldama-Nalda, A. (2013). Smart cities and smart governments: Using information technologies to address urban challenges. In *Proceedings of the 14th Annual International Conference on Digital Government Research*, 296-297.
- Glaeser, E. L., & Berry, C. R. (2006). *Why are smart places getting smarter?* Policy Briefs, PB-2006-2. Cambridge, MA: Taubman Center.
- Gray, J. A. (1987). *The psychology of fear and stress*. Cambridge, England: Cambridge University Press.
- Gummesson, E. (2003). All research is interpretive! *Journal of Business & Industrial Marketing*, 18(6/7), 482-492.
- Hancke, G., Silva, B., & Hancke, G. (2013). The role of advanced sensing in smart cities. *Sensors*, 13(1), 393-425.
- Haque, U. (2012). What is a City that it would be 'smart'. *City Box*, 34, 140-142.
- Harrison, C., & Donnelly, I. A. (2011). A theory of smart cities. In *Proceedings of the 55th Annual Meeting of the ISSS*.
- Hernández-Muñoz, J. M., Vercher, J. B., Muñoz, L., Galache, J. A., Presser, M., Gómez, L. A. H., & Pettersson, J. (2011). Smart cities at the forefront of the future internet. In *The Future Internet Assembly*, 447-462.

- Hevner, A., & Chatterjee, S. (2010). *Design research in information systems: theory and practice* (Vol. 22). New York: Springer Science & Business Media.
- Hielkema, H., & Hongisto, P. (2013). Developing the Helsinki smart city: The role of competitions for open data applications. *Journal of the Knowledge Economy*, 4(2), 190-204.
- Himmelroos, S., & Leino, M. (2015). Does the neighborhood context explain attitudes toward immigration? A study of opinions on immigration in the city of Turku, Finland. *Research on Finnish Society*, 8(1), 33-45.
- Hollands, R. G. (2008). Will the real smart city please stand up? Intelligent, progressive or entrepreneurial? *City*, 12(3), 303-320.
- Hollands, R. G. (2015). Critical interventions into the corporate smart city. *Cambridge Journal of Regions, Economy and Society*, 8(1), 61-77.
- Holotescu, C., Slavici, T., Cismariu, L., Goțiu, L. O. L., Grosseck, G., & Andone, D. (2016). MOOCs for innovative entrepreneurship in smart cities. *World Journal on Educational Technology*, 1-7.
- Hu, X., Chu, T. H., Chan, H. C., & Leung, V. C. (2013). Vita: A crowdsensing-oriented mobile cyber-physical system. *IEEE Transactions on Emerging Topics in Computing*, 1(1), 148-165.
- Hu, X., Li, X., Ngai, E., Leung, V., & Kruchten, P. (2014). Multidimensional context-aware social network architecture for mobile crowdsensing. *IEEE Communications Magazine*, 52(6), 78-87.
- Iacoboaia, C., Luca, O., & Nica, A. M. (2015). Industry in growth poles of Romania. *Urbanism. Arhitectura. Constructii*, 6(1), 57-70.
- INSTAT. (2017). *Statistical Business Register*. Available Online: <http://www.instat.gov.al/en/themes/statistical-business-register.aspx> [Accessed: 25.04.2017].
- Isbasoiu, G. M. (2006). Industrial clusters and regional development: the case of Timisoara and Montebelluna. In *MPRA Paper* (5037).
- Janis, I. L. (1982). *Groupthink*. Boston: Houghton Mifflin.
- Janssen, M., Charalabidis, Y., & Zuiderwijk, A. (2012). Benefits, adoption barriers and myths of open data and open government. *Information Systems Management*, 29(4), 258-268.
- Jäppinen, S., Toivonen, T., & Salonen, M. (2013). Modelling the potential effect of shared bicycles on public transport travel times in Greater Helsinki: An open data approach. *Applied Geography*, 43, 13-24.
- Jin, H., David, B., & Chalon, R. (2013). Novel proxemic interactive platform for sociable public zone in smart city. In *9th International Conference on Intelligent Environments IE'13 (Sociable Smart City 2013 workshop)*, 617-628.
- Jin, J., Gubbi, J., Marusic, S., & Palaniswami, M. (2014). An information framework for creating a smart city through internet of things. *IEEE Internet of Things Journal*, 1(2), 112-121.
- Jollivet, P. (2011). Crowd sourced security, trust & cooperation for learning digital megacities: Valuing social intangible assets for competitive advantage and harmonious development. In *IET International Conference on Smart and Sustainable City (ICSSC 2011)*, 52.
- Joss, S. (2011). Eco-cities: The mainstreaming of urban sustainability—key characteristics and driving factors. *International Journal of Sustainable Development and Planning*, 6(3), 268-285.
- Joss, S., Tomozeiu, D., Cowley, R. (2011). *Eco Cities – A Global Survey 2011*. London: University of Westminster International Eco-Cities Initiatives.
- Kanter, R. M., & Litow, S. S. (2009). *Informed and interconnected: A manifesto for smarter cities*. Cambridge: Harvard Business School General Management Unit Working Paper, 09-141.
- Kapnopoulou, V., Divakaran, P., McMurtry, E., Seo, M., & Yu, L. (2015). The long-term success of coastal eco-city projects: Studying examples from the EU and Asia. *WIT Transactions on the Built Environment*, 148, 189-198.
- Khan, Z., & Kiani, S. L. (2012). A cloud-based architecture for citizen services in smart cities. In *Proceedings of the 2012 IEEE/ACM Fifth International Conference on Utility and Cloud Computing*, 315-320.
- Khansari, N., Mostashari, A., & Mansouri, M. (2013). Impacting sustainable behavior and planning in smart city. *International Journal of Sustainable Land Use and Urban Planning*, 1(2), 46-61.
- Kitchin, R. (2014). Making sense of smart cities: Addressing present shortcomings. *Cambridge Journal of Regions, Economy and Society*, 8(1), 131-136.

- Kleinhans, R., Van Ham, M., & Evans-Cowley, J. (2015). Using social media and mobile technologies to foster engagement and self-organization in participatory urban planning and neighbourhood governance. *Planning Practice & Research*, 30(3), 237-247.
- Knowles, R. D. (2012). Transit oriented development in Copenhagen, Denmark: From the finger plan to Ørestad. *Journal of Transport Geography*, 22, 251-261.
- Komninos, N., Pallot, M., & Schaffers, H. (2013). Special issue on smart cities and the future internet in Europe. *Journal of the Knowledge Economy*, 4(2), 119-134.
- Kvale, S. (1996). The 1,000-page question. *Qualitative Inquiry*, 2(3), 275-284.
- Kvale, S. (2006). Dominance through interviews and dialogues. *Qualitative Inquiry*, 12(3), 480-500.
- Lähdesmäki, T. (2013). Interpretations of cultural identities in the European Capital of Culture events in Turku. *Ethnologia Fennica*, 40, 66-88.
- Lanza, J., Sotres, P., Sánchez, L., Galache, J. A., Santana, J. R., Gutiérrez, V., & Muñoz, L. (2016). Managing large amounts of data generated by a smart city internet of things deployment. *International Journal on Semantic Web and Information Systems (IJSWIS)*, 12(4), 22-42.
- Larsen, H. G., & Hansen, A. L. (2008). Gentrification—gentle or traumatic? Urban renewal policies and socioeconomic transformations in Copenhagen. *Urban Studies*, 45(12), 2429-2448.
- Lea, R., & Blackstock, M. (2014a). City hub: A cloud-based iot platform for smart cities. In *2014 IEEE 6th International Conference on Cloud Computing Technology and Science (CloudCom)*, 799-804.
- Lea, R., & Blackstock, M. (2014b). Smart cities: An iot-centric approach. In *Proceedings of the 2014 International Workshop on Web Intelligence and Smart Sensing*, 1-2.
- Lee, A. S. (1989). A scientific methodology for MIS case studies. *MIS quarterly*, 13(1), 33-50.
- Lee, A. S. & Baskerville, R. L. (2003). Generalizing generalizability in information systems research. *Information Systems Research*, 14(3), 221-243.
- Lee, J. H., Hancock, M. G., & Hu, M. C. (2014). Towards an effective framework for building smart cities: Lessons from Seoul and San Francisco. *Technological Forecasting and Social Change*, 89, 80-99.
- Lee, J., & Lee, H. (2014). Developing and validating a citizen-centric typology for smart city services. *Government Information Quarterly*, 31, S93-S105.
- Leminen, S., & Westerlund, M. (2017). Categorization of innovation tools in living labs. *Technology Innovation Management Review*, 7(1), 15-25.
- Letaifa, S. B. (2015). How to strategize smart cities: Revealing the SMART model. *Journal of Business Research*, 68(7), 1414-1419.
- Lévy, P. (1994). *L'intelligence collectif [Collective intelligence]*. Paris: La Découverte.
- Lombardi, P. (2011). New challenges in the evaluation of smart cities. *Network Industries Quarterly*, 13(3), 8-10.
- Lombardi, P., Giordano, S., Caragliu, A., Del Bo, C., Deakin, M., Nijkamp, P., . . . Farouh, H. (2011). An advanced triple-helix network model for smart cities performance. In Y. Ozge (Ed.), *Green and ecological technologies for urban planning: creating smart cities* (pp. 59-73). Hershey, PA: IGI Global.
- Lombardi, P., Giordano, S., Farouh, H., & Yousef, W. (2012). Modelling the smart city performance. *Innovation: The European Journal of Social Science Research*, 25(2), 137-149.
- Macintosh, A., & Coleman, S. (2003). *Promise and problems of e-democracy: Challenges of online citizen engagement*. Paris: OECD Publication Service.
- Malhotra, A., Melville, N. P., & Watson, R. T. (2013). Spurring impactful research on information systems for environmental sustainability. *MIS Quarterly*, 37(4), 1265-1274.
- Marsal-Llacuna, M.-L., Colomer-Llinàs, J., & Meléndez-Frigola, J. (2015). Lessons in urban monitoring taken from sustainable and livable cities to better address the Smart Cities initiative. *Technological Forecasting and Social Change*, 90(B), 611-622.
- 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.
- Mingione, E., & Oberti, M. (2003). The struggle against social exclusion at the local level. *European Journal of Spatial Development*, 1.

- Mirri, S., Prandi, C., Salomoni, P., Callegati, F., & Campi, A. (2014). On combining crowdsourcing, sensing and open data for an accessible smart city. In *2014 Eighth International Conference on Next Generation Mobile Apps, Services and Technologies (NGMAST)*, 294-299.
- Mirri, S., Prandi, C., Salomoni, P., Callegati, F., Melis, A., & Prandini, M. (2016). A service-oriented approach to crowdsensing for accessible smart mobility scenarios. *Mobile Information Systems*, 2016.
- Mitton, N., Papavassiliou, S., Puliafito, A., & Trivedi, K. S. (2012). Combining cloud and sensors in a smart city environment. *EURASIP Journal on Wireless Communications and Networking*, 2012(1), 247.
- Mollick, E. (2014). The dynamics of crowdfunding: An exploratory study. *Journal of Business Venturing*, 29(1), 1-16.
- Mulligan, C. E., & Olsson, M. (2013). Architectural implications of smart city business models: An evolutionary perspective. *IEEE Communications Magazine*, 51(6), 80-85.
- Municipality of Helsingborg. (2012). *Energy strategy 2035 - a short version*. Available Online: http://www.helsingborg.se/wp-content/uploads/2015/02/Energy_strategy_2035_and_Environment_programme_for.pdf [Accessed: 25.03.2017].
- Municipality of Helsingborg. (2016). *About Helsingborg*. Available Online: <https://helsingborg.se/toppmeny/english/about-helsingborg/> [Accessed: 19.05.2017]
- Municipality of Tirana. (2016). *Go Tirana - Major's Word*. Available Online: <http://tiranasmart.city/> [Accessed: 20.03.2017].
- Municipality of Turku. (2014). *Turku 2029*. Available Online: https://www.turku.fi/sites/default/files/atoms/files//kaupunkistrategia2029_weben.pdf [Accessed: 15.03.2017].
- Nadolu, B., Dinca, M., & Luches, D. (2010). *Urban shrinkage in Timisoara, Romania*. Available Online: https://www.ufz.de/export/data/400/39018_WP2_20report_20Timisoara13639.pdf [Accessed: 13.03.2017].
- Nam, T., & Pardo, T. A. (2011a). Conceptualizing smart city with dimensions of technology, people, and institutions. In *Proceedings of the 12th Annual International Conference: Digital Government Research*, 282-291.
- Nam, T., & Pardo, T. A. (2011b). Smart city as urban innovation: Focusing on management, policy, and context. In *Proceedings of the 5th International Conference on Theory and Practice of Electronic Governance*, 185-194.
- Nathan, M., Vandore, E., & Whitehead, R. (2012). *A tale of Tech City: The future of inner east London's digital economy*: London: Centre for London.
- Newell, A., & Simon, H. A. (1972). *Human problem solving* (Vol. 104). Prentice-Hall Englewood Cliffs, NJ: Organisation for Economic Co-operation and Development.
- Orlikowski, W. J., & Baroudi, J. J. (1991). Studying information technology in organizations: Research approaches and assumptions. *Information Systems Research*, 2(1), 1-28.
- Papa, R., Gargiulo, C., & Galderisi, A. (2013). Towards an urban planners' perspective on smart city. *TeMA Journal of Land Use, Mobility and Environment*, 6(01), 5-17.
- Partridge, H. L. (2004). Developing a human perspective to the digital divide in the smart city. In *Australian Library and Information Association Biennial Conference*. Gold Coast, Queensland, Australia.
- Partridge, H. L. (2007). Redefining the digital divide in the 'smart state'. In *Proceedings of the Thirteenth Australasian World Wide Web Conference*. The Southern Cross University, Coffs Harbour, NSW.
- Paskaleva, K. A. (2009). Enabling the smart city: The progress of city e-governance in Europe. *International Journal of Innovation and Regional Development*, 1(4), 405-422.
- Paskaleva, K. A. (2011). The smart city: A nexus for open innovation? *Intelligent Buildings International*, 3(3), 153-171.
- Perera, C., Zaslavsky, A., Christen, P., & Georgakopoulos, D. (2014). Sensing as a service model for smart cities supported by internet of things. *Transactions on Emerging Telecommunications Technologies*, 25(1), 81-93.

- Piro, G., Cianci, I., Grieco, L. A., Boggia, G., & Camarda, P. (2014). Information centric services in smart cities. *Journal of Systems and Software*, 88, 169-188.
- Pllumbi, D. (2013). Mirroring Tirana reflections on Tirana's urban context and perspectives. *European Journal of Sustainable Development*, 2(4), 73-84.
- Plumb, D., Leverman, A., & McGray, R. (2007). The learning city in a 'planet of slums'. *Studies in Continuing Education*, 29(1), 37-50.
- Pojani, D. (2010). Tirana: City profile. *Cities*, 27(6), 483-495.
- Popa, N., & Veschambre, V. (2008). Economic development and urban regeneration in Romania: The example of Timisoara city. *Roman Review on Political Geography*, 10(2), 40-53.
- Porter, M. E. (2000). Location, competition, and economic development: Local clusters in a global economy. *Economic Development Quarterly*, 14(1), 15-34.
- Pouryazdan, M., Kantarci, B., Soyata, T., & Song, H. (2016). Anchor-assisted and vote-based trustworthiness assurance in smart city crowdsensing. *IEEE Access*, 4, 529-541.
- Prasopoulou, E. (2017). A half-moon on my skin: A memoir on life with an activity tracker. *European Journal of Information Systems*, 26(3), 287-297.
- Quirino, W. S., Santos, C. A., Calles, J. X., & Tinelli, F. (2016). Crowdsourcing strategies for smart cities applications. In *Proceedings of the XII Brazilian Symposium on Information Systems on Brazilian Symposium on Information Systems: Information Systems in the Cloud Computing Era*, 1, 67.
- Radoslav R., Gaman M. S., Morar T., Ștefana B., Branea A. M. (2012). Sustainable urban development through the empowering of local communities. In C. Ghenai (Ed.), *Sustainable development - Policy and urban development - tourism, life science, management and environment* (pp. 41-66). Rijeka, Croatia: InTech.
- Rangvid, B. S. (2006). Living and learning separately? Ethnic segregation of school children in Copenhagen. *Urban Studies*, 44(7), 1329-1354.
- Rangvid, B. S. (2007). Sources of immigrants' underachievement: Results from PISA—Copenhagen. *Education Economics*, 15(3), 293-326.
- Ratti, C., & Townsend, A. (2011). The social nexus. *Scientific American*, 305(3), 42-48.
- Recker, J. (2012). *Scientific research in information systems: a beginner's guide*. Heidelberg: Springer Science & Business Media.
- Roitman, H., Mamou, J., Mehta, S., Satt, A., & Subramaniam, L. (2012). Harnessing the crowds for smart city sensing. In *Proceedings of the 1st International Workshop on Multimodal Crowd Sensing*, 17-18.
- Sanchez, L., Muñoz, L., Galache, J. A., Sotres, P., Santana, J. R., Gutierrez, V., . . . Theodoridis, E. (2014). SmartSantander: IoT experimentation over a smart city testbed. *Computer Networks*, 61, 217-238.
- Sava, C., & Coroamă, L. (2010). Aspects of urban tourism and its educational implications in the city of Timisoara. In *Proceedings of the 5th WSEAS International Conference on Economy and Management Transformation*, 568-573.
- Schaffers, H., Komninos, N., Pallot, M., Trousse, B., Nilsson, M., & Oliveira, A. (2011a). Smart cities and the future internet: Towards cooperation frameworks for open innovation. In *Future Internet Assembly*, 431-446.
- Schaffers, H., Sällström, A., Pallot, M., Hernández-Muñoz, J. M., Santoro, R., & Trousse, B. (2011b). Integrating living labs with future internet experimental platforms for co-creating services within smart cities. In *2011 17th International Conference on Concurrent Enterprising (ICE)*.
- Schaffers, H., & Turkama, P. (2012). Living Labs for cross-border systemic innovation. *Technology Innovation Management Review*, 2(9), 25-30.
- Schultze, U., & Avital, M. (2011). Designing interviews to generate rich data for information systems research. *Information and Organization*, 21(1), 1-16.
- Schuurman, D., Baccarne, B., De Marez, L., & Mechant, P. (2012). Smart ideas for smart cities: Investigating crowdsourcing for generating and selecting ideas for ICT innovation in a city context. *Journal of Theoretical and Applied Electronic Commerce Research*, 7(3), 49-62.
- Schuurman, D., De Moor, K., De Marez, L., & Evens, T. (2011). A living lab research approach for mobile TV. *Telematics and Informatics*, 28(4), 271-282.

- Shapiro, J. M. (2006). Smart cities: Quality of life, productivity, and the growth effects of human capital. *The Review of Economics and Statistics*, 88(2), 324-335.
- Söderström, O., Paasche, T., & Klauser, F. (2014). Smart cities as corporate storytelling. *City*, 18(3), 307-320.
- Srinivas, S., & Viljamaa, K. (2008). Emergence of economic institutions: Analysing the third role of universities in Turku, Finland. *Regional Studies*, 42(3), 323-341.
- Strickland, E. (2011). Cisco bets on South Korean smart city. *IEEE Spectrum*, 48(8), 11-12.
- Sun, Y., Song, H., Jara, A. J., & Bie, R. (2016). Internet of things and big data analytics for smart and connected communities. *IEEE Access*, 4, 766-773.
- Surowiecki, J. (2004). *The wisdom of crowds: Why the many are smarter than the few and how collective wisdom shapes business, economies, societies and nations*. The New Republic. Available Online: <https://www3.nd.edu/~busiforc/handouts/Other%20Articles/Wisdom%20of%20Crowds%20Review%202.PDF> [Accessed: 18.05.2017].
- Tajfel, H. (1974). Social identity and intergroup behaviour. *Social Science Information*, 13(2), 65-93.
- Theodoridis, E., Mylonas, G., & Chatzigiannakis, I. (2013). Developing an iot smart city framework. In *2013 Fourth International Conference on Information, Intelligence, Systems and Applications (iisa)*.
- Thomas, V., Wang, D., Mullagh, L., & Dunn, N. (2016). Where's Wally? In search of citizen perspectives on the smart city. *Sustainability*, 8(3), 207.
- Tirrell, D., & Belci, D. (2011). Timisoara: The historic city as a starting point for post-communist sustainable urban development. *City & Time*, 5(1), 43-47.
- Torpe, L. (2003). Social capital in Denmark: A deviant case? *Scandinavian Political Studies*, 26(1), 27-48.
- Triantis, L. U. (2008). *Urban change and the production of space: The case of urban renewal in Tirana (2000-2008)*. Paper presented at the workshop "Bringing the city together", Tirana, Albania, October 3-10, 2008.
- Trope, Y., & Liberman, N. (2010). Construal-level theory of psychological distance. *Psychological Review*, 117(2), 440-463.
- Turku Science Park. (2017). Turku science park - innovate to accelerate. Available Online: <http://www.turkusciencepark.com/en/> [Accessed: 18.05.2017].
- Tversky, A., & Kahneman, D. (1975). Judgment under uncertainty: Heuristics and biases. *Science*, 185, 1124-1131.
- Valdaliso, J. M., & Wilson, J. R. (2015). *Strategies for shaping territorial competitiveness*. New York: Routledge.
- Vanolo, A. (2014). Smartmentality: The smart city as disciplinary strategy. *Urban Studies*, 51(5), 883-898.
- Veeckman, C., & Van Der Graaf, S. (2014). The city as living laboratory: A playground for the innovative development of smart city applications. In *2014 International ICE Conference on Engineering, Technology and Innovation (ICE)*.
- Viitanen, J., & Kingston, R. (2014). Smart cities and green growth: Outsourcing democratic and environmental resilience to the global technology sector. *Environment and Planning A*, 46(4), 803-819.
- Walravens, N. (2015). Mobile city applications for brussels citizens: Smart city trends, challenges and a reality check. *Telematics and Informatics*, 32(2), 282-299.
- Walsham, G. (2006). Doing interpretive research. *European Journal of Information Systems*, 15(3), 320-330.
- Westerlund, M., & Leminen, S. (2011). Managing the challenges of becoming an open innovation company: Experiences from living labs. *Technology Innovation Management Review*, 1(1), 19-25.
- Wu, F. J., & Luo, T. (2014). WiFiScout: A crowdsensing WiFi advisory system with gamification-based incentive. In *2014 IEEE 11th International Conference on Mobile Ad Hoc and Sensor Systems (MASS)*.
- Yin, R. K. (2011). *Qualitative research from start to finish*. New York: Guilford Publications.