

Technische Universität Berlin (TU Berlin) - Institute for Urban and Regional Planning

Enhancing Citizen Engagement in Urban Planning Processes through Mobile Participation (mParticipation)



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Abstract

The Internet as a low-threshold communication channel provides the possibilities to exchange knowledge, communicate with each other and act outside of the traditional frameworks to nearly everybody around the globe. Therefore, digitalization processes, resulted by diffusion of information and communication technologies, might have massively transformed the contemporary urban settings. The essential elements in this contemporary urban setting are flow of communication and information exchange that are happening through networks. Recently, the widespread of smartphones and tablets with their unique features (e.g. embedded sensors, multi-channel communication, high-speed mobile Internet, intuitive design and portability) have changed the interaction of citizens in and with the urban environment. Furthermore, the new science of cities understands cities as dynamic setting embedded with flows and networks between individual actors and the urban environment, which entails urban planning as a collective process. This indicates that the planning approach has experienced that beside top-down approaches, bottom-up perspective in decision making processes is occurring. Given this fact, today it is no longer the question whether the public should be involved, but rather with which methods a broader spectrum of citizens can cooperate in planning processes. Thus, the participatory methods should be evolved aligned with the new characteristics of the contemporary urban settings and utilize the potentials offered by mobile technologies to enhance the citizen engagement processes in urban planning. Hence, this project's goal is to investigate a relatively new emerging form of participation as Mobile Participation (mParticipation), which refers to the use of mobile devices (mobile phones, smart phones and tablets) in participation processes.

This research, at the first step, endeavors to study the relevance, advantages, disadvantages and specific characteristics of mParticipation. In the next step, the influence of utilizing mobile technologies on communication between different actors, flow of information as well as citizens' network (as the essential elements in the contemporary urban settings) are studied. Finally, the influence of utilizing mobile technologies (smart phones and tablets) on the output and quality of output is investigated. Doing that, a comprehensive literature review on current debates in digitalization in urban settings (smart cities), citizen engagement in urban planning discourse (collaborative planning) and characteristics of citizen engagement in the age of information and technology (electronic participation mobile participation) has been conducted. In order to investigate the mParticipation from practical aspects and processes, several mParticipation projects from USA as well as Europe are evaluated and field tests (using FlashPoll application) are carried out in Berlin. These analyses are enriched by 15 expert interviews (from USA and Germany). The results of this research project elaborate the potentials, limitations and characteristics of mParticipation in urban planning. In addition, the influences of mParticipation on information flow, communication between stakeholders, the network of citizens and quality of participation outputs are clarified. Although, mParticipation offers new and unique opportunities to urban planning processes, the results of this research shows that there is still room for knowledge generation in this field of study. In addition, the continuous technological advancement in the field of mobile technologies shapes mParticipation field as a dynamic field of research.

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Chapter I - Introduction

1.1 Problem rationale

It is clear that the twenty-first century can be called the urban century as a large proportion of population will be living in major urban agglomerations, which are the hub of economic activities (Pahl-Weber and Schwartz 2014). This calls researchers to investigate variety of topics regarding urban areas. During the last several years, the concept of smart cities has received considerable attention from researchers (in the field of urban development), urban authorities as well as private companies. This has influenced the debate on the future of urban development not only in developed countries, but also in developing countries (e.g. 100 Smart Cities Program in India). Anthony M. Townsend (2013) explains the importance of smart city concept in light of urbanization and ubiquity of Internet. He underlines three historic thresholds that global civilization reached by 2008. First, urban population equaled the rural population of the World declared by the United Nation. Second, for the first time, the number of Internet users beaming down over the airwaves exceeded those using cable connections. This means the number of mobile cellular broadband subscribers exceeded the fixed-DSL, cable or fiber-optic lines. The explanation for this shift is basically the rapid spread of cheap mobile devices in the developing world, as the mobile web has already won against the fixed Internet connections. The transition away from wired devices is almost completed and the mobile phone is the most successful electronic device of all times. The last point is the transformation of the Internet of people to the Internet of Things (IoT), as there are more and more sensors and networked devices connected to the Internet, that communicate a huge volume of data through cyberspace. Thus, the essential elements in this contemporary urban setting are flow of communication and information exchange that are happening through networks (Castells, 1996). Given the Internet as a low-threshold communication channel, nearly everybody around the globe can instantly and permanently exchange information and knowledge with others (Drohsel et al., 2010). This has resulted in humans' abilities to share and act in a collective way outside the institutional and organizational frameworks of traditions (Shirky, 2008) and independent of the location. The mentioned processes go under the umbrella of the digitalization process, which influenced the transformation of cities and urban societies towards smart cities and mobile society.

In parallel, the urban planning approaches as a tool or process to plan and design the cities has been transformed during the last decades. This transformation can be seen from the perspective of how the way we understand cities— or science of cities. The systematic view on cities was developed nearly half a century ago, in which cities are defined as a collection of different entities, interacting with each other in a balanced situation. This view brought about a mentality that cities can be controlled, planned and managed with top-down forces. The shortcomings of this closed view were soon identified as scholars understood that cities are more than just mechanical systems (Batty, 2013). The rise of the sciences of complexity altered the top-down view of the systems theory to a bottom-up view. In this later view, cities are considered as biological system, which is open and based on dynamic evolutionary processes (Portugali, 2000). This change in focus is later demonstrated in the new planning theories in which planning is regarded as a process of learning with a larger group of individuals (community) and later as a process of argumentation and negotiation which

became the dominant contemporary planning theory (Forester, 2009; Healey, 1997). The reasons for doubting the certainty of scientific rationality in dealing with cities were the apparent failure of the systematic approach in defining a controllable base for planning theories in combination with the discrepancy existing between theory and practice as well as problems and solutions. Therefore, a view of planning incorporating the complexity of pluralism in cities, uncertainty in urban systems and valuing the ability of society in solving problems has become an accepted norm. Therefore, the new science of cities understands cities as dynamic setting embedded with flows and networks between individual actors and the urban environment. In this sense, planning of cities is collective action rather than individual action, which means that consensus about the future of a city must be reached by pooling diversity of opinions (Batty, 2013). This transformation process in urban planning from master planning (systematic view) to collaborative planning (network view) has yielded to the dominance of participatory urban planning in recent decades. Hence, today it is no longer the question whether the public should be involved, but rather how and with which methods a broader spectrum of citizens can participate in planning processes.

During the last decade, urban authorities, planners and researchers have tried to use the vast opportunities offered by Information and Communication Technologies (ICT) in order to deal with the challenges of current participatory methods and align citizen participation with the society's change. Therefore, the notion of Electronic Participation (eParticipation) has been developed and now is being more applied in real world projects. Among all ICT possibilities and technology forms, mobile technologies (smartphones, tablets) are often cited as the pioneers of future technologies in various fields. In the context of smart cities, mobile technologies are known as an inseparable part of citizens' urban life, which in the meantime, provide vast opportunities for real-time data collection as well as participation. These new forms of collaborative social interaction (as getting mobile) have revolutionized our information and knowledge society and call for a fundamental change in the government's approach toward more collaborative and bottom-up principles. As a relatively new emerging term, Mobile Participation (mParticipation) refers to the use of mobile devices (e.g. mobile phones, smart phones and tablets) in participation processes. Therefore, this project focuses on these types of ICT and aims to investigate the chances offered by mobile technologies (smartphones and tablets) for engaging citizens in the planning of smart cities and overcoming the barriers and challenges of traditional citizen participation.

1.2 State of the art and necessity for the research

During the last decade, a great deal of experience has been gathered in the field of eParticipation in research and practice. For instance, the definition of eParticipation and its relation to other concepts (Tambouris *et al.*, 2007b; Macintosh, 2004, 2006; OECD, 2003; Albrecht *et al.*, 2008), the opportunities of eParticipation for mobilizing citizens in urban governance processes and enhancing transparency of decision-making processes (Surowiecki, 2005; Noveck, 2009; Smith *et al.*, 2009; Weber *et al.*, 2003; Gibson *et al.*, 2005; Boulianne, 2009; Bekkers and Homburg, 2007; Seifert and Peterson, 2002), easy implementation and cost-effectiveness of eParticipation (Shirky, 2008; Noveck, 2009) as well as the challenges and barriers of eParticipation (Silva, 2013) are well researched.

However, as an emerging field in the participation discourse, mParticipation lines of research are limited in number. Most of the literature is reports and conference papers, which focus on defining mParticipation and explore mobile apps possibilities in urban development and participation discourse (Ertiö, 2013; Lahti *et al.*, 2006b; Drohsel *et al.*, 2010; Höffken and Streich, 2011; Wimmer *et al.*, 2013). Only a few book chapters and articles in scientific journals exists (e.g. Höffken and Streich, 2013; Evans-Cowley, 2011b; Desouza and Bhagwatwar, 2012; Ertiö, 2015; Ertiö and Ruoppila, 2014). For instance, Höffken and Streich (2013) describe mParticipation concept and some related concepts in a chapter. More recently, Ertiö (2015) categorizes the participatory apps in the context of urban planning and their contribution to participation research. In another paper, Kleinhans and his colleagues (2015) explore social media and mobile technologies in urban planning. These recent articles indicate the growing attention towards mParticipation in urban planning as a dynamic field of research. Nevertheless, they did not deeply investigate this topic from planning theory perspectives. This shows a clear need for this research in order to fill this gap.

1.3 Objectives and research questions

The main objective of this research is to study mParticipation (as a form of participation in smart cities) from urban planning perspective. By focusing on theoretical and practical aspects, its possible influences on the recent urban planning discourse is explored. From the theoretical background, this project focuses on collaborative planning (Innes and Booher, Pasty Healey) based on Habermas theory of communicative actions and the theory of information age and network society by Castell.

Given the limited lines of research on mParticipation from the planning perspective, the first research question is focused on exploring mParticipation from the urban planning perspective. Therefore, the first research question (RQ1) is **how mParticipation is positioned in participatory urban planning discourse?** In order to answer this research question, themes such as the relevance of mParticipation, advantages and disadvantages of mParticipation as well as specific characteristics of mParticipation are investigated.

The importance of citizen participation in the context of smart cities has been emphasized in previous studies (e.g. Albino *et al.*, 2015). Furthermore, mobile technologies are inseparable parts of smart cities. Therefore, the second research question (RQ2), which is dedicated to exploring the effect of mobile technologies on participatory urban planning, asks **how can mobile technologies (smartphones and tablets) support participatory urban planning in the contemporary urban settings (smart cities)?** To answer this question, the influence of utilizing mobile technologies on communication between different actors, flow of information as well as citizens' network is studied.

The outcome of participatory urban planning processes is an important aspect and have been investigated by different scholars. However, the effect of using ICT (specifically mobile technologies) can result in different quality of outputs or even provide new kinds of output. Therefore, the last research question (RQ3) is focused on **how can utilizing mobile technologies (smart phones and tablets) influence the output of citizen participation in urban planning processes?**

1.4 Research design and methodology

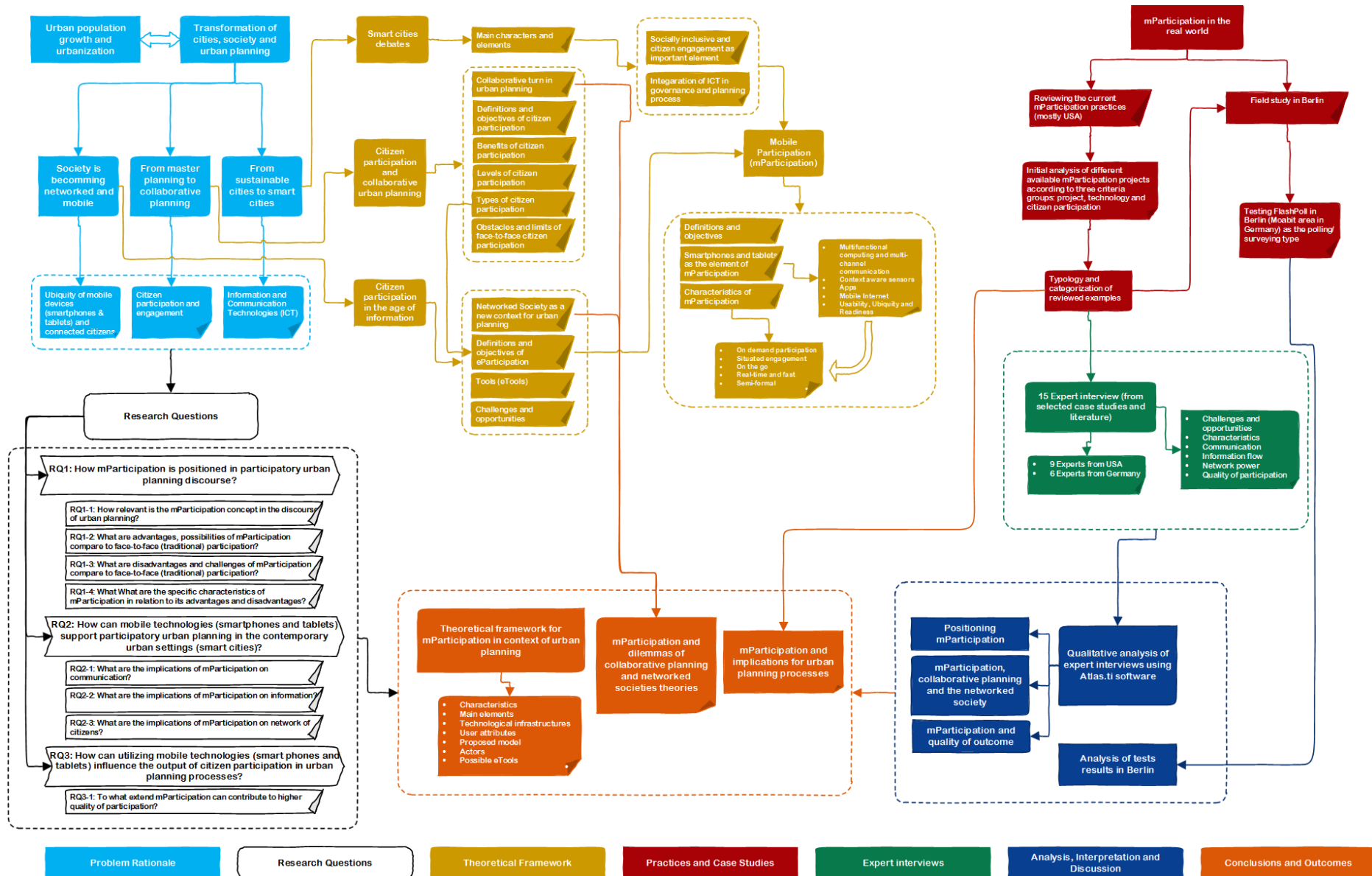
This research project is an exploratory research, as it endeavors to determine the mParticipation possibilities, challenges and its implications for collaborative planning in the age of ICT. However, empirical research in forms of a case study and experiments has been conducted in order to generate primary data and add experiences from the field. A range of secondary resources (library research, Internet search, etc.) and primary resources are gathered in data collection step. From the methodological perspective, this research is designed to be a qualitative research. Expert interview and case study methods are used for gathering information. In total, 15 expert interviews were conducted during the project. The collected data from expert interviews is analyzed with the ATLAS.ti software, which is a computer tool for qualitative analysis and is used in different research fields. The case study of this project is one mParticipation applications called “Flashpoll”, which is developed in the Center for Technology and Society of Technische Universität Berlin. Three tests (polls) have been conducted in the area of West Moabit Berlin within a period of four months.

Figure 1 shows the research design. First, an extensive literature review has been conducted on the topics of smart cities, collaborative urban planning, citizen participation, eParticipation and mParticipation in order to form a theoretical framework for the research. Here, the focus of the literature review part is mostly on English and German literature. This literature review provides the background information and related theories and concepts for next research steps. The literature review is followed by a comprehensive study on existing examples of mParticipation and previous research projects (mostly from the USA). These examples are systematically analyzed according to a set of criteria related to the project characteristics, technical features and citizen participation aspects. This provides an overview on the current status quo of mParticipation projects with focus on urban planning. Based on this initial overview, a typology of mParticipation is developed that is later used in the further discussion.

In the next step, the Flashpoll is tested in the West Moabit area in Berlin in order to investigate the challenges and opportunities in the real world. The empirical experiences gathered from this case study and implemented tests provide an added value to the research project. In parallel, expert interviews are conducted in order to generate information and knowledge for describing the mParticipation concept and its implications for collaborative urban planning in the age of ICT. The detail information on the expert interviews will be elaborated in section 4.1.1.

Finally, the results are analyzed, discussed and interpreted in the last chapter. The expert interviews are analyzed using ATLAS.ti software, which its details of analysis are described in section 4.3. Based on the interpretations and discussions from the previous step in addition to the comparison with what is found from the literature review, the conclusions and outcomes of this research are generated. The main outcomes of this research are formulated

Figure 1 Research design (process)



in three aspects: a theoretical framework for mParticipation in the context of urban planning, mParticipation and the new dilemmas of collaborative planning as well as implications of mParticipation for urban planning processes and outputs. These three aspects incorporate the answers of the three research questions.

1.5 Limitation of the research

The general topics of this research are smart cities, collaborative urban planning, ICT supported citizen participation (e/mParticipation). However, the main focus is on mParticipation concept specifically in the context of urban planning. Therefore, the examples reviewed in this research are examples from urban planning field. This excludes mobile applications and projects related to other topics such as mobility, governance, urban management, environmental planning, etc. Hence, a limited literature is used this research.

Another limitation of this research is related to the language of the existing research. The literature review covered mostly international (English) materials (specifically in the smart cities debates), which to some extent excludes German literature. However, the researcher endeavors to reduce this limitation by adding a few but important works of German literature as well as by interviewing experts from Germany.

In terms of the expert interviews, the first limitation was the lack of possibility for conducting face-to-face interviews. As most of the experts working in the same or similar field of research as this study are living across the world and most of the time in the USA, the researcher could not conduct face-to-face interviews. In addition, the time difference between countries was an inconvenience for the arrangement of meeting at a time, which suited both the researcher and interviewee. Such geographical limitations might have influenced the quality of the interviews.

Another limitation is the lack of interviews with citizens and urban authorities as another group of actors involved in mParticipation processes. This limitation was due to the required time and workload, which were out of the scope of this research. Moreover, as an exploratory research based on qualitative methods, the focus of this work is on exploring possibilities, challenges, and implications of mParticipation in citizen participation, collaborative planning and smart cities. Therefore, the conclusions should be tested furthermore in other cases.



Chapter II- Mobile Participation in participatory urban planning of smart cities

2.1 Citizen participation in smart cities discourse as future form of urban transformation

This section investigates the development of the smart cities discourse during the last decades in order to highlight important aspects of this concept. Doing that, the definition of smart cities, the critical discussions as well as the main characteristics and dimensions are reviewed and investigated.

2.1.1 Smart cities or “Buzz” word? Conceptual definitions of smart cities and criticisms

The concept of the smart city has been fashionable in the policy arena in the last two decades and has influenced the debate on the future of urban development in many Western countries (Caragliu *et al.*, 2011; Hollands, 2008; Coe *et al.*, 2001; Komninos, 2002; Paskaleva, 2009; Albino *et al.*, 2015). The term “smart city” was first used in the 1990s, when the focus of this concept was on the significance of the new ICT with regard to modern infrastructures within cities. The California Institute for Smart Communities was among the pioneers to start finding ways on how communities could become smart and find design prerequisites for a city to embed ICT (Alawadhi *et al.*, 2012). Later, the Center of Governance at the University of Ottawa criticized the idea of smart cities as being too technical-oriented. In contrast, they believed that the smart city should have a strong governance-oriented approach, which underlines the role of social capital and relations in urban development. The “smart city” label spread vastly in the first years of the current century as an “urban labeling” phenomenon (Albino *et al.*, 2015).

Accordingly, numerous cities in different countries are appointed as smart, while emphasizing different scopes. For instance, ICTs are majorly considered as elements in safeguarding the success of San Diego as a “City of the Future”, while the “Smart Communities” initiative in Canada was financed through the industry including Ottawa’s “Smart Capital” project, which encompassed enhancing business, local government and communities’ use of Internet resources (Hollands, 2008). In Europe, the Amsterdam Smart City initiative concentrated on the importance of collaboration between the citizens, the government and businesses to develop smart projects in order to save energy. The city of Edinburgh council elaborated a smart city vision and an action plan for government transformation. Another example is Malta city that promotes a “business park” in order to increase economic growth (Paskaleva, 2011; Caragliu *et al.*, 2011). In south-east Asia, Singapore targeted an “Intelligent Island” with its IT2000 plan, which applies information technology to transform work, life and play (Wei Choo, 1997).

Yet, researchers believe that “smart city” as a label is a fuzzy concept and they attempt to scrutinize the background of this concept (Nam and Pardo, 2011, Caragliu *et al.*, 2011, 2011; Hollands, 2008; Deakin and Al Waer, 2011; Albino *et al.*, 2015). Robert Hollands (2008) is one of the first researchers, who criticized self-congratulatory and self-designated nature of smart city concept in his article ‘Will the real smart city please stand up?’. He explains three difficulties in defining smart city. First of all, it is difficult to differentiate between new city

discourses like smart, intelligent, innovative, wired, digital, creative, and cultural as they often borrow one another's assumptions and sometimes they even conflate with each other. Secondly, such urban labelling is mostly used for marketing purposes rather than for providing actual and needed infrastructures to foster the concept. Finally, many of these terms often convey a natural impression of a positive and rather uncritical stance towards urban development. Therefore, the question is: which city does not intend to be smart, intelligent, creative or cultural? (Hollands, 2008)

In addition to these definitional problems, Hollands mainly argues that the focus on the development of the new technological and networked infrastructures may lead to underestimating of the possible negative effects of such technologies. Furthermore, the prejudice against the smart city discourse may strategically result in ignoring other promising alternatives approaches toward urban development (Hollands, 2008). Caragliu and his colleagues criticize the smart city concept in relation to the previous economics and planning approaches. They took the critiques of Hollands to the next level and tried to quantify the ranking of smart cities in Europe according to six axes connecting with traditional regional and neoclassical theories of urban growth and development (Caragliu *et al.*, 2011).

Paskaleva (2011) critically reviews European trends towards smart cities in the context of open innovation as the social related aspect of the smart city concept. She emphasizes the considerable effect of open innovation-driven approaches on creating smart cities in Europe, however, it is still needed to develop the levers to enable more effective implementation of the strategies (Paskaleva, 2011). In another study, Deakin and Al Waer reflect upon the existing anxieties over the smart city concept referring to Hollands' criticisms. In particular, they agree with Hollands that such developments have focused more on meeting the corporate needs of marketing campaigns rather than the social intelligence required for the cities to be smart. Therefore, they consider the smart city discourse as a transition of the intelligent city debate. They emphasize the role of e-learning platforms, knowledge transfer, and capacity building together with the networks of innovation and creative partnerships (Deakin and Al Waer, 2011).

Alongside the aforementioned critiques about the smart city, there is another concern. The smart city agenda and associated technologies are being dominated and overtly shaped by a number of the world's largest software services and hardware companies (e.g. IBM, Cisco Systems, and Siemens AG), who view city governance as a large, long-term potential market for their products (Greenfield, 2013; Townsend, 2013). Their approach has recently been critiqued by authors such as Adam Greenfield. He argues (2013) that "corporate-designed cities such as Songdo (Korea), Masdar City (UAE), or PlanIT Valley (Portugal) eschew actual knowledge about how cities function and represent "empty" spaces that disregard the value of complexity, unplanned scenarios, and the mixed uses of urban space" (Greenfield, 2013; Albino *et al.*, 2015, p. 6). Schaffers *et al.* similarly note that "smart city solutions are currently more vendor push than city government pull based", with companies working to build working relationships, put in place favourable market conditions, divert funding streams and create public-private partnerships" (Schaffers *et al.*, 2011, p. 437).

In spite of all these critical views on the smart city concept, several scholars have attempted to show that technology could be deployed in cities in order to empower citizens by adapting those technologies to their needs rather than changing their routine lives according to technological requirements (Vanolo, 2014; Kitchin, 2014; Deakin and Al Waer, 2011; Eger, 2009). Doing that, scholars have tried to illustrate the smart city concept in the last two decades. Tracing the genealogy of the word smart in the label smart city, Nam and Pardo (2011) study the application of the term “smart” in literature according to different contexts. In the marketing context, “smart” is more user-friendly than intelligent, which is limited to having a quick mind and being responsive to feedback; therefore, the smart city had to adapt itself to user needs and provide customized interfaces (Marsá-Maestre *et al.*, 2008; Nam and Pardo, 2011, p. 283).

In the technology context, smartness similarly reflects on automatic computing principles like self-configuration, self-healing, self-protection, and self-optimization (Spangler *et al.*, 2010; Nam and Pardo, 2011, p. 283). In this sense, smart homes, smart buildings, and larger smart units like airports, hospitals or university campuses are provided with a variety of mobile terminals and embedded devices as well as connected sensors (Klein and Kaefer, 2008). Scaling up such units, Yovanof and Hazapis define smart ecosystems as a conceptual extension of smart space from the personal context to the larger community and the entire city (Yovanof and Hazapis, 2009). In addition to these terminological aspects of the smart city concept, Albino and his colleagues recently investigated the different definitions and meanings that were given to the concept of smart city by different scholars since the millennium.

The different definitions presented in Annex 1, underline an important turn of the focus of the smart city concept. Hence, the smart city concept has no longer the sole focus on the deployment of ICT within city, but it also considers the needs of citizens and urban communities as well as environmental concerns. In other words, the diffusion of the ICT in cities should contribute to improving operation of every subsystem of a city, aiming at enhancing the quality of life of the citizens (Batty *et al.*, 2012).

The various keywords that are used in describing the smart city concept additionally highlight the frequent use of terms such as “ICT deployment”, “connectivity of city infrastructure (interconnectedness)”, “quality of life”, “economic development”, “optimized resource usage”, “sustainability and environmental sensibility”, “innovation and creative economy”, “human and social capital”, “governance and participation of citizens”. Such diverse terms with different theoretical and practical prerequisites emphasize again the fact that the smart city concept is still ambiguous and borrows all the attributes of concepts like digital cities, intelligent cities, creative cities and sustainable cities (what the scholars had criticized about smart cities).

Figure 3 Distinctions within smart cities definitions and the role of ICT (adapted from Kitchin, 2014)



On the other side, the concept of a smart city as a whole is seen to rely on the development of a knowledge economy within a city-region (Kourtit *et al.*, 2012). In this reading, economy and governance of a smart city is being driven by innovation, creativity and entrepreneurship, acted out via smart people. In such circumstances, the role of ICT is considered central as the basis for mobilizing and realizing ideas and innovative solutions. In particular, ICT is applied here in conjunction with human and social capital and wider economic policy in order to leverage growth and manage urban development. As Kitchin (2014) embraces “whereas the first vision of a smart city focuses on ICT and its use in managing and regulating the city from a largely technocratic and technological perspective, the second encompasses policies related to human capital, education, economic development and governance and how they can be enhanced by ICT.” (Kitchin, 2014, p. 2)

Finally, for many researchers and experts, there is actually no difference between intelligent and smart cities. Many academics and leading consultancies do not distinguish between the definitions of the terms “intelligent” and “smart” (Kominos, 2002, 2008). However, some academics bear in mind that “for smart cities the capacities that intelligent cities have sought to develop over the past twenty years or so become the technical platform for their application across a host of service-related domains. For it is here and at this stage of development that the point of emphasis and intervention begins to shift from innovation to application, from the back-office to front-line services, and in policy terms, the emphasis also shifts from the corporate to the civic, from the market to the community, and from the bureaucratic administration of the economy to a liberal democratic governance.” (Allwinkle and Cruickshank, 2011, p. 9)

2.1.2 Identifying main characteristics and dimensions of smart cities

As it was discussed in section 2.1.1, many scholars claimed that it is hard to agree on a universal definition for smart city concept; therefore, they have been trying to illustrate it through the characteristics that are related to a smart city. Some researchers refer to the concept of intelligent cities in identifying the characteristics of smart city (Hollands, 2008; Deakin and Al Waer, 2011). Kominos (2002; 2008) accordingly identifies four main characteristics for intelligent cities:

- the application of a wide range of electronic and digital technologies to communities and cities,
- the use of information technologies to transform life and work within a region,
- the embedding of such ICTs in the city,
- the territorialization of such practices in a way that bring ICTs and people together, so as to enhance the innovation, learning, knowledge, and problem solving which they offer.

Furthermore, Robert Hollands (2008) is among the first authors, who has tried to unwrap the concept of smart city. He points out six main characteristics for smart city. The characteristic is the deployment of networked infrastructure in order to increase economic and political efficiency while facilitating social, cultural, and urban development. The second

characteristic is an underlying stress on business-led urban development. In other words, the neo liberal urban spaces and business friendly city would aim at encouraging the establishment of new businesses. The third is a principal goal to achieve the social inclusion of various urban residents in public services. It means attention of researchers and policy maker should be given to the equitable urban growth within smart cities. The forth aspect is an emphasis on the crucial effect and the role of high-tech and creative industries in long-run urban growth. This aspect, which relies on Richard Florida's research, indicates that future smart cities that want to succeed must aim at attracting the creative people (Florida named them the wave of the future). The fifth characteristic is the profound attention to the role of social and relational capital in urban development. A smart city will be a city whose community has learned to learn, adapt, and innovate. People need to be able to use technology in order to benefit from it. Finally, social and environmental sustainability are seen as major strategic components of smart cities. There is no doubt that unbalanced urban development in a situation resources are scarce, may endanger the life of future generations not only in urban agglomerations, but also in rural areas.

In summary, Paskaleva (2011) categorizes previous discussions on characteristics of smart cities into three main groups:

- The level of exploitation of networked infrastructure for improving economic and political efficiency and enabling social, cultural and urban development. The term infrastructure signifies business services, leisure and lifestyle services, housing and ICTs, and connectivity is foreseen as the source of growth.
- A vision and a strategy for creating the competitive city. In this perspective, a smart city uses the opportunities offered by ICTs to increase local prosperity and competitiveness considering various approaches. These range from stressing the importance of the multi-actor, multi-sector, and multi-level urban perspective towards competitiveness and sustainability to highlighting the presence of a creative class, the quality of and dedicated attention to the urban environment, the level of education, multi-modal accessibility, and the use of ICTs for public administration to increase urban wealth.
- An approach to sustainable and inclusive cities. Here, the main weight will be placed on the social capital of urban development. The emphasis is on social inclusion in public services or on involving the citizens in service co-design for better services. Moreover, sustainability, which is borne in mind as the strategic element of smart cities and safeguarding environmental or social sustainability through participation of the public in local decision-making, is a key to increase democracy and governance.

Apart from the mentioned characteristics of smart cities, the dimensions (components) of smart cities were also investigated by many scholars (Mahizhnan, 1999; Giffinger *et al.*, 2007; Eger, 2009; Thuzar, 2011; Nam and Pardo, 2011; Barrionuevo *et al.*, 2012; Kourtit and Nijkamp, 2012; Chourabi *et al.*). Such investigations of dimensions support researchers and policy makers to create a holistic approach for dealing with the complexity of the smart

city concept. According to a research project “Ranking of European medium-sized cities” conducted by the Centre of Regional Science at the Vienna University of Technology, six main components were identified as dimensions of smart cities. These components are smart economy, mobility, environment, people, living, and governance (Giffinger *et al.*, 2007). These classification relies on the traditional and neoclassical theories of urban growth and development as regional competitiveness, transport and ICT economics, natural resources, human and social capital, quality of life, and participation of society members (Lombardi *et al.*, 2012). Barrionuevo and his colleagues (2012) took a similar approach and identified five dimensions for a smart city as economic (GDP, sector strength, international transactions, foreign investment), human (talent, innovation, creativity, education), social (traditions, habits, religions, families), environmental (energy policies, waste, water management, landscape), and institutional (civic engagement, administrative authority, elections) (Barrionuevo *et al.*, 2012).

Nam and Pardo (2011) count the technology, the people (creativity, diversity, and education), and the institutions (governance and policy) as the key components of a smart city. In their opinion a city is really smart when investments in human and social capital, together with ICT infrastructures, contribute to sustainable growth and improve the quality of life of the citizens. Eger (2009) mentions technology, economic development, job growth and quality of life as dimensions of a smart city. He stresses the economic aspect. Thuzar (2011) sees quality of life and sustainable economic development as dimensions of a smart city, which will be supported through participatory policies in management of natural resources and convergence of economic, social, and environmental goals. Kourtit and Nijkamp (2012) mostly place different types of capital as the dimension of a smart city. The determined dimensions are human capital (e.g. skilled labor force), infrastructural capital (e.g. high-tech communication facilities), social capital (e.g. intense and open network linkages), and entrepreneurial capital (e.g. creative and risk-taking business activities).

By having a look only at the frequency of the words used in describing smart city dimensions from the cited literature, the below graphic (Figure 4) illustrates that information, communication, technology, economy, environment, management (governance), and people are considered as the key components of the smart city concept. In this regard, the **economic** dimension fuels the economic growth of smart city, competitiveness, and job creation. The **environmental** dimension safeguards effective usage of the natural resources and sustainable development of a smart city. The **human (people)** dimension covers the social aspect of a smart city and ensures learning possibilities for the citizens and improvement of the social capital. At the same time, it encourages creativity within the city. The **institutional** dimension supports government and policy makers for governance of urban processes within smart cities. And lastly, ICT represents the **technological** (or in a broader sense infrastructural) dimension of a smart city and serves as a facilitator for integration of the dimensions and governing urban processes.

Figure 4 Frequently repeated terms in describing dimensions of smart cities



Given the organic integration of a city's various systems (e.g. transportation, education, health care, buildings, physical infrastructure, natural environment, and public safety), a comprehensive view on the mentioned dimensions is needed in order to develop a smart city concept. Smart cities must integrate technologies, systems, services, and capabilities into an organic network that is sufficiently multi-sectorial and flexible for future developments, and open-access. This means that ICT must be a facilitator for creating a new type of communicative environment, which requires the comprehensive and balanced development of creative skills, innovation-oriented institutions, broadband networks, and virtual collaborative spaces (Kominos, 2011).

2.1.3 Importance of citizen participation in smart cities

The smart city concept not only focuses on the deployment of ICT within city, but also considers the needs of the citizens and urban communities as well as environmental concerns. In other words, the diffusion of ICT in cities should contribute to improving operation of every subsystem of a city, aiming at enhancing the quality of life of the citizens. Furthermore, safeguarding environmental or social sustainability through participation of the public in the local decision-making as a key for increasing democracy and governance was identified as characteristics of smart cities.

Reviewing different dimensions of smart cities also reveals the importance of the human aspects. Hence, smarter cities are believed to be started from the human capital side, rather than be automatically created by ICT (Hollands, 2008). Smart governance as an important dimension of the smart city concept, instead of being solely elective, requires ridding of the barriers related to the language, culture, education, and disabilities. The smart people dimension comprises various aspects, like affinity to lifelong learning, social and ethnic plurality, flexibility, creativity, cosmopolitanism, open-mindedness, and participation in public life (Nam and Pardo, 2011). Moreover, problems associated with urban agglomerations can be solved by creativity, human capital, and cooperation among relevant stakeholders (Baron, 2012). Therefore, the label "smart city" should refer to the capacity of clever people to generate clever solutions to the urban problems.

To achieve such smart governance, various stakeholders should be engaged in decision-making and public services. ICT-mediated governance, also called e-governance, is fundamental in bringing smart city initiatives to the citizens, and to keep the decision and implementation process transparent. However, the spirit of e-governance in a smart city should be citizen-centric and citizen-driven (Albino *et al.*, 2015). Respectively, the citizens or public have a central role in governance of the future smart cities and should participate in the decision-making processes. An individual citizen and civic groups are important players in the governance of a smart city. ICT-mediated participation (or e-/mParticipation) is undoubtedly a fundamental element of such governance processes.

2.2 Citizen participation in urban planning: recent debates in participatory urban planning

This section tries to explore the debate on communicative action theory as one of the dominant and influential discourses in the urban planning context. Doing that, the section briefly reviews how citizen participation entered urban planning processes and why the urban planning paradigm turned toward more collaborative approaches.

2.2.1 Communicative turn in urban planning

The communicative action theory introduced to planning in the late 80's and soon became a dominant debate. This turn and extensive use of this theory could have been due to two main reasons: the needs of the planning discourse for a new theory and the deficiency of previous theories as well as the strengths of Jürgen Habermas' theory of "communicative rationality" that attracted many scholars' attention to formulate an efficient urban planning theory.

Historically speaking, first public policies in urban and regional planning were made in the late 19th century focusing on physical intervention to the environment, as the urban areas within west Europe were facing the problems of rapid urban growth. Therefore, urban planning was founded as a discipline mostly oriented towards scientific-rational thinking tradition. Using scientific knowledge (which was linked to the increasing access to computers in the 60s and 70s), professional planners could supervise economic and social development and produce blueprint master planning schemes with the focus on physically arranged land uses and achievement of functional objectives. Thus, planners separated themselves from other groups of stakeholders as they could decide on their behalf in favor of public interest (Hillier, 2002b). In other words, "the public interest would be revealed through a scientific understanding of the organic logic of society" (Beauregard, 1989, p. 386). Therefore, the main function of public participation was limited to a tool for legitimizing the planners decisions (Hillier, 2002b).

The failures of planning during the time of the vast urban renewal programs verified many of the objections to top-down, expert-driven planning and encouraged the communicative turn in planning (Fainstein, 2000). Since the late 1960s in the Western world, many endeavors either through advocative processes (lobbying) or through intermediary processes (civil disobedience), that were focusing on citizen activism, have been represented through formal

processes in planning (Hillier, 2002a). However, in the 80s and 90s new flexible structures of capital and labor replaced Fordism and capital was increasingly globalizing. The concepts such as active citizenship and public participation have been reborn, together with new interpretations of the democracy as being more inclusive rather than representative. Urban planning practices encompass notions such as moderating between different stakeholders, talking and listening to opinions of the citizens (Hillier, 2002b).

Planning theories were stocked in a dead-end with previous rational-comprehensive planning approaches, which were dominated by top-down thinking. Therefore, theorists of urban planning discipline started pursuing new theoretical contexts and approaches in order to prove the importance and functionality of planning. While the neo-liberal economic and political system were receiving a vast amount of criticism, Habermas (1985) indicated how technocratic approaches were giving scientific legitimacy to the decisions that did not bring about consensus in public and open consultations. Conversely, he believed in communicative ways of actions providing the basis for a kind of thinking, which end in a consensus in decision-making and policies generation, more advanced than the available democratic and participatory methods. Hence, the communicative model of planning became the dominant theory of planning since the 1980's (Allmendinger and Tewdwr-Jones, 2002; Innes, 1995, Hillier, 2002a, 2002b).

2.2.1.1 Habermas theory of communication rationality as the basis of communicative planning

Fainstein believes that the communicative model of planning relies on two philosophical strands; namely from American pragmatism driven from John Dewey and Richard Rorty and the theory of communicative rationality elaborated by Jürgen Habermas. American pragmatism, which roots in British philosophical realism and empiricism, tends to generate the theoretical concepts through searching best practices in the real word and generalizing them, as Hoch (1996) explains: "The big question for the pragmatic analysts is how practitioners construct the free spaces in which democratic planning can be institutionalized. The idea [...] is to uncover examples of planning that are both competent and democratic, and then to explore who the practitioners were who did it, what actions they took to make it happen, and what sorts of institutional conditions helped or hindered their efforts" (Hoch, 1996, p. 42; Fainstein, 2000, p. 454).

Instead, communicative rationality, which traces back to Hegelian idealism and Marxist critical analysis and then later to Wittgenstein's scrutiny of language, begins with an abstract proposition, as Healy (1996) says: "A communicative conception of rationality . . . replaces[s] that of the self-conscious autonomous subject using principles of logic and scientifically formulated empirical knowledge to guide actions. This new conception of reasoning is arrived at by an intersubjective effort at mutual understanding. This refocuses the practices of planning to enable purposes to be communicatively discovered" (Healey, 1996a, p. 239; Fainstein, 2000, p. 454). Notwithstanding different philosophical traditions supporting communicative rationality and pragmatism, they unite when it comes to providing actions for

planners. Both of them describe the role of planners in communicative model as negotiator and intermediary among different stakeholders.

Habermas initially targets the problem of legitimacy in a capitalist system and criticizes this problem. Habermas' work scrutinizes the concept of rationality in accordance to socio-political changes and subjective communication and he argues that science, morality and art (as three cultural scopes of the Enlightenment period) are controlled by instrumental rationality— a product of capitalism. While these three compasses have enormously dissociated through invasion of the life-world by experts, Habermas counteracts with his communicative rationality, in which post-structuralism, language and untwisted communication play a significant role to guarantee a consensus (Habermas, 1985). Habermas' communicative action forms a space for the public, in which decisions are made through dialogue and communication, and therefore, all participants can freely express their opinion. In such an atmosphere, a consensus is built upon trust and should not be distorted by a power structure.

The principal theorists, who have developed communicative theories in planning and communicative planning are Judith Innes, John Forester, Jean Hillier, Patsy Healey, Charles Hoch, Toe Sager, and Seymour Mandelbaum. Since 90s, several terms have appeared in planning literature describing communicative models of planning such as “collaborative planning” (Healey, 1997), “argumentative planning” (Fischer and Forester, 1993), “deliberative planning” (Forester, 1989) , “discursive planning” (Hillier, 2002b), and “communicative planning” (Innes, 1995; Sager, 1994). Despite differences, these concepts are strongly overlapping with each other. The term communicative planning was applied more often in the literature.

2.2.1.2 Planning agenda in the communicative model

Richardson (1996) in his article on concepts of power and truth in Foucauldian discourse summarizes following characteristics of communicative planning process:

- its setting within an ideal pluralist political system;
- its aim of redefining rationality in a new communicative way;
- the consequent attempt to develop a new unified planning theory;
- its pro-modernist theoretical tendency;
- the central role of the policy analyst/planner.

Besides Richardson, Healey (1992) as one of the main theorists that developed Habermas theory in the context of urban planning attempts to summarize some prevailing propositions of that time on communicative planning offered by several scholars. These, which could be called principles, elaborate the agenda of communicative planning:

- Planning is an interactive and interpretive process, focusing on ‘deciding and acting’ within a range of specialized allocative and authoritative systems but drawing on the multidimensionality. Planning processes should be enriched by discussion of moral dilemmas and aesthetic experience.

- Planning is undertaken among diverse, fluid and overlapping discourse communities, each with its own meaning system, knowledge forms and ways of reasoning and valuing. The communicative action should search for achievable levels of mutual understanding for the purposes in hand.
- Respectful intercultural and interpersonal discussion is the necessity of such interaction's method. It involves recognizing, valuing, listening, and searching for translative possibilities between different discourses communities.
- Such interaction involves intervention in the 'arenas of struggle' where public discussion occurs and where problems, strategies, tactics, and values are identified, discussed, evaluated, and where conflicts are mediated.
- Using the Habermasian claims of comprehensibility, integrity, legitimacy, and truth, a reflective and critical capacity should be developed. That enables the participants to evaluate and reevaluate specific actions.
- Discourses include all interested parties, and because of interest overlap and conflict, morality is an important point.
- Interaction involves mutually reconstructing what constitutes the interests of the various participants, and the participants not only gain knowledge of other participants, but also involve in a process of mutual learning through mutually searching to understand.
- In this intercommunicative planning, finding ways of practically achieving the planning desires is the task of participants, not simply to agree and list their objectives. The participants cannot know where this will take them. Nevertheless, they can act with hope and ambition to achieve further possibilities (Healey, 1996b).

2.2.1.3 Critiques of communicative model in planning

Communicative theory of planning has been criticized by many scholars in different aspects (Tewdwr-Jones and Allmendinger, 1998; Fainstein, 2000; Flyvbjerg, 1998; Yiftachel, 2001). Tewdwr-Jones, Allmendinger and Fainstein mainly criticized the theoretical and practical aspects of the communicative theory and highlight the deficiencies, however, Flyvbjerg and Yiftachel, questioned the theoretical bases of communicative planning considering the relations between planning and power structures and how power and power holders influence planning decisions.

In terms of theoretical discussion, Fainstein (2000) states that the communicative theorists introduce planners as the central element of discussion and less attention is given to the context in which planners work and to the outcome of planning. Instead of questioning what is needed to be done for urban agglomerations, the communicative model of planning typically asks what planners should do. The answer is that they should tell the truth, and not be pushy about their own judgments. But still the question of how to deal with unjust results driven from open and participatory processes remained unanswered (Fainstein, 2000).

Tewdwr-Jones and Allmendinger (1998) claim a need for a corresponding "world view" of values in order to accept Habermas' work. At a primitive level, communicative rationality is

about undistorted communication, openness and a lack of oppression. However, this assumption contains prejudgment. They believe that participatory democracy, which communicative planning depends on, cannot be considered 'without any problem', and is not a value acceptable by everyone. Even the proponents of the theory acknowledge its limits and problems emphasizing local rather than national concerns. Moreover, the assumption that "citizen involvement in democratic processes brings more participation" is also open to be questioned. They also challenged the ability to reach consensus as the main assumption of Habermas' theory by two critical questions of "what to do and how to mediate when this consensus is not reached?" and secondly, "should we reach consensus at all?" (Tewdwr-Jones and Allmendinger, 1998).

With regard to practical aspects, communicative planning theory like most of other theoretical debates will be challenged due to its deficiencies when it comes to practice and the real world. The gap between theory and action is addressed by Susan Fainstein. She discusses this issue in respect to the lack of real power for participants in the planning process. She believes that, if the real power is granted to the citizens, there is still no guarantee for implementing that agreements by participants (Fainstein, 2000). Another argument of Fainstein is the matter of the required time. She states: "the lengthy time required for such participatory processes, leads to burnout among citizen participants and disillusion as nothing ever seems to get accomplished" (Fainstein, 2000).

Tewdwr-Jones and Allmendinger argue that although all sections of the community can participate in the process of communicative planning discourse, this theory has not been able to fully answer the questions like how should this be achieved? How the stakeholders can be identified and by whom? Furthermore, focusing on the process instead of outcomes has also been challenged by them. They believe that the theory of communicative planning and rationality emphasizes the process rather than the results. They believe that participation of the citizens, stakeholders and interest groups in the planning process is acceptable and reasonable, but it is unacceptable to focus only on the planning process as the final aim, without reaching the outcomes. The participants would like to be aware of the final decisions and outcomes, otherwise there will be only talking shops (Tewdwr-Jones and Allmendinger, 1998).

The relation between power structure and planning was the third aspect for that communicative planning received considerable criticism. While the proponents of communicative planning model (like Healy and Forester) presume the positive effect of trust and confidence built among different stakeholders (through collaborative processes) in shifting power basis, the opponents like Fainstein and Tewdwr-Jones and Allmendinger doubt this optimistic view and consider it an understatement. They think that only a simple change in the institutional framework of governance and power structure does not assure a more discursive style of governance as it displays little consideration towards different perceptions of interest, motivation and neglects the existence of power inherent within the individuals (Tewdwr-Jones and Allmendinger, 1998; Fainstein, 2000).

Bent Flyvbjerg in his book “rationality and power” (1998) argues that a plan¹ based on best rational principles and methods and also engagement of citizens could be changed and distorted in the approval and execution phase through power structures. He concludes that rationality is under the influence of power and even determined by power, and not by enlightenment ideals of reasons, democracy, and public utility (Flyvbjerg, 1998). Moreover, by referring to Flyvbjerg’s thesis of “rationality is determined by power”, Nietzsche’s “will to power” and Foucault’s “rationality as rationalization”, Yiftachel challenges the behaviour of many planners and decision-makers, and states that it is maybe necessary to reconsider planning as a “double-edged sword” (Yiftachel, 2001).

So far, the communicative model of planning has been discussed. Its theoretical background, conditions and practical deficiencies are briefly reviewed. Despite all aforementioned critiques, this planning model as a theoretical base has proved to be successful in concrete projects and introduced new aspects and perspective in participatory planning processes. However, it emphasizes participation of different stakeholders within decision-making processes. Thus, the concept of citizen participation has a core function for deliberation of decisions in the communicative model of planning, which is in the focus of this study. The next part will focus on describing this concept more accurately.

2.2.2 Definition, benefits, obstacles and new dilemmas of citizen participation

It has been mentioned before that the citizen participation discourse showed up in the urban planning context in the 60s through introduction of advocacy planning by Davidoff (1965). Ever since, scholars have been trying to investigate different aspects of this notion. For instance, what does citizen participation mean (definition), what is the purposes of citizen participation (benefits), what are the negative aspects (obstacles), or what are the current challenges of citizen participation (dilemmas).

Defining citizen participation has been on the agenda of several researchers, organizations and governmental agencies. Therefore, many conceptual definitions have been developed during the last decades (Glass, 1979; Roberts, 2004; Arnstein, 1969; Laurian, 2004; Chetkow-Yanoov, 1982). Glass states that “the term citizen participation is an overgeneralization that often is defined simply as providing citizens with opportunities to take part in governmental decision or planning processes” (Glass, 1979, p. 180). Sherry Arnstein (1969) illustrates citizen participation from the perspective of citizen power in the decision-making process. She believes that citizen participation is “the redistribution of power that enables the have-not citizens, presently excluded from the politics and economic processes, to be deliberately included in the future. It is the strategy by which the have-nots join in determining how information is shared, goals and policies are set, tax resources are allocated, programs are operated, and benefits like contracts and patronage are parceled benefits of the affluent society (Arnstein, 1969, p. 216).

¹ Referring to redesigning Aalborg’s central area in Denmark

Chetkow-Yanoov defines citizen participation from the perspective of an urban planner. He expresses that “when planners insist on citizen participation, they usually mean that the ultimate beneficiaries (e.g. residents) of the city’s services should have a part in setting the policies, and perhaps implementing them” (Chetkow-Yanoov, 1982). This view considers citizens as clients or consumers of public services that need to be involved by all means, as these services deal with their daily life. Laurian (2004) describes a desirable participation as it enables citizens to shape planning decisions and outcomes while increasing their levels of social and political empowerment (Laurian, 2004). Roberts offers a more detailed definition of citizen participation (direct citizen participation) “as the process by which members of a society (those not holding office or administrative positions in government) share power with public officials in making substantive decisions and in taking actions related to the community” (Roberts, 2004, p. 320). The focus in Roberts’s definition is on direct participation (when citizens are personally involved and actively engaged) as opposed to indirect participation (when citizens elect others to represent them) in the decision process. Roberts’ approach on direct citizen participation will be considered in this research as the focus of the study in participatory urban planning context.

In addition to defining citizen participation concept, the purpose of this notion has been investigated by many researchers in the last decades. Glass (1979) summarizes different scholars views on purposes of citizen participation and categorized them into two main purposes. The first one (based on the administrative perspective) is to engage citizens in planning and other governmental processes aiming to increase their trust and confidence in government, so that they accept decisions and plans and will be involved in the system when seeking solutions to their problems. The other purpose (based on the citizen perspective) is to give an opportunity to citizens (as actors) in the planning and decision making process in order to improve plans, decisions, and service delivery (Glass, 1979). Innes and Booher (2004) identify seven purposes of citizen participation that encompass most of the claims that usually justify participation:

- to find out what the public’s preferences are so these can play a part in their decisions (for decision makers),
- to improve decisions by incorporating citizens’ local knowledge into the calculus,
- advancing fairness and justice,
- public participation is about getting legitimacy for public decisions,
- participation is something planners and public officials do because the law requires it,
- to build civil society, and
- to create an adaptive, self-organizing polity capable of addressing problems in an informed and effective way (Innes and Booher, 2004).

Therefore, participation of citizens is considered to ensure better and stronger plans in the sense that plans are more likely to be implemented (Potapchuk, 1996; Burby, 2003). Participation of citizens can be also applied at the time when planning problems are complex. Planning theory considers under what conditions “a better city for all citizens” is developed

in a democratic and inclusive manner (Fainstein, 2005). Some other researchers investigated other benefits of citizen participation and they revealed that participation of citizens led to increase of the education and awareness levels of the residents, engagement, government responsiveness and formation of social capital in a civic community (Arnstein, 1969; Berry *et al.*, 1993; Potapchuk and Crocker, 1999). Klaus Selle (2013) briefly lists the positive effects of citizen participation as: it decreases the conflicts and speeds up the planning processes, it reinforces the local democracy and improves the political decisions, it creates local identity and increases the social capital, and it compensates the deficiency of legitimization (Selle, 2013). In case of direct citizen participation Roberts (2004) summarizes the supportive arguments and he believes that citizen participation (specially direct type) is developmental (fosters active moral), educative (participation as a skill of citizenship), therapeutic and integrative, legitimating, protective of freedom and instrumental (support power share) (Roberts, 2004).

Despite all the aforementioned benefits, citizen participation is considered an ambivalent concept in literature. In an article written by Day (1997) citizen participation in urban planning is debated as an essentially contested concept. This ambivalence appears in the literature in different forms as some announced citizen participation as the “Achilles heel of planning” or a “wicked” problem. Some also fundamentally doubts the ability of “masses” for constructive contribution to governance (Friedmann, 1987; Stivers, 1990). Irvin and Stansbury (2004) categorize the disadvantages of citizen participation in a table according to two sides of participation concept (government and citizens) as well as decision process and outcome (Table 1). Here the main negative issues are cost, difficulty of diffusing citizen goodwill, complacency, representation, the lack of authority and the power of wrong decisions.

Table 1 Disadvantages of citizen participation in government decision-making (Irvin and Stansbury, 2004)

	Disadvantages to citizen participants	Disadvantages to government
Decision process	<ul style="list-style-type: none"> • Time consuming (even dull) • Pointless if decision is ignored 	<ul style="list-style-type: none"> • Time consuming and costly • May backfire • Creating more hostility toward government
Outcomes	<ul style="list-style-type: none"> • Worse policy decision if heavily influenced by opposing interest groups 	<ul style="list-style-type: none"> • Loss of decision-making control • Possibility of bad decision that is politically impossible to ignore • Less budget for implementation of actual projects

In some other studies the negative aspects of citizen participation from practice are described as: it is time consuming and costly, in reality nothing will happen, the results of participation will not be integrated to the plans and lastly, the citizens has no power to change

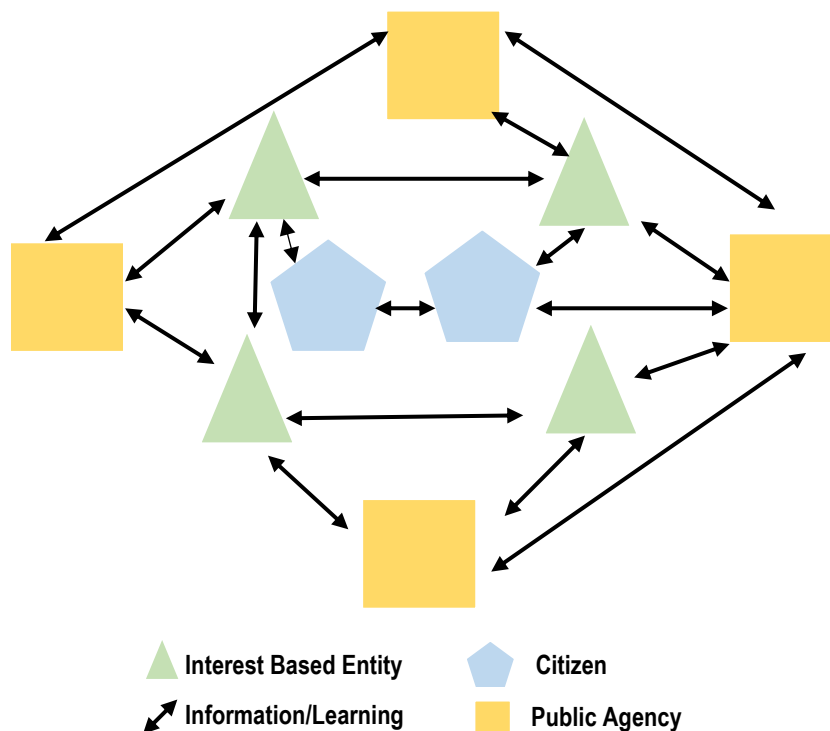
anything and the decisions have been already made (Selle, 2013). From the perspective of direct participation, Roberts (2004) highlights some similar negative aspects of (direct) participation. He believes that it is based on a false notion (too passionate and selfish or too passive and apathetic to be involved), inefficient (too expensive, too slow), politically naive, unrealistic (it requires skills, resources, money, and time that most citizens do not have), disruptive (disequilibria and increase noise in the system) and dangerous (promote extremism) (Roberts, 2004).

The criticisms on citizen participation do not solely address the negative aspects of it. For instance, Innes and Booher (2004) investigated the failure of formal citizen participation in the US planning system and claimed that legally required methods of public participation in government decision-making in the US— public hearings, review and comment procedures in particular—do not work. In their opinion:

- these forms of citizen participation do not achieve genuine participation in planning or other decisions;
- they do not satisfy members of the public that they are being heard;
- they seldom can be said to improve the decisions that agencies and public officials make;
- they do not incorporate a broad spectrum of the public,
- Worse than previous issues, these methods often antagonize the members of the public who do try to work with them;
- the methods often pit citizens against each other, as they feel compelled to speak of the issues in polarizing terms to get their points across.

Accordingly, this form often discourages busy and thoughtful individual citizens from participating in such meetings as they consider it as a waste of time to go through what appears to be nothing more than rituals that are designed to satisfy legal requirements. Furthermore, this increases the ambivalence of planners and other public officials about hearing from the public at all (Innes and Booher, 2004). One important issue here is that public participation is seen as involving citizens on the one hand and government on the other. Such simplistic duality underlies the debates and encourages adversarial participation, as it does not allow neither to unpack the citizen side nor the side of the government. Therefore, reframing citizen participation is on the agenda of urban planners and theorists (Laws and Rein, 2003). The proposal here is that participation must be more collaborative and it should incorporate not only citizens but also organized interests, profit-making and non-profit organizations, planners and public administrators in a common framework in which everyone interact (Figure 5). Hence, none of the one-way forms of communication from citizens to government, or from government to citizens would work. It is a multi-dimensional model where communication, learning and action are joined together and where the policy, interests and citizenry co-evolve (Innes and Booher, 2004).

Figure 5 Collaborative network paradigm for citizen participation (Innes and Booher, 2000)



This new paradigm of citizen participation as collaborative participation seeks to deal with the interests of all actors (public agencies, powerful private interests, and disadvantaged citizens) and treats all equally within the discussions. During the course of this process learning takes place, and sometimes conflicts are resolved and innovations emerge (Connick and Innes, 2003; Healey, 1993, 1996b). In such an environment citizens and other players work and talk in formal and informal ways to influence action in the public arena before it is virtually a foregone conclusion.

Ultimately, the differences between the legally required participation methods and collaborative approaches include:

- one-way talk vs. dialogue;
- elite or self-selected vs. diverse participants;
- reactive vs. involved at the outset;
- top-down education vs. mutually shared knowledge;
- one-shot activities vs. continuous engagement;
- and use for routine activities vs. for controversial choices (Innes and Booher, 2004).

However, the keys to success and achieve such a collaborative process are dialogue, networks and institutional capacity (Innes and Booher, 2004). Much of the reason for these successes of collaborative processes is what has been called the transformative power of

dialogue (Forester, 1999, pp. 115–153; Roberts, 2002; Yankelovich, 2001). In this sense, an inclusive set of citizens can engage in an authentic dialogue, where all are equally empowered and informed and where they listen and are heard respectfully and when they are working on a task that interests all, following their own agendas. They learn new ideas and they often come to recognize that others' views are legitimate. They can work through issues and create shared meanings as well as the possibility of joint actions.

Collaborative processes also build **networks**. The one outcome that participants almost universally cited was building new professional and personal relationships. They understood each other's perspectives after a while and in most cases built considerable trust. This social capital translated into new networks, that they could and did use for many other issues outside the collaborative process (Innes and Connick, 1999). These networks often proliferated as participants learned the power of the processes and transmitted the ideas and practices into associates.

Finally, collaborative networked processes contribute to building **institutional capacity**, which is a combination of social, intellectual and political capital (Cars *et al.*, 2002; Chaskin, 2001; Khakee, 2002). As this capital grows and spreads through collaboration into interlocking circles and networks, the civic capacity of a society grows and participants become more knowledgeable and competent, and believe more in their ability to make a change.

2.2.3 Levels of citizen participation

The level of participation mostly defines the value of a participatory project, no matter what type of methods and techniques are used in the project. Each level of citizen participation contributes to different sets of goals and expectations, and therefore, requires different resources, methods and processes. In this regard, investigating the level of citizen participation in projects clarifies to what extent the aims of participatory project are achieved and to what extent applied techniques and methods were suitable and successful. Hence, in this part, different categorizations of public participation will be reviewed.

It rarely happens that the scholars in the debate of citizen participation do not cite the influential work of Arnstein's "ladder of participation". Arnstein reflects the different levels of participation according to the efficiency of the process, which range from manipulation and therapy (as non-participation), tokenism (as informing and consulting) to citizen power, in which citizens have partnership, delegated power as well as controlling power in the decision-making processes (Arnstein, 1969). In addition to this classification, the International Association of Public Participation (IAPP), as a preeminent international organization advancing the practice of public participation, introduced five levels in public participation spectrum including informing, consulting, involving, collaborating and empowering (IAPP, 2014).

Informing means to provide the public with balanced and objective information and assist them in understanding the problems, alternatives and/or solutions. Consulting refers to the level of citizen participation that government tries to obtain feedback on analysis, alternatives

and/or solutions. Involving as third level is to work directly with public throughout the process to ensure that public issues and concerns are consistently understood and considered. Collaborating is the fourth level, in which there will be a partnership with the public in each aspect of decision-making including the developments of alternatives and the identification of the preferred solution. The last level (the highest level) is the empowerment level as a stage that the final decision will be in the hands of the public (Figure 6).

Figure 6 Spectrum of public participation developed by IAPP (2014)

PROMISE TO THE PUBLIC	PUBLIC PARTICIPATION GOAL	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
		To provide the public with balanced and objective information to assist them in understanding the problems, alternative and/or solutions We will keep you informed	To obtain public feedback on analysis, alternatives and/or decision We will keep you informed, listen to and acknowledge concerns and provide feedback on how public input influenced the decision	To work directly with the public throughout the process to ensure that public issues and concerns are consistently understood and consider We will work with you to ensure that your concerns and issues are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution. We will look to you for direct advise and innovation in formulating solutions and incorporate you advise and recommendations into the decision to the maximum extent possible.	To place final decision-making in the hands of the public. We will implement what you decide

Moreover, the Organization for Economic Cooperation and Development (OECD) summarizes citizen participation into three levels: information, consultation and active participation. The first level information refers to the one-way flow of information between government and citizens that aims at providing information. The government disseminates information on policy-making on its own initiative– or citizens access information they demand. Examples are access to public records, official gazettes, and government websites. Consultation as the second level represents a limited two-way communication between government and citizens, in which government enables citizens to give their feedback, and government defines whose view will be considered in the policy-making. Examples are comments on draft legislation, and public opinion surveys. The last level is active participation, in which citizens are deeply involved and they jointly participate in generation of policy content, implementation and evaluation of policies (OECD, 2001).

Lüttringhaus (2000), with a similar approach, introduced four levels of citizen participation as information, consultation, cooperation and self-management. The information level means that the engaged actors have the opportunity to inform themselves with the information provided by the authorities. The second level, consultation, will provide participants with the chance to give their feedback in forms of, complains, ideas, etc.; however, they do not have the opportunity to make a decision. The third level is cooperation, which offers actors the possibility to be engaged in the decision-making process and discussing the aims, strategies

and plans offered by authorities. The fourth level, self-management, refers to condition that all the involved actors decide together and this decision will be voted and is legally-binding. It should be mentioned that in this categorization, cooperation and self-management level represent the active participation level in OECD categorization.

As the focus of this study is more on the informal (not legally required) forms of direct citizen participation in urban planning context, the categorization offered by IAPP may not fit in our approach. The latest level of citizen participation in this categorization is empowerment, which means to give the final power of decision-making to the citizens. This level requires some institutional and organizational changes and processes that are not in the interest of this research. Therefore, the three level categorization offered by OECD and Lüttringhaus (2000) will be taken into the consideration in the following sections.

2.2.4 Forms of citizen participation (Face-to-Face, eParticipation, mParticipation)

In the previous sections, aspects of citizen participation in the urban planning context were theoretically discussed. However, it is still needed to make clear how such citizen participation (no matter of which level it is) can be implemented or taken place. In addition, which mechanisms and techniques (or methods) are available in urban planning context?

Methodically speaking, citizen participation techniques could be categorized into two forms. The first group encompasses the so-called conventional, face-to-face or sometimes 'traditional' forms. This form has long history in citizen participation literature and is deeply researched. Looking at the literature highlights methods such as factsheets, open houses, public comment, site visits, street stalls, referenda, public hearings, public surveys, deliberate polling, citizen expertise, award scheme, consensus conferences, public advisory committees, focus groups, citizen juries, or ballots (Creighton, 2005; IAPP, 2014).

The other group of citizen participation forms emerged after the emergence of Internet (World Wide Web and specifically introduction of Web 2.0 technology) and has been rapidly developed since the diffusion of ICT and different communication devices (such as laptop, mobile phones and tablets). This form has been named with different terms such as ICT-supported participation (Palen and Liu, 2007), online engagement (Chen and Dimitrova, 2006), digital participation (Smith and Craglia, 2003), web-based participation (Kingston *et al.*, 2000), online participation (Wojcieszak, 2009), Internet-based participation (Evans-Cowley and Hollander, 2010), and electronic participation (eParticipation) (Conroy and Evans-Cowley, 2006; Macintosh, 2004).

Like the face-to-face¹ form of citizen participation, eParticipation² also embraces several tools and methods. Some examples are digital TV in the closer sense (without feedback channel), kiosk system/info terminal, website (including FAQs / glossaries), newsletter, RSS feed, weblog, (Audio or video) podcast, online game and simulation, interactive

¹ This term will be used in this research.

² This term will be used in this research.

map/geodata-based communication, SMS/MMS, E-mail/mailling list, webcast (with feedback function), telephone/call center, chat, instant messaging, social tagging/ social bookmarking, ranking/rating tool, online input form, quick poll, online questionnaire/survey, video conference, forum, Wiki, photo / video community, social networking site/online community, groupware / CSCW, and virtual world (Tambouris *et al.*, 2007b; Albrecht *et al.*, 2008). These tools will be described in more detail in the following section.

Each form (face-to-face or eParticipation) provides different possibilities for participation of the citizens, has its own attributes and characteristics, and can support different levels of participation. Additionally, each form has its own benefits and limitations, which were the topic of many investigations in literature. In the next section, it is initially discussed why the traditional form of participation is not as effective as it should be. Furthermore, eParticipation as a recent form of participation is studied.

2.3 Citizen participation in the age of information and communication: eParticipation

Traditional participation form or face-to-face participation has its own limitations and obstacles. The critiques of communicative planning and citizen participation in urban planning are discussed in the previous sections. By having a deeper look at the critiques, it can be seen that most of them are valid for the face-to-face form of participation. Furthermore, the emergence of the Internet and ICTs (digitalization process) has transformed the cities and urban societies (smart cities). Hence, there is a need for citizen participation forms that make participatory urban planning to be compatible with the new urban settings. In this section, the limitations of face-to-face form are discussed. In addition, the influence of ICT on urban societies and its consequences for urban planning are theoretically elaborated. This is followed by a deeper look at the eParticipation topic.

2.3.1 Obstacles and limitations of traditional form of citizen participation

It is discussed that traditional citizen participation form (face-to-face) has some limitations and obstacles. Some of them are related to the nature of participation as a concept (such as the lack of authority, or risk of extremisms), while others are related to attributes of face-to-face form. For Instance, most of face-to-face methods require the **physical presence** of the participants at a **particular time and place**. This means that participants should change daily routines in order to be able to participate in the meetings. However, in the current modern society, where most of the people have specific working hours per week, participating in a meeting might not be easy to plan due to the limited available time. Additionally, most of the face-to-face methods are **time consuming** for participants as well as urban authorities. For example, an average “Planning Cell” process (as a face-to-face method) normally takes three to four full days in order to get expected results. Accordingly, the whole process is time-intensive, which also means **cost-intensive**. These costs will be however on both participants and urban authorities. Hence, participants must take four days off from work and the government also has to invest time of its employees. In addition, government should cover the organizational costs of events such as catering, venue, equipment, etc.

Another argument, specifically for formal face-to-face methods, is that they are not **transparent** enough in the mind of the citizens, as it is not clear how their contributions will be handled and influence the final decision (Kubicek, 2010). Furthermore, Innes and Booher (2004) argues the **communication problem** of this kind of methods. On the one hand, they believe that, for instance, public hearings put citizens against each other and polarize them, so that every individual argues his or her single point. Therefore, many single points will be discussed but no compromise will be made and the objective of participation process will not be achieved. On the other hand, such communication in public hearings gives leverage to the people who are not shy to talk in front of the others, while the quite participants will be cornered and left out of the discussion. In some specific situations, even the language (knowledge) can be considered as a barrier for people with the immigration background or foreigners, who are living in a city or neighborhood.

Scale and the dilemma of **size** are counted as a limitation for face-to-face methods. As modern administrative processes are normally very large and complex, citizen involvement will have to accommodate numerous groups and individuals, which requires many resources and sometimes even sounds impossible. For instance, if a city with 5 million inhabitants decides to gather the ideas of citizens regarding the future development of the city, how many workshops or meetings should be organized to gather ideas from most of citizens? How long does it take to gather ideas from most of citizens?

Due to these limitations, the next challenge could be the selection of citizens (how can they be representative?) and the briefing process. It is often cited that the same specific groups of people always attend and participate in public meetings. They either belong to the older age group (which have time or money) or opponents, who are always against every plan and say NIMBY¹. In addition, the last limitation of face-to-face participation is the lack of geo-based inputs from the citizen's side. This is a very important issue in the context of urban planning, because most of the decision-making processes have a location-based side. In this perspective, having citizens' feedback on the planning process could enhance the quality of plans and enrich the outcomes of participation processes. Most of face-to-face methods have limitations in this regard.

In summary, the aforementioned limitations do exist in face-to-face citizen participation form and several attempts have been made to overcome such issues. Knowing this, in the next section, it is explained how the opportunities and possibilities offered by ICT can overcome some of the limitations and enhance participation processes in collaborative urban planning. How does participation look like in contemporary society?

¹ NIMBY (an acronym for the phrase "Not In My Back Yard"), is a pejorative characterization of opposition by residents to a proposal for a new development because it is close to them, often with the connotation that such residents believe that the developments are needed in society but should be further away.

2.3.2 Networked society and its implications for participatory urban planning

Over the course of the past several decades, the rise of the new ICTs and the Internet has transformed our cities as well as our societies to what Castells called the “network society” (Castells, 1996). Albrecht and Mandelbaum (2007) extracted three important characteristics of the network society from Castells’s trilogy (1996; 1997; 1998) and their implications in the planning context. In the first one Castells (1996) argues that in the network society, social structures are open and decentralized and hierarchy is reduced; people are in different networks at the same time, which act, intersect and overlap. Information flows are not anymore limited to the hand of a specific group (Castells, 1996). In the specific planning and policy-making context, such relations between networks challenge traditional representative democracy. They call for a shift in planning towards more inclusiveness in the democratic processes (pluralist democracy), reducing unequal power structures between social groups and classes, accountability of the state and planners as well as respecting the right of citizens to be heard and to have a creative input in matters affecting their lives (Albrechts and Mandelbaum, 2007). The second characteristic is that activities are becoming footloose as ICT enables people to interact without face-to-face contacts (Castells, 1996). Consequently, spatial barriers and territories matter less in the network society; and therefore, urban processes are decreasingly restricted to the administrative boundaries (city limits, or regional territories), which planners have been struggling with since a long time. The third important characteristic is that the physical space of interactions is replaced by a virtual space, mostly without material basis (for instance mass media, virtual financial markets). This possibility enables networks to coordinate their actions more efficiently and over larger distances.

Moreover, Castells refers to two important attributes of the network society; both are extremely relevant for planning context. The first attribute is that the nature of the new society has profound implications for the **phenomenon of power**. Castells highlights that in the network society power is no longer concentrated in institutions, organizations, or even symbolic controllers such as the church or media. Instead, power is diffused throughout global networks of wealth, information, and images. Power does not disappear and still shapes society. But the old forms of power are fading away because they are comparatively less effective than the new forms (Castells, 1997). It has been claimed that “the new power lies in the codes of information and in the images of representation around which societies organize their institutions, and people build their lives and decide their behavior. The sites of this power are people’s minds” (Castells, 1997, p. 359).

The second attribute is what Castells (2009) calls **communication power**. The Internet provides low-threshold communication possibilities between nearly everybody, worldwide. Whereas real-world communication is limited by distance and time, online tools enable many forms of instant, global, and nearly permanent communication (Drohse et al., 2010). The Internet as a truly interactive medium enables users to participate in the production of online content, express their thoughts on blogs, share videos and photos, and be connected with others by using social networks; hence, a many-to-many communication is established,

which will have long-term consequences (Castells, 2009; Höffken and Streich, 2011). Castells believes that “mass communication used to be predominantly one-directional. With the diffusion of the Internet a new form of communication has emerged, characterized by the capacity of sending messages from many to many, in real-time or chosen time, and with the possibility of using point-to-point communication, narrowcasting or broadcasting, depending on the purpose and characteristics of the intended communication practice” (Castells, 2009, p. 55). He shares Habermas’ view that communication itself is a form of action that changes the realities of the social world, including power relations; and thus, he argues that in today’s network society, communication is powerful because it shapes shared meaning and accordingly influences action (Innes and Booher, 2014). The question here is how this new structural form, the network society, influences the planning agenda and more importantly collaborative planning concepts.

Verma and Shin (2007) believe that “despite Castells’ prominence within planning, planning theory has been slow to see the network society as central to its agenda, however this tide may be changing, as new literature are coming” (Verma and Shin, 2007, p. 9). On a very abstract and theoretical level, they debate whether the network society can be accommodated and find a home within the communicative turn of planning theory or their differences require constituting new set of planning theory. Doing that, they debate Habermas’ theory of communicative action (as the root of the communicative turn in planning) and Castells’ network society. Comparing analogically the core ideas of both theories (Table 2) and associating their arguments’ perspective with American pragmatism, they conclude that the reality of the network society and its complexity does not reject or disavowal of communicative action, and believe a “pragmatic marriage” between communicative action and the network society is possible (Verma and Shin, 2007).

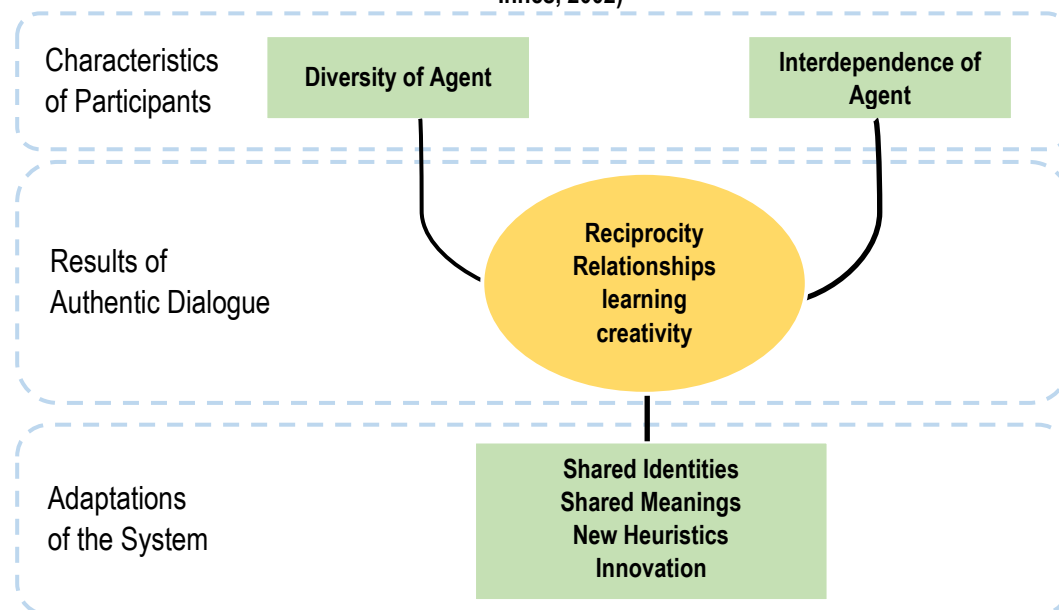
Table 2 Comparing Habermas and Castells Theories (Verma and Shin, 2007)

Tension	Manifestation	Consequences
System versus lifeworld (Habermas)	Colonization of lifeworld by system	<ul style="list-style-type: none"> - Erosion of ordinary communicative action - Instrumentalization of ends and purpose
Net versus Self (Castells)	Increasing distance between Net and Self	<ul style="list-style-type: none"> - Declining legitimacy of the nation-state - Emergence of resistance identities

Additionally, Booher and Innes (2002) discuss the possibilities of network power in collaborative planning in the context of the network society. In their opinion, network power is what works most effectively in the informational age. By definition, network power implicates a shared ability of linked agents to individually and collectively change their environment in advantageous ways to these agents. Hence, network power emerges from communication and collaboration among individuals, public and private agencies, and businesses in a society. Network power emerges as diverse participants in a network focus

on a common task and develop shared meanings and common heuristics that guide their action. The power grows as these players identify and build on their interdependencies to create new potential. In the process, innovations and novel responses to environmental stresses can emerge. More concretely, three conditions of the agents' diversity, interdependency, and an authentic dialogue are critical in enabling such network power (see Figure 7) (Booher and Innes, 2002).

Figure 7 Diversity, interdependence, and authentic dialogue network dynamics (adapted from Booher and Innes, 2002)



In summary, it could be concluded that in the contemporary times hierarchical authority is dramatically less effective. Instead, authority and power are fragmented, and information flows through networks. If actors work collaboratively, they are able to develop shared heuristics, joint objectives and shared knowledge and meanings. These provide the basis for building and maintaining new networks, which create their own forms of power and action (Booher and Innes, 2002). In the new model of participation, citizens must be part of such networks and thus be part of the action themselves. Moreover, Shirky highlights the fact that “we are living in the middle of a remarkable increase in our ability to share, to cooperate with one another, and to take collective action, all outside the framework of traditional institutions and organizations” (Shirky, 2008, p. 20). This new opportunity opens doors to planners for incorporating more citizens in planning processes and acting collaboratively.

In conclusion, the lack of real world face-to-face participation practices due to their own politics of difference and unequal power relations are identified. At the same time, technology allows an entirely new generation of forms and practices of citizen participation that promises to elevate the public discourse in an unprecedented manner, while providing an interactive, networked environment for decision-making (Evans-Cowley and Hollander, 2010). Therefore, municipalities and urban planners try to use advanced information and

communication technologies to inform, consult and actively engage citizens in urban decision-making processes, which is expected to broaden the collaboration of citizens as well as local public service delivery (Silva, 2013). The next sections will explore new opportunities offered by ICT on a practical level.

2.3.3 Definitions and objectives of eParticipation

The high diffusion of ICT and especially the Internet in combination with the trend towards more participation of citizens in the processes of public decision-making and policymaking have been considered as the main drivers of the emergence and development of eParticipation (Loukis, 2012). Researchers and scholars have tried to define eParticipation concept. Doing so, many terms have been applied in literature in describing the related domain, namely digital democracy, eVoting and eDemocracy.

Hacker and van Dijk (2000) define digital democracy as “a collection of attempts to practice democracy without the limits of time, space and other physical conditions, using ICT or Computer Mediated Communication (CMC) as an addition, not a replacement, for traditional ‘analogue’ political practices” (Hacker and van Dijk, 2000, p. 1). The term eDemocracy is a term that has been used widely, but with different interpretations. In some cases, it has been incorrectly used as synonym of eVoting, which is not the only possible way of influencing decision making processes. Therefore, in the international debate, a distinction is made between the term “eParticipation” and the term “eDemocracy” in that the latter also covers elections as the most binding form of citizen participation (eVoting) (Tambouris *et al.*, 2007b). Accordingly, eDemocracy is “the use of information and communication technologies to engage citizens, support democratic decision-making processes and strengthen representative democracy. The principal ICT mechanism is the Internet accessed through an increasing variety of channels, including personal computers (PCs), both in the home and in public locations, mobile phones, and interactive digital TV. The democratic decision-making processes can be divided into two main categories: one addressing the electoral process, including eVoting, and the other addressing citizen eParticipation in democratic decision-making” (Macintosh, 2004)

Tambouris and the colleagues claim that eParticipation could be part of a broader spectrum of the topic of eDemocracy. They believe that eParticipation should include all forms of digital engagement ranging from top-down government to bottom-up community initiatives. Therefore, it can be defined as “the use of information and communication technologies to broaden and deepen political participation by enabling citizens to connect with one another and with their elected representatives” (Tambouris *et al.*, 2007b, p. 9). In other words, the term eParticipation incorporates procedures based on ICT to enable the participation of citizens and other stakeholders in political decision-making processes (Macintosh, 2004, 2006; OECD, 2003). Albrecht and his colleagues in their study consider eParticipation as part of eGovernment and define it as “the participation of individuals and legal entities (including groups thereof) in political and administrative decision-making processes by means of ICT” (Albrecht *et al.*, 2008, p. 4).

In this concept, the idea that citizen eParticipation aims to shape the content of urban policies, monitoring and evaluating the implementation of these policies is embedded. Local/urban governments acts as networked organizations, use citizen mass-collaboration in different stages of the policy process, co-innovate with citizens and other local stakeholders, and share resources (Silva, 2013). More accurately, different researchers investigated the aims of eParticipation in the context of urban planning as:

- to enable the participation of a broader range of interests and perspectives;
- to make easier and more understandable information access for citizens regarding urban planning;
- enhance the equity in the accessibility to decision-making processes in urban governance;
- to provide relevant information that supports planning decision;
- to provide opportunities for negotiation between different perspectives;
- to help consensus building; to increase transparency in public decision-making;
- to improve the citizens' inputs for the policy process; to enable citizens to set up their own policy agenda;
- to reinforce local identity through citizen engagement in community affairs; and
- to improve the efficiency of local public services (Albrecht *et al.*, 2008; Macintosh, 2004; OECD, 2001, 2003).

2.3.4 Tools (eTools)

Even for traditional form of citizen participation some tools and methods are required. In the case of eParticipation several formats and/or tools are available when it comes to designing participation processes within the different participation forms. The term "tool" refers to the technical functionality and implementation, whilst "format" refers to the abstract information and communication pattern (Albrecht *et al.*, 2008). It should be argued that not all of these tools should be seen as a replacement of conventional modes of citizen participation in urban governance, but as a complement to the traditional tools. However, it is increasingly recognized that a new technology will not replaces previous technologies without changing the essence of structures and processes. There is basically a transformation running (Silva, 2013).

Nevertheless, a series of tools and/or formats that are listed above (see 2.2.4), will be described below:

Digital TV in the closer sense (without feedback channel): Unidirectional communication from one transmitter to many receivers in the sense of traditional mass media. The digital transmission paths enable the integration of additional information services, such as electronic program guides.

Kiosk systems / info terminals: Computer-based, stationary multimedia terminals, which are typically used as information systems with or without Internet access. The desired functions can be accessed via the keyboard or a touch-screen.

Website: Websites are primarily used for unidirectional information dissemination. However, they can also integrate other channels.

Newsletter: Periodical electronic publications (circulars), which can be received via Email.

Really Simple Syndication (RSS) feed: RSS feeds provide information concerning newly published content on websites, in weblogs or forums. A so-called RSS reader (also called feedreader or aggregator), which can also be directly integrated into a browser or an E-mail client should be used to receive the information. It is then no longer necessary to visit websites or to check them for updates. Audio or video contents of a podcast are also automatically downloaded into the computer by RSS.

Weblog: A frequently updated website presenting contributions in chronological order, with the most recent contributions appearing on top. Weblogs enable users to quickly and easily publish texts, pictures, audio and video files on the basis of a Content Management System (CMS). These contributions can then be commented by visitors of a weblog. Furthermore, blogs are strongly interconnected by a so-called trackball (direct references to contents of other blogs) and blogrolls (collections of links to other weblogs).

Podcast (audio or video): Audio or video contributions, that are published on websites and that can be directly viewed or downloaded and/or be automatically received using special RSS-based software. Audio podcasts, in particular, are designed for playback using mobile devices. This is also reflected by the term "podcast" which is composed of the "iPod" (a mobile audio player) and "broadcast".

Online games and simulations: Games and simulations enable a playful approach by users towards the contents of a particular subject. They can be of a descriptive, illustrative and more educational nature, or they can simulate a real (decision) situation and highlight the possible effects of actions. Most of these applications enable human-to-computer interaction, but so-called multi-user games are also available, that can involve several users in one game.

Interactive maps / geodata-based communications: Applications for the presentation of geographical data on the Internet. The presentation of the data can usually be varied by the viewer. The applications can be designed in such a manner that information (such as text or pictures concerning a particular place) could be added by users.

SMS / MMS: The abbreviations SMS for Short Message Service and MMS for Multimedia Messaging Service represent both the service as well as the pure text and multimedia short messages themselves.

E-mail / mailing lists: E-mail ("electronic mail") enables the asynchronous exchange of both text messages and files. Although E-mails are mostly used for communications between individuals, they can also be sent to several recipients or used to exchange messages within closed user groups (mailing lists).

Webcast (with feedback function): Broadcasting (streaming) of video contents from one sender to several receivers via the Internet. The recordings are broadcast live, but can also be archived and viewed at any time. Some webcasts also offer feedback functions during live streaming. It is, for example, possible to ask individual questions or send comments.

Telephone / call center: The telephone enables simultaneous communication between two individuals (or several individuals in the case of a telephone conference). The answering of calls and/or the active establishment of contact per telephone is bundled in call centers, which are staffed by several employees. In contrast to contacts established with individual call partners via the telephone, a call center ensures that the call is in fact answered. This usually eliminates the need for time-consuming connecting on the telephone and asking callers for the right partner to talk to.

Chat: Chats are simultaneous (synchronous) text-based discussions. Depending on the purpose of a chat, two or more users can communicate with each other either directly or via a moderator in the case of subject-centered chats.

Instant messaging: Instant messengers enable the real-time communication of text, voice or video signals. Communications are usually restricted to the users of the same system because there are, with a few exceptions, different software solutions, which use different protocols. In the case of instant messaging, other users must first be confirmed as contacts and be entered into a so-called buddy list, which shows if a contact is online and/or if he is ready to communicate.

Social tagging/ social bookmarking: Internet contents are collaboratively tagged by users by means of metadata in the form of the so-called tags. The tags are assigned without fixed rules and structures, so that every user can assign those tags, which he or she personally associates with the contents.

Ranking / rating tool: Ranking and rating tools enable the quantitative or qualitative rating of contents for example in a discussion forum. Such rankings or ratings can be carried out either automatically (for example longest contribution, most viewed contribution or contribution with most replies) or by the users of the systems (for example, awarding points which reflect consent to a contribution).

Online input form: Information can be captured and transmitted in a standardized form.

Quick poll: Short polls, which enable the retrieval of simple opinion statements. A certain question is usually asked and a few reply options are offered. (Intermediate) results of the poll are usually presented immediately.

Online questionnaire / Survey: Longer surveys designed to retrieve more differentiated opinion statements, which can be completed and transmitted online. The data is captured electronically and can hence be evaluated more quickly and with less effort.

Videoconference: Videoconferences support the simultaneous communication of two or more geographically separated communication partners in the form of (moving) pictures and

sound, i.e. all the partners taking part in the conference can hear and see each other. Some conference systems also enable the exchange and joint editing of documents.

Forum: Forums enable (in most cases subject-centered) discussions in larger groups irrespective of time and place. Active participation in the discussion in a forum is usually subject to prior registration. Following this, registered users can publish their own contributions to the discussion (postings) or comment on postings from other users. Forums can be held without a moderator, so that postings are published directly and discussions moderate themselves without external intervention. A can also moderator support the discussion, check whether postings are appropriate for the subject, and prepare summaries on a regular basis, etc.

Wiki: Thematic collections of websites can be prepared in a joint effort by a large group of users at different times and at different geographic locations. Every user can directly edit the texts online, with integrated version management functions (history entries, discussions) ensuring the traceability of every single change.

Photo / video community: Online platforms on which users can publish their own photos or videos, that can be commented on and rated by other users. Furthermore, the contents published can be provided with tags. The community members can present themselves with their own profiles and organize themselves in (for instance thematic) groups.

Social networking site / online community: Online platforms, which are primarily used for one's own presentation and to establish and maintain contacts and relations. The profiles can be provided with tabs and supplemented by additional content, such as photos or videos.

Groupware: Complex applications designed to support group work via time and space boundaries. Groupware systems offer a host of functionalities for cooperation (shared information space, group editors or wikis for the joint creation and archiving of documents, communication with group members (conference and messaging systems, such as video conference tools, E-mail, chats, instant messaging) and coordination of workflows (workflow management, calendar sharing).

Virtual worlds: Virtual 3D environments in which users move and interact with other users via a digital profile (avatar). The contents and objects of a virtual world, such as "Second Life", can usually be created by the registered users themselves. Communications with other users take the form of short messages, chats or forums, including the possibility to send E-mails to nonusers. Furthermore, the participants can organize themselves in user groups, for example, in order to work on joint virtual projects (Albrecht *et al.*, 2008).

Public Participation Geographic Information Systems (PPGIS): PPGIS supports various stages of more collaborative planning processes, by disseminating planning-related information online, expanding the number of stakeholders in planning, easing the understanding of analyses through visualization, and weighting alternatives utilizing graphical user interfaces (Sieber, 2006).

Augmented Reality (AR): Augmented Reality is augmentation of the surroundings of the user with virtual information that is registered in 3D space and overlays with the real world (Yovcheva *et al.*, 2012).

Obviously, each of the aforementioned eTools has their specific functions and abilities, which fulfill different demands and needs in the process of citizen participation in urban planning context. Furthermore, these eTools could be used with no explicit distinction in mobile applications as well as stationary tools, that can be used with different devices e.g. portable devices (mobile phones, smart phones, tablets, and laptops) and fix devices (PC, kiosk) at home or at specific places. These eTools will be used later in reviewing the mParticipation projects (section 3.1).

2.3.5 Challenges and opportunities of eParticipation

Some researchers argued that the Internet disconnects citizens from public policy; however, others claim even a positive effect of eParticipation on civic and political participation (Surowiecki, 2005; Noveck, 2009; Smith *et al.*, 2009). Some examples show that the Internet increases and improves citizen participation in urban governance (Weber *et al.*, 2003; Gibson *et al.*, 2005; Boulianne, 2009). On the one hand, proponents of eParticipation contend that the use of ICTs may alleviate at least some participation impediments and invoke benefits such as implementation ease and cost-efficiency (Shirky, 2008; Noveck, 2009), easier citizen participation and access (Seifert and Peterson, 2002), or increasing of trust (OECD, 2003). It is also considered as a tool to ameliorate the relationships between citizens and government in terms of quality and access to services, and transparency of decision making (Bekkers and Homburg, 2007).

Silva (2013) categorizes the benefits of eParticipation for citizens and local government. In terms of citizen-related benefits, he believes that eParticipation provides information of urban issues in a more accessible form, increases the ability of citizens to influence not only content of policy, but also its implementation, monitoring and evaluation (Kubicek, 2010; Albrecht *et al.*, 2008). For the urban government, eParticipation improves efficiency and effectiveness with more and better policy outputs, outcomes and impacts. This also increases the legitimacy of the decision and helps the empowerment of citizens and excluded groups of them. One of the promises of eParticipation is to increase the number of participants as well as to integrate broader groups of stakeholders in the urban planning process.

On the other hand, eParticipation is confronted with numerous barriers in particular when there is a declining participation in formal political processes, in elections, in political parties and trade unions and a growing disconnect and distrust between citizens (and youth) and politicians and lastly, the resistance of conservative administrative sections in municipalities, as it may not fit the conventional forms of urban governance (Silva, 2013). Additionally, issues such as digital divide and data privacy (as they could be misused to control citizens) are repeatedly cited in eParticipation literature.

2.4 Mobile Participation (mParticipation): Future of participation?

Over the past decade, the rapid evolution and diffusion of telecommunications technology has brought about widespread use of mobile phones worldwide which has changed the way that citizens interact with the urban environment (Evans-Cowley, 2011a). The statistical reports on penetration of Internet and mobile phones at least in EU countries (76 % for Internet and 125% for mobile phones) (Wimmer *et al.*, 2013), reveal the fact that society is changing into a mobile society and especially in urban areas the mobile citizens will be a more dominant group. In order to respond in time to this change of societies, the relevance and potential of mobile technology in urban planning has been investigated by researchers. Many concepts have been developed, which considered the high penetration of mobile phones as a new chance for a higher involvement of citizens in urban planning processes.

2.4.1 Ubiquity of Internet and mobile society

During the course of last years, the ICT entered into a new important phase (around 2005), which is the era of mobile communication. In this era the mobile communication technologies have been developing with a high pace, mostly due to the infrastructural developments, which provide higher and faster data exchange capacity. With the widespread diffusion of mobile phones and especially smartphones, the Internet is going mobile. Mobile devices and wireless connections enable the current citizens to surf the web nearly everywhere and anytime as the “mobile factor” dramatically reduces the limitations caused by distance and time. This provides a unique opportunity to join different social media and as a result networks citizens in the urban public spaces. Furthermore, location-based-services, Augmented Reality (AR), and the ubiquitous connectivity open new windows for perceiving space and participation of citizens in the contemporary urban environment (Drohse *et al.*, 2010).

Moreover, the possibility of using social networks and communicating from mobile devices is increasing, as already 30 percent of all users reach social media through apps (Nielsen, 2012). Hence, the social interaction of such citizens is getting mobile and the mobile technologies are extending the communication at home to communication on-the-go in the public spaces. These power users are relevant stakeholders of the future urban planning processes, as they are mostly well educated, have the skills to use smartphones and apply smartphones for their daily conversations or communicate via social media. They are the actual users of the Internet and spend most of their time in the cyber net and on the mobile device contributing to a great part of their online activities (Höffken and Streich, 2011). Therefore, dealing with future urbanization calls for a revision of urban planners’ perspectives on the planning agenda and characteristics of the future citizens, as they are going to be connected and mobile.

2.4.2 Definition of mParticipation and related concepts

MParticipation represents the latest development within eParticipation. It uses mobile devices, specifically apps, as tools to engage citizens (Ertiö, 2013). In order to have a practical definition for later analysis of the real world cases, in this study we use the practical definition of Höffken and Streich: “mParticipation is the use of mobile devices (e.g. mobile

phones, smart phones, and tablet computers) via wireless communication technology to broaden the participation of citizens and other stakeholders by enabling them to connect with each other, generate and share information, comment and vote” (Höffken and Streich, 2013, p. 206). What distinguishes eParticipation from mParticipation is portability: mParticipation removes barriers to access according to the “online whenever wherever” principle. Citizens no longer have to attend time-consuming meetings scheduled at certain times. Beyond the “usual suspects”, the promise of mParticipation is to reach out to diverse audiences, such as young adults, who tend to be severely underrepresented in traditional forms of participation (Ertiö, 2013).

Dealing with the discourse of eParticipation and accordingly mParticipation, several concepts (and terms) such as crowdsourcing, participatory sensing and Volunteered Geographic Information (VGI) were developed by researchers and have been used to address specific modes of e/mParticipation through mass collaboration or collective intelligence and sometimes overlap aspects of e/mParticipation. A new bottom-up trend in participation is **crowdsourcing**. Howe defines the term as combination of “crowd” and “outsourcing” (Howe, 2006). It is a phenomenon that exists since long time, but gained its importance out of the collaborative power of web-based cooperation. The web is a catalyst for this new form of collaborative action of the masses (Brabham, 2009). More precise and helpful in the context of mobile participation in the urban environment is the definition presented by Erickson: “crowdsourcing is the use of the perceptual and cognitive abilities of a large group of individuals to solve a problem” (Erickson, 2010). Based on the concept of crowdsourcing, Erickson gives a helpful classification of different types, based on time and space. In his “four quadrant model of crowdsourcing” he defines the term of geocentric crowdsourcing as relevant for urban topics. Here the work of the crowd is focused on a particular place or geospatial region (Erickson, 2010).

The term **participatory sensing** describes the integration of citizens in the acquisition and collection of datasets about the urban environment by using collectively gathered datasets. According to Burke et al., participatory sensing is the everyday use of “mobile devices, such as cellular phones, to form interactive, participatory sensor networks that enable public and professional users to gather, analyze and share local knowledge” (Burke *et al.*, 2006). This can be achieved with the embedded sensors in such mobile devices as the accelerometer, digital compass, gyroscope, Geographic Positioning System (GPS), microphone, and camera (Lane *et al.*, 2010). Planners can benefit from public data collection (Estrin, 2010). Participatory sensing has numerous technological and methodological similarities to mParticipation and geocentric crowdsourcing (e.g. mobile devices, use of sensors, crowdsourcing, geoweb, etc.), but lacks the deliberative impetus and political influence that the other two concepts share.

Volunteered Geographic Information (VGI) or Neogeography refers to a specific form of citizen mass collaboration or crowdsourcing for production of geographic information in text, image or video (Haklay *et al.*, 2008; Hudson-Smith *et al.*, 2009; Rana and Joliveau, 2009; Warf and Sui, 2010; Goodchild, 2007; Sui, 2008). However, this form of citizen mass

collaboration in urban governance, has been seen as a development of the concept of PPGIS (Ghose, 2001). In PPGIS, individuals access available data sets about a specific location but in VGI individuals create data about locations themselves (Tulloch, 2008). All planners have been in situations, in which they do not have enough information. Staffs typically have limited time, budgets, and resources to generate complete data sets. Goodchild offers VGI as one way to help improve data availability (Goodchild, 2007). VGI tools have high potential to gather, visualize, and share information on a scale never seen before, which will allow millions of contributors to create, record, and save digital information (Elwood, 2008).

2.4.3 Smartphones and tablets as main elements of mParticipation

Investigating mParticipation projects requires deep understanding of the main technological attributes of mobile technologies. More importantly, these technological elements determine the advantages and chances of mParticipation. It has been just a few years since smartphones and tablets (known as mobile technologies) are available on the market and they have already influenced the behaviors of users like no other digital instrument did before. The popularity of smartphones is not only due to making phone calls, but also due to computing possibilities, the Internet connection and variety of apps. It could be expected that smartphones provide the main Internet access in the following years (Höffken and Streich, 2013). Along with the increasingly low/flat rates for mobile Internet, the change in the handling of mobile phones progresses, so that more and more people have their “little digital companion” (Drohse *et al.*, 2010). There are several basic technological attributes that distinguish smartphones and tablets from other ICTs, which are illustrated in the following lines.

2.4.3.1 Multifunctional computing and multi-channel communication

As a multifunctional device, smartphones include several features as telephony, a digital camera, personal organizer, E-mail, music, Internet, etc. all in one device. In addition, different communication possibilities via voice, text, image, video and Internet are embedded in the smartphones and tablets, which provide multi-channel communication opportunities for their users. The multimodal functionality of smartphones and tablets transformed them into “always-with-you” devices which support information processing and ubiquitous computing in everyday life.

Another important advantage is, that the mobile Internet is multimodal. Users can communicate via all kinds of channels even if it is voice, text, an image or a video. In contrary to mobile phones, which are just offering voice and SMS, smartphones are now connected to the whole Internet. This amplifies the range from a one-to-one to a one-to-many communication, as the own content can be published on the Internet even by using the content from other pages. And all these channels can be used in real-time, which offers short-time reactions possibilities (Drohse *et al.*, 2010)

2.4.3.2 Context aware sensors

Smartphones integrate a wide array of embedded sensors, such as camera, accelerometer, gyroscope, digital compass, GPS and microphone allowing different context aware services

(Lane *et al.*, 2010). By using mobile broadband and Wi-Fi it is possible to access the Internet and through the use of multi-sensor data (e.g. the gyroscope) they allow the analysis and detection of the activities carried out by the user. Besides the embedded sensors of smartphones, different researchers have investigated the possibility of connecting additional stand-alone sensors to the smartphones and tablets for specific purposes such as measuring CO concentration, creating environmental data-sets (NASA, 2009), monitoring body movement or temperature and acceleration or sound measurement.

One of the unique applications of the GPS sensor is location-detection with the highest accuracy of ~ 10 m, Wi-Fi-connection with ~50 m accuracy, cell tower triangulation of ~ 100 m. Therefore, location-based services enhance mobile applications to offer spatial-based information as well as services (e.g. local search and navigation) (Höffken and Streich, 2013). Sensors like the compass and gyroscope enhance more detailed location-aware information (e.g. direction and orientation of the devices and user's position). Furthermore, geotagging is another feature that is provided by GPS sensors of the smartphones and tablets. Using this feature, the geospatial and geo-referenced data (derived from mobile phones and tablets) could be added to other digital content. This feature of smartphones is very relevant in the urban planning context.

2.4.3.3 Apps

The most important factor for the success of smartphones (and tables) is the extensibility of the features with the help of the so-called apps (short for applications). These apps perform specific tasks, like the integration of web-maps and GPS-information for live tracking. "They are available through application distribution platforms, which are typically operated by the owner of the mobile operating system, such as the Apple App Store, Google Play Store, Windows Phone Marketplace and BlackBerry App World" (Wikipedia, 2012). There are apps for navigation, schedule news aggregators, instant messaging, social networking, gaming, and many more. In contrast to former times, when companies were still responsible for the development of new software, users (individuals and companies) nowadays have the option of self-programming. They are able to develop new applications and add them to the application distribution platforms. By offering tutorials and modular systems for software development, Android and Apple encourage the users to do this.

These apps are part of a growing field of tools that help us navigate in the real world. At this early stage, the apps are primarily limited to information sharing. As this technology evolves and the number of available applications increases, planners can expect to see a growing number of tools to help engage the public (Evans-Cowley, 2011b). It should be considered that compared to computer programs, the smartphone app development costs are relatively low, while distribution to users takes place through app stores and is usually free of charge or at a minimal cost (Ertiö, 2013; Desouza and Bhagwatwar, 2012). Moreover, local and push notifications are helpful to keep users informed with timely and relevant content, whether their app is running in the background or is inactive. Notifications can display a message, play a distinctive sound or update a badge on their app icon (Apple, 2014).

2.4.3.4 Mobile Internet

Wireless communication and data transfer is the basic technology for all mobile devices. Different standards exist at the moment: The General Packet Radio Service (GPRS) supports flexible data transfer and constant connection up to 53,6 kbit/s (download). The Universal Mobile Telecommunication System (UMTS) was introduced in Germany in 2002 and is part of the third generation mobile cellular technology (3G). It allows transfer rates of up to 384 kbit/s. The development of high-speed downlink packet access (HSDPA) and its improved version of HSPA allow downloads up to 42,000 kbit/s and 11,500 kbit/s upload. In the future, the next standard will be Long Term Evolution (LTE), an evolution of the GSM/UMTS standard, allowing download rates up to 100 mbit/s. It is expected to cover especially rural areas, in which there is a lack of high-speed Internet connections (Höffken and Streich, 2013).

2.4.3.5 Usability, ubiquity and readiness

Intuitive touch screens and smart operating systems facilitate the handling of mobile devices. All functions can be used independent of the location and low weight and small sizes allow users to easily take them everywhere in the public and private sphere. Smartphones are switched on most of the time. Therefore, their readiness is relatively high.

2.4.4 Characteristics of mParticipation

The elements of smartphones and tablets result in certain characteristics of mParticipation, which distinguish this concept from other forms of citizen participation, namely face-to-face and eParticipation. These characteristics will be explained below.

- **On demand participation**

One of the characteristics of mParticipation, specifically for projects that apply mobile apps, is being “on demand”. It is described as a specific feature available on smartphones, known under notifications. It provides a unique possibility to easily reach the users and draw their attention. In case of a participation project, this feature can provide a possibility to ask (demand) citizens for their contributions. Of course, in terms of technicality, this characteristic can be hindered by some modifications on the settings of devices, but still the argument can stay.

- **Locally-specified participation**

Locally-specified participation can be mentioned as the second characteristic of mParticipation. This characteristic is derived from the possibilities of the new services of the smartphones, which are called “location-based services”. This feature relies on GPS sensors of the smartphones and enables planners to engage citizens of a specific area into the planning process. In other words, mParticipation projects can target the public in a specific place (location or area) and engage them into the planning process. Another important aspect here is that citizens can contribute to the planning process by providing (specific) information related to a specific geographical area. In this sense, the content and contributions of citizens can be enriched in terms of the possibilities of integrating them into the planning analysis.

- **On the go participation**

The third characteristic of mParticipation can be called on the go participation. Notably, the biggest benefit of mobile participation is portability. Citizens carry phones with them and can now provide feedback from wherever their location might be. This provides true potential for engagement, because it removes traditional barriers of space and time – e.g. to come to a public meeting at a specific time. Rather, it thrives on their current position and allows participation “on the go” (Ertiö, 2013). Therefore, citizens can take part in participatory processes without having the time and space barriers. For instance, while they are in public transportation, going to work or heading back home.

- **Real-time and fast participation**

Given the power of the mobile phone as part of our “always on” society, there is a real potential for creating real-time participation processes. Planning researchers across the globe have begun to undertake experiments to monitor and study the real-time city, and in doing so they have developed new analytic techniques (Evans-Cowley, 2011a). In terms of participation and civic engagement, the real-time and fast participation supports planners for reporting urgent matters. Moreover, usability, ubiquity and readiness attributes of smartphones accelerate participation speed and will enhance it in terms of time duration. Thus, being fast in the process of participation can be viewed as another characteristic of mParticipation.

2.4.5 Challenges and opportunities of mParticipation

The mentioned technological possibilities made smartphones and tablets widely available and pervasive in use. Using smartphones instead of personal computers has additional benefits. Smartphones bridge the digital divide by providing Internet access to those without computers. Manufacturers currently produce a wide range of smartphones, including low priced models (Ertiö, 2013).

MParticipation opens new channels of communication, creates new ways of gathering local information and has the chance to create a low-threshold gateway for citizen participation in urban planning by improving databases and giving instant feedback. Mobile and wireless participation solutions (like polls or opinion profiling via mobile phones) are not totally replacing old wired or fixed systems, but rather act as complementary elements. Both wireless and wired solutions have their own market niches (economically and socially) but more integrative solutions will emerge as well (Lahti *et al.*, 2006a). Low-threshold participation is an important point-of-entry for the involvement of passer-bys. The aim is to get passer-bys into the process and raise their awareness about the process. Automatic responses and further information are strategies to turn interested passer-bys into engaged participants (Höffken and Streich, 2013). MParticipation is a valuable method for engaging many unconnected individuals, while minimizing time and costs for personal involvement. The reduction of spatial and temporal limitations also allows the gaining of information anytime and everywhere. It means, that citizens are – potentially – more independent to choose when and where they would like to participate (Höffken and Streich, 2011).

Despite of all the advantages, mParticipation confronts a few challenges. The integration of sensors leads to the problem of **battery power**, as sensors, especially GPS, are energy consuming. Solutions can be based on software (e.g. a manual geo-referencing on a map without GPS to avoid high energy consumption), or on the hardware, improving energy efficiency (Zhuang *et al.*, 2010; Sorber *et al.*, 2005). Furthermore, improved batteries will also help to solve the problem of high-energy consumption, which is sometimes an obstacle for taking part in mParticipation processes.

The variety of sensors and sensing technologies allows new forms of personal data mining, directly affecting **privacy**. This tension between the participation's need for personal information and the individual's right to privacy is a big challenge and has to be defined in every single project. One difference to be made is between active given data and passive data collection. While active data is given voluntarily, passive data collection is not necessarily registered by the user. Awareness rising is necessary for all participants, to ensure that users have the knowledge about location information and other personal data. They should be able to determine how and when the data will be used. For better data security and privacy protection, regulations from the government are necessary. The need for the **installation of apps** is at first a barrier, as the app has to be installed. This is time-consuming (due to low mobile Internet rates) and in some cases cost-intensive (for participants without flat rates). On the other hand, participants with an installed app are probably interested in the topic and therefore probably remain in the process. Furthermore, an app as a catalyst can generate attention to a service and create a higher involvement.

Digital divide and excluded groups are two of the other challenges confronting mParticipation. They result from the fact, that not every citizen possesses the necessary smart phone with GPS and mobile Internet capabilities. For this reason, mParticipation will exclude many potential participants, but the use of these smart phones will increase in number, as the cost of owning and using them will fall. Another problem concerns the input possibilities. The user reports during his daily routine. Maybe he is in transit and does not have much time to write a comprehensive text. Beyond that typing on a small touch screen is still very troublesome and time-consuming. Thus, the mobile input contains only small, superficial text elements (Drohse *et al.*, 2010). Nevertheless, it must be considered that challenges of citizen participation will not be solved by merely focusing on gathering planning information, but on how the citizens' diverse input is handled and evaluated as part of policy-making (Bäcklund and Mäntysalo, 2010).

2.5 Summary

The smart cities discourse received considerable attention from researchers and practitioners during the last decade. The current smart city discussions indicate a shift of paradigm from a technology-driven development toward more inclusive and human-centric approaches. Therefore, the importance of citizens in the planning of (current and) future smart cities has become more clear. Moreover, the urban planning discourse has experienced a fundamental shift from rational urban planning toward collaborative urban planning since the 80's. This approach influences the citizen participation discussion and

brings up new dilemmas for engaging citizens in planning processes. This new paradigm of citizen participation as collaborative participation seeks to deal with the interests of all actors (public agencies, powerful private interests, and disadvantaged citizens) and treat all equally within the discussions. Moreover, to achieve a successful citizen participation in urban planning processes, it is required to define the level of engagement and the type of methods being used in the participatory processes.

Over the course of the past decades, the rise of the new ICTs and the Internet has transformed our cities as well as our societies to the “network society”. The high diffusion of ICT in combination with the trend towards more participation of citizens in the processes of public decision-making and policymaking have been considered as the main drivers of the emergence and development of eParticipation (Loukis, 2012). Several eParticipation formats and/or tools can be applied to design a successful participation processes. Moreover, the rapid evolution and diffusion of telecommunications technology has brought about widespread use of mobile phones worldwide. It has been just a few years since mobile technologies become available on the market and they have extremely influenced the behavior of users like no other digital instrument did before. Therefore, it is vital to investigate the influence of using mobile technologies in participatory urban planning processes of smart cities. This is the RQ2, which should be answered in the next sessions. Certain characteristics of mParticipation distinguish this concept from other type of citizen participation (e.g. face-to-face and eParticipation). These characteristics are “on demand participation”, “locally-specified participation”, “on the go participation”, and “real-time and fast participation”. Apart from all the benefits of mParticipation, there are some challenges and limitations of this technology, which have been discussed in this chapter. This library studies about different aspects of mParticipation is completed with the further library and practical studies that are presented in the next chapters. Combining and analyzing the results of these studies enables the researcher to answer the RQ1 and RQ3 at the end of this dissertation.

Chapter III- mParticipation practices in the real world (case studies)

3.1 Reviewing and analyzing the mParticipation practices in global perspective

This part of dissertation refers to the analysis of current real-world mParticipation projects in order to investigate the latest developments in this emerging field. The main aim here is to provide a systematic overview of the current landscape of mParticipation practices with the focus on planning. Doing this, more than 150 mobile apps (and mobile-ready websites) and projects are reviewed and finally 23 case studies are selected according to the relevance and possible usage for the urban planning discourse. This research is focused on mParticipation in the urban planning context, therefore projects in the context of urban governance (like public relations of municipalities and city councils, transparency and corruption, issue-reporting apps, and utilities management) or projects related to a specific topic (like transportation related projects, or public safety and health) are excluded from the analysis. This means that projects that are dealing in particular with urban development plans, strategic visions and plans, planning regulations and similar ones were reviewed. Moreover, some mParticipation practices, that are indirectly useful are also embedded in the analysis. The geographical scope of searching for practices is worldwide ranging from the USA, Europe, to Middle East and Asia.

For the analysis of the selected examples, the analytical framework used by Höffken and Streich (2013) is modified and completed by some additional criteria, that were derived from the studies of Desouza and Bhagwatwar (2012; 2014) and Tambouris and his colleagues (Tambouris *et al.*, 2007a). Additionally, from the theoretical research, some factors are extracted and applied in the analysis in this section. The information and data about cases were collected using secondary sources (e.g. web portals, social-media sources, existing literature, app stores and distribution lists). The analytical framework includes three categories of criteria regarding the project, technology and citizen participation. Criteria such as the goal of application, beneficiaries (actors who benefits from), medium, topic, spatial level, driving institution/developer and their motivation are embedded in the project category. In the technology category, the cases will be analyzed according to the system of project, data source, channel and form of communication, platform deployed, complexity (in terms of user experience and user friendliness), the used location-based verification, used eTools, user identification (registration) and devices. The third group of criteria, citizen participation, focuses on involved actors, level of participation (according to the definition of OECD), costs of participation, direction of communication (top-down or bottom-up), information flow (one way, two way), cross-media communication (link to other social media), relation network between actors, and more importantly the stage in the urban planning process (informing, ideation/articulate concerns, data gathering, analysis, scenario and decision making, implementation).

Table 3 Project criteria

Name	Goal of application	Beneficiaries (actors who benefits from)	Medium	Topic	Spatial Level	Driving Institution/Developer	Motivation of Driving Institution/Developer	Country
Abu Dhabi Vision 2030	Information sharing and collecting citizen feedbacks	Citizens, planners, government agencies	Online	Strategic development plan	City	Governmental agency	Transparency, consulting citizens	UAE, Abu Dhabi
bePart	Informing citizens about public hearings of development plans, rating development plans, providing possibilities to suggest development needs	Citizens, government agencies	Online	Implementation of Urban development plans	City	Research Institute (Student project)	Prize	Germany, Potsdam and Berlin
Bürgerbaut stadt	Providing citizens with clearer and easier information about public hearings of development plans	Citizens	Online	Implementation of Urban development plans	City	Project from Open Data Initiatives	Transparency	Germany, Berlin
Buildingeye	Providing an easy to use interface for citizens to access building permits, planning applications, code enforcement, capital projects, public events, business licenses and other civic activities	Citizens	Online	Tracking building permits for citizens	Neighborhood/city	Start-up company	Financial benefits	USA, San Francisco
Chip-In	Connecting motivated leaders to funds and volunteers in order to complete community projects	Citizens, planners, developers	Online	Co-funding (time or money) implementing projects	Neighborhood	Research Institute (Student project)	Prize	USA, Ohio

Community Remarks	Collecting citizens ideas for development plan project	Citizens, planners, government agencies	Online	Urban plans	development	Neighborhood/city	Start-Up company	Financial benefits	USA
CityVoice	Giving citizens a voice to influence planning processes by collecting citizen ideas and feedback	Citizens, government agencies	Online and offline	Revitalizing vacant lands	urban	Neighborhood/city	Project from Open Data Initiatives	Helping municipality to solve an urban problem, engaging people in planning process	USA
FlashPoll	Gathering opinions and feedback of citizens about urban issues	Citizens, planners, government agencies	Online and offline	Urban projects	development	Neighborhood/city	Research Institute	EU-Research project	Germany, Berlin
Local Data	Making digital tools to collect and analyze information about urban infrastructure in real-time	Citizens, planners, government agencies	Online and offline	Urban data gathering	environment	Neighborhood/city	Start-Up company	Financial benefits, mobilizing people to be engaged in planning processes of their urban environment, making data-gathering process for urban authorities and planners easier and more efficient	USA
Master Plan 2014 - Singapore	Information sharing	Citizens, government agencies	Online	Master Plan		City	Governmental agency	Providing different subjective maps about the master plan	Singapore
Metroquest	Engaging citizens in planning	Citizens, government agencies	Online and offline	Urban projects	development	Neighborhood/city/state	Private consultancy	Financial benefits	USA
Mindmixer	Building better communities by involving people in the things they care about	Citizens, planners, government agencies	Online	Urban projects	development	Neighborhood/city/state	Start-Up company	Financial benefits, providing an alternative engagement method via crowdsourcing	USA

Nabo	Creating safer communities by providing a private social network and connect together the people in neighborhood	Citizens, government agencies	Online	Urban development projects in suburbs	Neighborhood	Start-Up company	Financial benefits, connecting city officials and local residents with each other and create better and safer communities	Australia
Neighborhood	Empowering organizations to collaborate with residents on local issues by providing real-world design tools and a web-based communication platform	Citizens, planners and government agencies	Online and offline	Urban development projects	Neighborhood/city/state	Start-Up company	Financial benefits, improving the way local organizations, municipal leaders, and residents collaborate to make great ideas happen.	USA
Nextdoor	Connecting local organizations to residents via a private social network and connect together the people in neighborhood	Citizens, government agencies	Online	Urban development projects, crime Prevention, emergency preparedness	Neighborhood	Start-Up company	Financial benefits, connecting city officials and local residents with each other	USA
Nexthamburg	Activating citizens in urban development processes and crowdsourcing ideas for development	Citizens, planners	Online and offline	Strategic development plan	City	Non-Profit Organization	help the citizens in developing ideas for the urban development and be actively engaged	Germany, Hamburg
OpenPlans	Engaging citizens in planning processes	Citizens, planners, government agencies	Online	Urban development projects	Neighborhood/city	Non-Profit Organization	Providing an easy understandable and ready-to-use maps for citizens and urban authorities for engaging citizens	USA
Planning Toolkit	Providing information on municipality's administrative services	Citizens, planners, developers	Online	Calculating agency fee form department of city planning	City	Government agencies	Providing easier services for planners and citizens, providing the contact information of agencies to urban planners and citizens	USA, Los Angeles

PlanningVIC : Planning Property Report	Information sharing	Citizens, planners, developers	Online	Planning Report service	Property City	Government agencies	Transparency, providing easier services for planners	Australia, Victoria state
Seattle in Progress	Showing the “notice of proposed land use” in a much understandable way to citizens	Citizens	Online	“Notice of proposed land use” (implementation of building constructions)	City	Normal citizen	Transparency, easier and understandable presentation of information for citizens, monitoring development project implemented by urban authorities	USA, Seattle
Textizen	Providing possibilities for urban authorities to reach most of their citizens and engage them in urban planning process	Citizens, planners, government agencies	Online and offline	Urban development projects	Neighborhood/city	Start-Up company	Financial benefits, accessing anyone of citizens via their phone 24/7	USA
Urban Planning - Gordexola	Engaging citizens in planning	Citizens, planners, government agencies	Online and offline	Urban development projects	City	Research Institute	EU-Research project	Spain, Gordexola
Ushahidi	Enabling people to be actively engaged in transformation of their environment through gathering geo-based information, communicating via SMS and visualizing the results	Citizens, planners and government agencies	Online and offline	Urban development projects	Neighborhood/city/state	Non-Profit Organization	Giving the power of action to normal people, providing easy to use platform with different functions	Kenya

Table 4 Technology criteria

Name	System of Project	Data Source	Channel of Communication	Form of Communication	Platform Deployed	Complexity	Location-Based Verification	Used eTools	User Identification (Registration)	Devices
Abu Dhabi Vision 2030	Project-need development	User feeds, Open data from government	Mobile Internet	Text, map	Mobile app	Medium (working with design tool)	-	Interactive maps, Augmented Reality	Not needed	Tablet (only iPad)
bePart	Project-need development	Open data from government, user feeds	Mobile Internet	Text, map, image	Mobile app	Low	yes	Interactive maps	Not needed	Smartphone and tablet
Bürgerbaustadt	Project-need development	Open data from government	Mobile Internet	Map	Mobile-ready website	Low	-	Interactive maps	Not needed	Smartphone and tablet
Buildingeye	Project-need development	Open data from government	Mobile Internet	Map	Mobile-ready website	Low	-	Interactive maps	Needed	Smartphone and tablet
Chip-In	Project-need development	User feeds	Mobile Internet	Text, map, image	Mobile app	Low	-	Interactive maps	Needed	Smartphone and tablet
Community Remarks	Project-need development	User feeds	Mobile Internet	Text, map, image	Mobile-ready website	Low	-	Interactive maps	Not needed	Smartphone and tablet
CityVoice	Open source tool	User feeds	Telephony	Audio (voice), map	Mobile-ready website	Very Low	-	Call center	Not needed	Normal phone, smartphone and table
FlashPoll	Open source tool	User feeds	Mobile Internet	Text	Mobile app	Medium	yes	Quick poll	Not needed	Smartphone and tablet

Local Data	Open source tool	User feeds	Mobile Internet	Text, map, image	Mobile app	Low	-	Interactive maps	Not needed	Smartphone and tablet
Master Plan 2014 - Singapore	Project-need development	Open data from government	Mobile Internet	Text, map	Mobile app	Low	-	Interactive maps	Not needed	Smartphone and tablet
Metroquest	Project-need development	Open data from government, User feeds	Mobile Internet	Text, map, image	Mobile app/ Mobile-ready website	Low	-	Interactive maps, ranking tool, Quick poll	Not needed	Tablet
Mindmixer	Open source tool	User feeds	Mobile Internet	Text, image, video	Mobile-ready website	low	-	Online Forum, ranking tool	Needed	Smartphone and tablet
Nabo	Project-need development	User feeds	Mobile Internet	Text, map, image	Mobile app	low	yes	Social networking site, instant messaging	Needed	Smartphone and tablet
Neighbourland	Project-need development	User feeds, Open data from government	Mobile Internet	Text, map, image	Mobile-ready website	low	-	Interactive maps, ranking tool	Needed	Smartphone and tablet
Nextdoor	Project-need development	User feeds	Mobile Internet	Text, map, image	Mobile app	low	yes	Social networking site, instant messaging	Needed	Smartphone and tablet
Nexthamburg	Project-need development	User feeds	Mobile Internet	Text, map, image	Mobile app	Low	-	Interactive maps, ranking tool,	Not needed	Smartphone and tablet

										Augmented Reality			
OpenPlans	Open tool	source	User feeds	Mobile Internet		Text, map, image		Mobile-ready website	Low	-	Interactive map, ranking tool	Needed	Smartphone and tablet
Planning Toolkit	Project-need development		Open data from government	Mobile Internet		Text		Mobile app	Low	-	Website	Not needed	Smartphone and tablet
PlanningVIC: Planning Property Report	Project-need development		Open data from government	Mobile Internet		Text, map, pdf data		Mobile app	low	-	Website	Not needed	Smartphone and tablet
Seattle in Progress	Project-need development (open source)		Open data from government	Mobile Internet		Text, map, pdf data		Mobile web app	low	-	Interactive map	Not needed	Smartphone and tablet
Textizen	Project-need development		User feeds	SMS, MMS		Text, image		Mobile-ready website	low	-	SMS/MMS	Needed (phone number)	Normal phone, smartphone
Urban Planning - Gordexola	Project-need development		User feeds, Open data from government	Mobile Internet		Text, map, image		Mobile app	low	-	Interactive map, quick poll, Augmented reality	Needed	Smartphone and tablet
Ushahidi	Open tool	source	User feeds	SMS, Internet	Mobile	Text, map		Mobile-ready website/ Mobile app	low	-	Interactive map, instant messaging	Not needed	Normal phone, smartphone

Table 5 Citizen participation criteria

Name	Involved Actors	Level of Participation	Costs for Participants	Communication Direction	Information Flow	Cross-media communication	Relation between Actors	Network	Stage in Urban Planning Process
Abu Dhabi Vision 2030	Citizens, planners, governmental agency	Active participation	Low (with flatrate Internet)	Top-Down	Two-way	-	Gov. ↔ Citiz.		Informing, scenario and decision making
bePart	Citizens, governmental agency	Information	Low (with flatrate Internet)	Bottom-Up	Two-way	-	Gov. ↔ Citiz. Citiz. ↔ Citiz.		Informing, Ideation/articulate concerns
Bürgerbautstadt	Citizens	Information	Low (with flatrate Internet)	Bottom-Up	One-way	-	-		Informing
Buildingeye	Citizens, Developers, governmental agency	Information	Low (with flatrate Internet)	Top-Down	One-way	-	-		Informing
Chip-In	Citizens, developers, planners	Active participation	Low (with flatrate Internet)	Bottom-Up	Two-way	yes	Planne. ↔ Citiz. Devlope. ↔ Citiz. Citiz. ↔ Citiz.		Ideation/articulate concerns, Implementation
Community Remarks	Citizens, planners, governmental agency	Consultation	Low (with flatrate Internet)	Top-Down	Two-way	yes	Gov. ↔ Citiz. Planne. ↔ Citiz. Citiz. ↔ Citiz.		Ideation/articulate concerns
CityVoice	Citizens, planners, governmental agency	Active participation	Very low	Top-Down	Two ways	-	Gov. ↔ Citiz.		Ideation/articulate concerns
FlashPoll	Citizens, governmental agency	Consultation	Low (with flatrate Internet)	Top-Down	Two ways	-	Gov. ↔ Citiz.		Ideation/articulate concerns

Local data	Citizens, planners, governmental agency	Active participation	Low (with flatrate Internet)	Top-Down	Two ways	-	Gov. ↔ Citiz.	Data gathering
Master Plan 2014 - Singapore	Citizens, governmental agency	Information	Low (with flatrate Internet)	Top-Down	One way	-	Gov. ⇒ Citiz.	Informing
Metroquest	Citizens, planners, governmental agency	Active participation	Low (with flatrate Internet)	Top-Down	Two ways	yes	Gov. ↔ Citiz. Planne. ↔ Citiz.	Ideation/articulate concerns, analysis, scenario and decision making
Mindmixer	Citizens, planners, governmental agency	Active participation	Low (with flatrate Internet)	Bottom-Up, Top-Down	Two ways	yes	Citiz. ↔ Citiz. Gov. ↔ Citiz. Planne. ↔ Citiz.	Ideation/articulate concerns, scenario and decision making
Nabo	Citizens, governmental agency	Consultation	Low (with flatrate Internet)	Top-Down	Two ways	yes	Citiz. ↔ Citiz. Gov. ↔ Citiz.	Informing, Ideation/articulate concerns
Neighborland	Citizens, planners, governmental agency	Active participation	Low (with flatrate Internet)	Top-Down	Two ways	yes	Citiz. ↔ Citiz. Gov. ↔ Citiz. Planne. ↔ Citiz.	Ideation/articulate concerns, scenario and decision making
Nextdoor	Citizens, governmental agency	Active participation	Low (with flatrate Internet)	Top-Down	Two ways	yes	Citiz. ↔ Citiz. Gov. ↔ Citiz.	Informing, Ideation/articulate concerns
Nexthamburg	Citizens, planners	Active participation	Low (with flatrate Internet)	Bottom-Up	Two ways	yes	Planne. ↔ Citiz. Citiz. ↔ Citiz.	Ideation/articulate concerns
OpenPlans	Citizens, planners	Active participation	Low (with flatrate Internet)	Bottom-Up	Two ways	yes	Planne. ↔ Citiz. Citiz. ↔ Citiz.	Ideation/articulate concerns, analysis,

										scenario and decision making
Planning Toolkit		Citizens, developers	planners, Information	Low (with flatrate Internet)	Top-Down	One way	-	Gov. ⇒ Citiz.	-	
PlanningVIC: Planning Property Report		Real estate agents, planners, architects and potential property purchasers	Information	Low (with flatrate Internet)	Top-Down	One way	-	Gov. ⇒ Citiz.	-	
Seattle Progress	in	Real estate agents, citizens, home buyers	Information	Low (with flatrate Internet)	Bottom-Up	One way	-	Citiz. ⇒ Gov.	-	
Textizen		Citizens, planners, governmental agency	Consultation	Very low	Top-Down	Two ways	-	Gov. ⇔ Citiz. Planne. ⇔ Citiz.	Informing, Ideation/articulate concerns	
Urban Planning Gordexola	-	Citizens, governmental agency	Active participation	Low (with flatrate Internet)	Top-Down	Two ways	-	Gov. ⇔ Citiz.	Informing, Ideation/articulate concerns, scenario and decision making	
Ushahidi		Citizens, planners, governmental agency	Active participation	Low (with flatrate Internet)	Bottom-Up	Two ways	-	Gov. ⇔ Citiz. Planne. ⇔ Citiz.	Ideation/articulate concerns, data gathering	

The cases based analysis of the project criteria (Table 3) reveals that the main objectives of the current mParticipation examples are information sharing with citizens, gathering data with the help of citizens, collecting citizens' opinions on project-related topics, providing social networking platforms for neighborhoods (community building) and giving voice to citizens in the urban planning processes by engaging them. Among the reviewed cases, the main beneficiary groups are citizens, planners as well as government agencies. In terms of applied mediums during the project, more than one third of the selected projects used online and offline mediums. This shows the importance of offline mediums for extending the outreach and avoiding the digital divide within the engagement process.

Due to the focus of this dissertation, which is only on the urban planning context, the spatial level of most of the projects understandably ranges from neighborhood level to city level. However, some applications (with focus on community building and neighborhood social networks) are used only in the neighborhood scale. The main four developer groups of the cases are private companies (start-ups), governmental agencies, research institutes as well as non-profit organizations (NGO). A remarkable point here is the presence of start-up companies as well as NGOs in this emerging field; however, this could be mostly due to governmental programs in the USA (Code for America), in which the development of some of the cases were supported. Consequently, the motivation of developers could be gaining financial benefits for start-up companies, solving social issues, and providing transparency and information for governmental agencies and NGOs. It has been indicated that the most important reason for developing apps by citizens (and NGOs) was the developer's belief that his/her application could improve the everyday lives of people (Socrata, 2010). It should be taken into account that mParticipation projects are also happening in the developing world (e.g. Ushahidi initiative in Kenya). These real projects in developing countries confirm the penetration of mobile technologies in the developing countries and the possibilities of citizens' empowerment in these countries, where normally citizen participation is not formally and legally being considered in urban planning processes.

From the technological point of view (Table 4), many of the projects use open source codes in the development of their ideas, which emphasize opportunities of the open source movement (e.g. open government, open data and open participation) especially in the context of urban planning. Given the huge volume of apps that are offering information about public transport, health issues and safety using data revealed by governmental agencies, open data from governments were repeatedly used as the source of many mParticipation projects among selected cases. Nevertheless, the possibility of gathering urban environment data through citizens and crowdsourcing of geo-data is still very high.

Three of the selected cases use SMS and telephony as their communication channel, which are basically low-threshold channels. Using such channels vastly broadens the engagement range of citizens into project, while it decreases the collection of geotagged data as well as image data. This issue is partly solved in the CityVoice project, as the citizens have to announce a location-based code while they are leaving voice message at a call-in center. Recently, Textizen also added photo-messaging possibilities in their platform. Most of the

projects use multi-form communication in order to increase possibilities and easier ways for citizens to express their opinions. Due to the chances offered by apps, projects are using mobile apps, however, there is a growing tendency of using mobile-ready websites instead of apps to eliminate users' difficulties for downloading the apps. Complexity of most of the projects was analyzed according the personal test performed by the author including installation and test of different features of the applications in combination with some similar results derived from other research.

Location-based verification is one of the innovative features that is used by only four of the cases (FlashPoll, bePart, Nabo and Nextdoor). This feature could enhance the geographical scope of citizen participation. Using this feature enables planners and governmental agencies to integrate people, who are influenced in the project's spatial boundaries (e.g. in one specific neighborhood). Among eTools, interactive maps, quick polls and ranking tools were used more often in the reviewed projects. Augmented reality was rarely applied rarely in the projects, despite its potentials for providing extra information to citizens. User identification was not considered as a prerequisite for participation of citizens in most of the cases. However, this could be interpreted as due to the informal type of participation of citizens in selected cases.

According to Table 5 citizens, planners and governmental agencies were the three main involved actors. Based on the engagement levels of OECD, nearly two third of the projects target consultation and active participation as their engagement level within project. Lower reputation of information as a very low level of participation in the table does represents the fact that mParticipation projects aim initially at promoting higher level of citizen participation. This is also due to the exclusion of reporting apps and other thematic projects in the selection procedure. The costs of participation are relatively low among most of the selected cases as participants must not take a trip to a participatory event and most (data) plans available tariffs for Internet are relatively affordable. Without flat-rate contract, the costs could particularly increase when it comes to data gathering tools. Regarding the communication, top-down direction is mentioned more often in the table; however, bottom-up direction is remarkably the case for nearly one third of examples. Two-way flow of information is common in most of the projects, but only a few projects tried to use cross-media communication during the course of the project. In respect to the relations/networks between actors, most of the projects enable the actors to be networked with each other very often in both directions. One noticeable point is the possibility of networking between citizens, which brings a new aspect to participation processes. In terms of citizen engagement in different stages of urban planning processes, it could be concluded that most of the cases offer informing, ideation/articulate concerns about planning issues. Inclusion of citizens in data gathering and the implementation stage only took place in the case of LocalData. Moreover, few projects were able to engage citizens in the analysis and decision-making processes.

3.2 Typology of the reviewed mParticipation projects

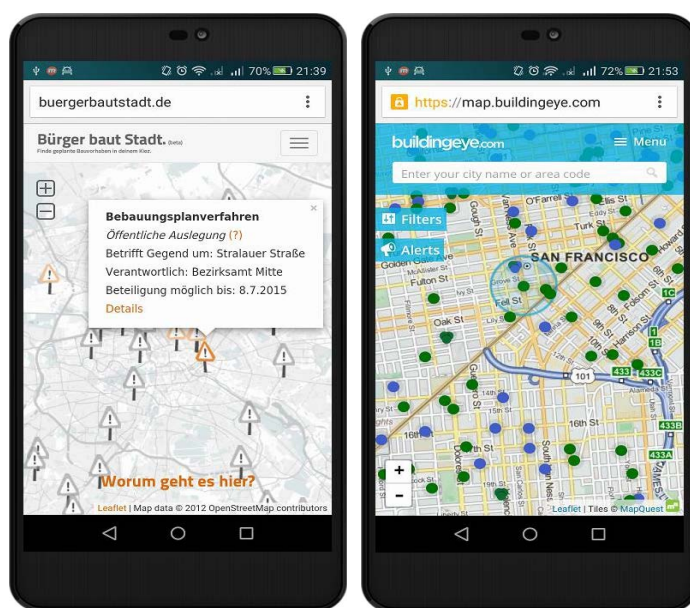
Classifying the reviewed cases into different types and presenting a typology make it possible to have a systematic analysis in following chapters. In terms of classifying mParticipation practices, very few attempts have been previously made by scholars. One of the earliest attempts is the typology of participatory planning apps introduced by Ertiö (2013). Ertiö schemed the apps in a typology by using the dimensions of goals, information flow, and leverage, which were derived from citizen participation theories. According to these dimensions, she introduced eight types of participatory planning apps such as information sharing apps, experience apps, behavior suggesting apps, interaction enabling apps, citizen impacts apps and lastly dialogue apps. Additionally, Desouza and Bhagwatwar (2012) reviewed several so-called “citizen apps”, which were developed to solve urban complex problems. They studied a representative example of 20 apps from countries around the world and classified these apps according to three dimensions: data source, goals of the application, and developer motivation. In terms of data source, citizen apps were categorized into three types user feeds, governmental data and hybrid. Based on goal of the application, four types of citizen opinion seeking, problem identification, problem resolution and creating awareness were identified. Regarding developer motivation prizes, solving social problems and open-data app startups were three types under this category.

Each of the typologies presented above applied different sorts of criteria to categorize the participatory or citizen apps based on their approaches. However, due to the different approaches and selected criteria of this research, different sets of factors have to be considered in categorizing the reviewed examples. Thus, the mParticipation practices are categorized according to two dimensions: communication flow and content of the system. Content of the system refers to type of the things that are contained in the system and are being communicated. The communication dimension is one step further than only information flow as it represents the flow of information and the involved parties in communication actions (Figure 9).

- **Informing type**

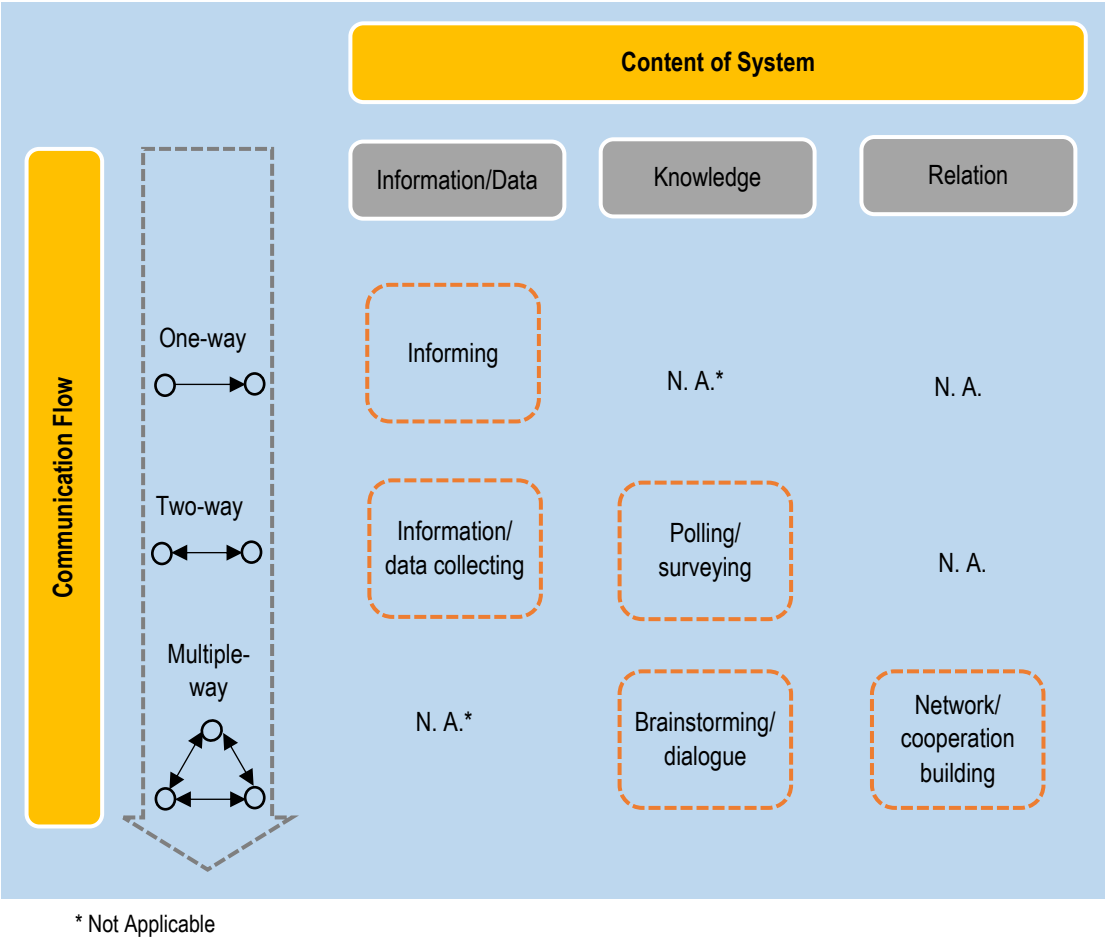
This type of application represents projects that aim at providing information from one actor to the other one via single-way communication flow. This means, the information about different topics is shared via one of the eTools from one actor to another and the communication flow stops at the end. Projects such as bePart, Bürgerbautstadt, Buildingeye, Master Plan 2014 Singapore,

Figure 8 Bürgerbautstadt project in Berlin (© Bürgerbautstadt) and Buildingeye project in San Francisco (© Buildingeye)



Planning Toolkit, PlanningVIC: Planning Property Report, and Seattle in Progress can be classified in this type.

Figure 9 Typology of the reviewed mParticipation practices

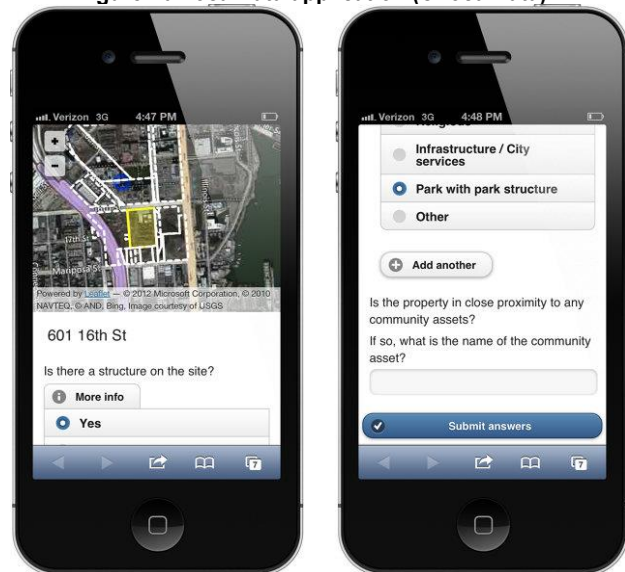


For instance, the bePart and Bürgerbautstadt projects focus mainly on providing information about the formal (face-to-face) participation possibilities for citizens in Berlin, while making the access to such information easier and more understandable. The Buildingeye and Seattle in Progress provide access to different kinds of information for citizens such as building permits, planning applications, code enforcement, capital projects, public events and business licenses. The Seattle in Progress project publishes all the related planning documents for the approved projects. The Master Plan 2014 Singapore project only informs the citizens of Singapore about the prepared master plan, its regulation, and maps. The Planning Toolkit and PlanningVIC are two other projects, which focus on providing planning related information mostly to planners and developers.

- **Information/data collecting type**

The information/data collecting type is another category of mParticipation examples, in which data/information is gathered through a two-way communication between two actors. In this type, one actor (e.g. a municipality) asks the other actor (e.g. residents) to provide certain data/information (demographic or spatial data) and this data/information will be communicated back. The real world example of this type is the LocalData app, which is a cloud-based mapping platform that helps cities and communities make data-driven decisions by capturing and visualizing street-level information in real time. In one of their projects in Indiana with just 67 volunteers, the team surveyed over 11,651 properties covering 2,000 acres across the city. Surveyors covered nearly 40 parcels per hour (LocalData, 2013).

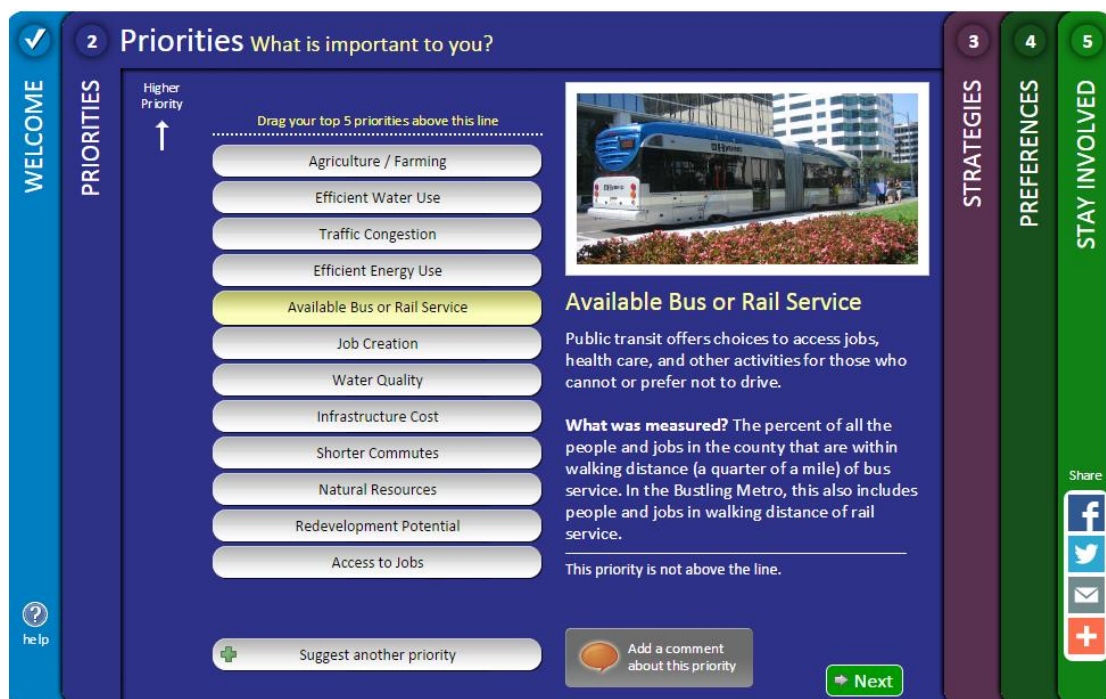
Figure 10 LocalData application (©LocalData)



- **Polling/surveying type**

As it is indicated in the typology figure, the polling/surveying type utilizes a two-way communication flow to gather knowledge of other actors. In this type, one actor starts communication and asks the other actors about their knowledge, and the knowledge will be

Figure 11 Visually-rich and well-structured design of MetroQuest projects for tablets (©MetroQuest)



communicated only between these two actors. The typical example here is, when a municipality asks citizens to give their opinion on certain planning issues. The citizens respond to the survey or poll and communicate back to the municipality but they will not communicate with other respondents of the poll or survey. The projects such as Abu Dhabi Vision 2030, FlashPoll, Metroquest and Textizen can be grouped in this type.

All of these projects aim to survey or poll public opinion and knowledge, however, they apply a different set of tools and technological features to achieve their goals. In the Abu Dhabi Vision 2030 project, citizens were asked to give their opinion on how the streets of future Abu Dhabi would look like through using an online street section design tool. FlashPoll is a municipal polling app, which uses location-based service's smartphones to collect citizens' feedback, but only the ones that live or are located in a specific geographic area. MetroQuest, a company based in Vancouver (Canada) uses a very well structured and visually rich application for engaging citizens in different urban planning projects in the USA (Figure 11). Textizen is, however, a very low-threshold service as it utilizes text messages (SMS) to collect citizens' feedback. Using this tool, municipalities (depending on the project) put posters or information stands in the project area and asked citizens to sign-up and give their feedback. The unique aspect of this tool is the application of text messages as the communication channel, which makes the participation process more inclusive and open with fewer barriers.

- **Brainstorming/dialogue type**

This group of applications, called brainstorming/dialogue type, applies several two-way communication channels and utilizes a multiple-way of communication between different actors. The main difference of brainstorming/dialogue type from polling/surveying type is that the first enables different actors to communicate with each other, but the later one only engages two actors in the communication action. This means, the knowledge here will be conveyed through many-to-many communications channels. For example, a municipality starts a conversation with citizens on an urban planning issue and asks them to give their opinion on this topic. The citizens and municipality enter a conversation, in which they communicate with each other, develop ideas and solutions, comment on others' ideas, vote on and rank the solutions. As a result, a very low level of dialogue will take place among different actors as each actor has the possibility to initiate a communication with others.

This type of mParticipation is very often applied in the urban planning context and a lot of the reviewed examples are of this type. Community Remarks, CityVoice, Mindmixer, Neighborland, Nexthamburg, OpenPlans, Urban Planning- Gordexola and Ushahidi belong to this type. For instance, Community Remarks is a (mobile-ready) map-based engagement platform that enables citizens to drag and drop markers in Google Maps and attach an image and comment. It has been utilized for planning projects all over the USA, specifically in Michigan for transportation related citizen engagement. OpenPlans uses a similar concept. It is an open-source map-based engagement tool, which also focuses on collecting citizens' ideas for specific locations. Another important aim of OpenPlans is to ease the mapping process, as it provides user-friendly templates for different planning topics.

CityVoice is another interesting example of this type, which is a place-based call-in system for gathering, sharing, and understanding community feedback and is supported by Code for America program in partnership with the City of South Bend in the USA. This project focused on the redevelopment plan of 1000 vacant lots. The team of CityVoice tried to provide a possibility for citizens to voice their opinion (especially low-income classes), so that their interests will be included into

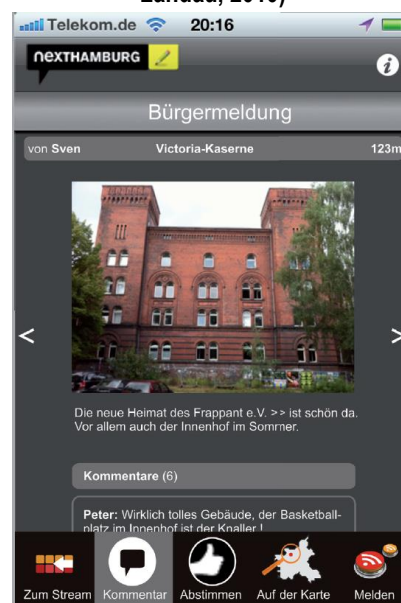
this plan. Signs were placed in the yards of 250 selected vacant or abandoned properties (Figure 12). After calling the number, citizens were asked to answer a poll on this property, which provided structured data for the city authorities. The callers could first listen to what other citizens had been saying about this property and then leave their own comment (idea, suggestion, complementary description, etc.) at the end of the call. All of these comments were transferred to the web platform of CityVoice and geo-located on a city map.

Figure 12 CityVoice project in South Bend (USA)
(©CityVoice)



Minmixer is one of the most-used engagement platforms in the USA (900 communities). The basic idea of this tool is to provide a forum for communities in order to discuss certain topics and crowdsource solutions and ideas. Participants or contributors receive rewards based on their contributions to the platform as they post ideas, interact with other comments and vote. Nexthamburg was a bottom-up initiative in Hamburg (Germany), which aimed to activate citizens in the process of urban development by engaging them into envisioning the future of Hamburg. They used the crowdsourcing idea and applied different social media and online platforms (mobile-ready use). An app for Apple devices operating systems (iOS) was developed during the project, which enabled users to contribute to the platform by putting their ideas on the map and other people could comment on ideas. In addition, the app used the location-based service function of the smartphone to notify the users about the ideas around them while walking through the city.

Figure 13 Developed App in the Project NextHamburg (Fey and Landau, 2010)



- **Network/cooperation building type**

The last type of applications deals with relations and instead of information or knowledge. This type of applications (which is called network/cooperation building) aims at connecting different actors with each other and provides multiple ways of communication for these actors to be linked. As it was described before, in this type the relations between actors are being communicated in the system. Although it is a new and emerging type of engagement, there are some examples among the reviewed cases that can be categorized in this group such as the Chip-In, Nabo and Nextdoor projects. Chip-In is a developing mobile app that allows community members to volunteer time, donate funds, and start projects within communities, while allowing users to engage on social media to share their projects. This app aims at building cooperation between different actors (urban planners, developers, and community members), and engaging them in the planning and implementation of ideas. The other two projects, Nextdoor (in the USA) and Nabo (in Australia), provide a private social network for community members, who actually live in the neighborhoods. In this social network, community members are networked together and they get to know one another through their relations and finally support neighborhood activities.

3.3 Experimenting mParticipation in Berlin (testing FlashPoll as the polling type)

This section describes the tests and experiments with the FlashPoll mobile app (as the polling/surveying type) that have been conducted under the umbrella of a European Research Project “Smart Sustainable Districts (SSD)” in the West Moabit area, Berlin. SSD is an applied-research project, which is funded by Climate-KIC (Knowledge innovation Center) and involves a network of eleven European districts (quarters). In Berlin, the Institute for Sustainable and Urban Design “CHORA city&energy” of TU Berlin is responsible for implementing research activities. The SSD project aims to promote and advance implementation of an intelligent urban quarter. The West Moabit area has optimal preconditions for this as it has been addressing topics of resource protection, sustainability and climate change for many years and has built networks and developed procedures to achieve its goals (CHORA city&energy, 2015). In the following, the FlashPoll app and its features will be briefly described. Afterwards, the status quo of the West Moabit quarter as the test bed of the experiment will be demonstrated. In the end, the differently implemented tests (polls) will be elaborated in more detail with their results.

3.3.1 Description of FlashPoll Mobile Participation Tool

FlashPoll is a mobile app, which was developed in the European research project “Developing a Municipal FlashPoll Tool” funded in the framework of the European Institutes of Technology EIT-ICT. The aim of the project was to develop a tool that allows more satisfying and consistent communication between citizens and administrators. In addition, the project intends to facilitate municipal decision-making processes by means of a feedback function and generates bottom-up discussions as well as ideas and interests. During the course of the project, FlashPoll app was firstly developed for mobile devices running on Android operating system.

In terms of technical features, FlashPoll uses the location-based services feature of smartphones and tablets, which allows pushing polls at defined moments in specific geographical areas. This feature provides the possibility of engaging only the residents of a specific neighborhood and collecting context-based knowledge of citizens for planning purposes. The FlashPoll app offers different types of answers for each question such as single choices, multiple choices, ranking and open questions. In an example scenario (Figure 14), a municipality wants to consult the public before making a decision. In the first step, the municipality initiates a poll via the poll initiator web-platform. Initially descriptions of the poll have to be added to the poll initiator interface. Title, subtitle, description, concluding message, poll duration, timeframe (start/end time), location (also known as geo-fence) and display of results to the respondent (instantly/later) are required information for initiating a poll. Afterwards, the questions of poll will be added to the poll initiator and the poll will be published.

In the next step, citizens (who already installed the app on their smartphones) moving through the city will enter the geo-fenced area related to the poll and receive a notification about a running poll. In the third step, the participants take part in the polling and answer the questions. After finishing the poll, the users get immediate feedback on results on their phone. In the last step, the municipality evaluates the content and results of polling and integrates them into the decision-making process (Flashpoll, 2015).

There are some factors, which make FlashPoll a unique tool for citizen engagement in urban planning context. First of all, it can support decision-making by fast polling as it enables large numbers of people to give their opinion instantly and in real-time. Additionally, the FlashPoll app immediately visualizes the public feedback in the current poll and participants can view the results (of the poll after their participation). This increases transparency of the engagement process. Furthermore, the FlashPoll allows context-based polling, which enables decision-makers to engage stakeholders of a specific planning area within a clear time frame. More importantly, the FlashPoll is privacy sensitive and therefore the responses cannot be traced back to the users or to their devices. Finally, the FlashPoll app is very flexible in terms of technicality and can be integrated into other apps or platforms.

Figure 14 General scenario of using FlashPoll tool (Flashpoll, 2015)

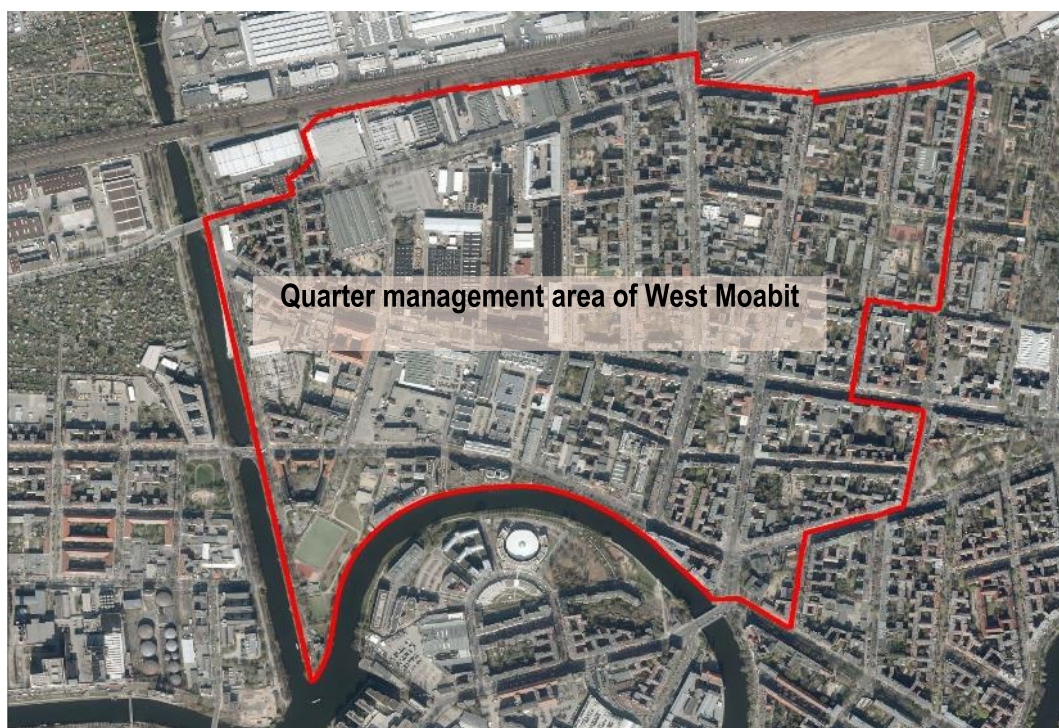


According to the above mentioned factors and interest (supports) of the FlashPoll team for implementing the tests, this tool has been chosen for a real test in the West Moabit area in Berlin, which will be described below.

3.3.2 West Moabit quarter: status quo and current development

West Moabit is the quarter management (QM) area (Figure 15) within the Mitte municipal district in Berlin. This 134-hectare area is surrounded by several important sites such as the governmental district (Regierungssitz), Technische Universität Berlin and development area “Europacity” near the main train station of Berlin (Hauptbahnhof). The West Moabit quarter includes industry areas (43 hectare) and high-density residential areas (QM Moabit West, 2013).

Figure 15 QM's area of West Moabit



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In 2012 West Moabit had 21.182 inhabitants and experienced a population growth of 1.1 percent compared to 2011. Regarding its social structure, the West Moabit quarter has a multi-cultural texture, as almost half of the inhabitants (49.8 percent) are foreigners or Germans with immigration background. In terms of age structure, the quarter has a young population age as 65.8 percent of the inhabitants are below 45 years old (Table 6). In respect to the economic situation of its inhabitants (2011) it should be highlighted that near to 37 percent of the residents receive governmental aids (Transfereinkommen) and 10 percent of the inhabitants are unemployed (QM Moabit West, 2013).

Table 6 Age structure of the West Moabit quarter by 2012 (QM Moabit West, 2013)

Age group (years old)	0-6	6-12	12-18	18-35	35-45	45-55	55-65	+65
Percentage	5.58	4.59	4.31	37.05	14.30	14.12	10.18	9.78

The network of actors in the West Moabit area is structured and consists of many actors in different levels and themes. The **residents** are represented in quarter council (Quartiersrat) and assignment jury (Vergabebeirat), the institutional body of decision-making processes in the area. In addition, there are several monthly-organized events (like Stadteilplenum) and working groups for engagement of all inhabitants. In the field of **education**, several organizations (high schools, elementary and secondary schools, kindergartens) and NGOs are actively engaged in the development of quarter. The Cultural and Natural Scientist Education Network (NGO), Moabiter Ratschlag (NGO), SOS-Kinderdorf (NGO) and Kurt-Tucholsky library are some active examples for organizations, which provide different educational offers for different target groups including families, youth and children.

In the field of **culture** several art-related NGOs (such as Kunstverein Tiergarten/Galerie Nord, Kunstrepublik/Zentrum für Kunst und Urbanistik, Refo-Moabit Kirche im Kiez/Refo-Kirche, Initiative Grenzen-los!/Jugendtheaterbüro) offer cultural activities in the quarter. Regarding **business and economic** activities in West Moabit the Business Companies Network of Moabit (Unternehmensnetzwerk Moabit) is the only identified actor, which includes companies such as GFAD (software), Siemens AG and Atotech. The initiative “Green Moabit” was started by this network and focuses on monitoring urban climate changes and generating energy saving potentials in the West Moabit quarter (QM Moabit West, 2013).

In respect to the focus of this dissertation (citizen engagement in urban planning), three main development trends in the West Moabit quarter are considered here: mobilization of citizens, responsibility for the quarter, and networking. Since the end of 2011, twenty-five selected inhabitants are active members of the quarter council. In the course of developing the guiding principle (Leitbild) of the quarter in 2012 and beginning of 2013, participation in the quarter council increased and the quarter council members became more engaged in different initiatives and projects. The diversity of the quarter council members in terms of age structure is acceptable; however, the citizens with immigration background are underrepresented in the quarter council considering their share in the quarter’s total population.

Concerning responsibility of the quarter, several activities are supported by different actors in the quarter. For instance, the quarter council initiated participatory actions in the area to design the trees pits in Emdebner Street. Several NGOs are active in cleaning and maintenance of some green areas and play grounds. Many local companies and businesses are involved in the education field and support initiatives and projects, which promote an improvement of the education situation in the Moabit area (e.g. Nawi-award for the Tiergarten secondary school in cooperation with Atotech Company). The voluntary engagement in the quarter is very high, and therefore, important offers and activities can

resort to the intensive support of volunteers. The projects and offers of Schulgarten and Nachbarschaftstreff Café and SOS-Kinderhof are categorized in this type. In contrast to the high responsibility of local actors for the quarter, the responsibility of the district municipality is decreasing specifically in terms of financial supports (QM Moabit West, 2013).

In respect to the networking aspect, the QM of West Moabit is integrated in local and district networks. The existing institutional structure of the area provides many exchange possibilities. Besides the joint organization of the Stadtteilplenum with Moabiter Ratschlag NGO, several other cooperation activities exist between the QM and other actors such as SOS-Kinderdorf. Through these activities QM has initiated a range of thematic networks (Kindergarten network or network for integration) in the last years. Another example could be an initiated cooperation between REFO- Church and Youth Theater Office, which allows for a common usage of the local church's space and increases the role of the church as cultural point for the quarter (QM Moabit West, 2013).

The above-mentioned aspects of the current situation and development trends of the quarter can be summarized in the following points:

- The relatively high share of younger age groups in the quarter may show higher availability of smartphones for the residents and their technological skills for using smartphones. However, it may decrease their willingness to participate in the urban development processes, as there is a common lower rate of citizen engagement among younger generation. This issue may be aggravated by the high share of foreigners and Germans with immigration backgrounds as well as the relatively high share of low-income and unemployed people in the quarter.
- The existing network of actors consists of diverse types of stakeholders (e.g. institutions, NGOs, municipal bodies, companies, associations and networks, etc.) from different fields, which are actively cooperating with each other in order to influence the urban development of the quarter. Therefore, it is necessary to consider these existing potential partners and their communication channels for initiating any kind of participatory processes. Doing that, the implementation of FlashPoll tests will be carried out in close cooperation with QM as well as some other actors.
- There are several (face-to-face) possibilities for engaging the residents in the development of quarter. These possibilities are normally available for specific groups of residents (older, well-educated, middle-class income, committed and dedicated residents with free time). The low share of inhabitants with immigration background in quarter council and relatively low level of their engagement calls for a more inclusive approach. In this sense, using new methods such as mobile participation can be one new communication channel for engagement.

3.3.3 Implemented polls (tests) and their results

In order to cover and test most of the possible influential factors and elements of mParticipation, three different scenarios were designed according to the spatial scope of engagement, subject of the project and timeframe of the engagement process. The first scenario was using FlashPoll in a short timeframe (less than a week) on the scale of quarter, as an additional participation element to the face-to-face method in a running participatory process. The second scenario was applying FlashPoll in a longer timeframe (four months) on the quarter scale as a single element of engagement. The third scenario was to test FlashPoll in a long timeframe (three months) on a larger spatial scale (district scale) as a single element (Map 1).

The QM office of West Moabit was contacted as the main local partner for the tests in the quarter, because they are already active and integrated in the network of actors (since 2000). It is responsible for engaging residents of the quarter in the urban development process and have local office onsite and organizational capabilities for implementing the tests. The tests will be described below in more detail.

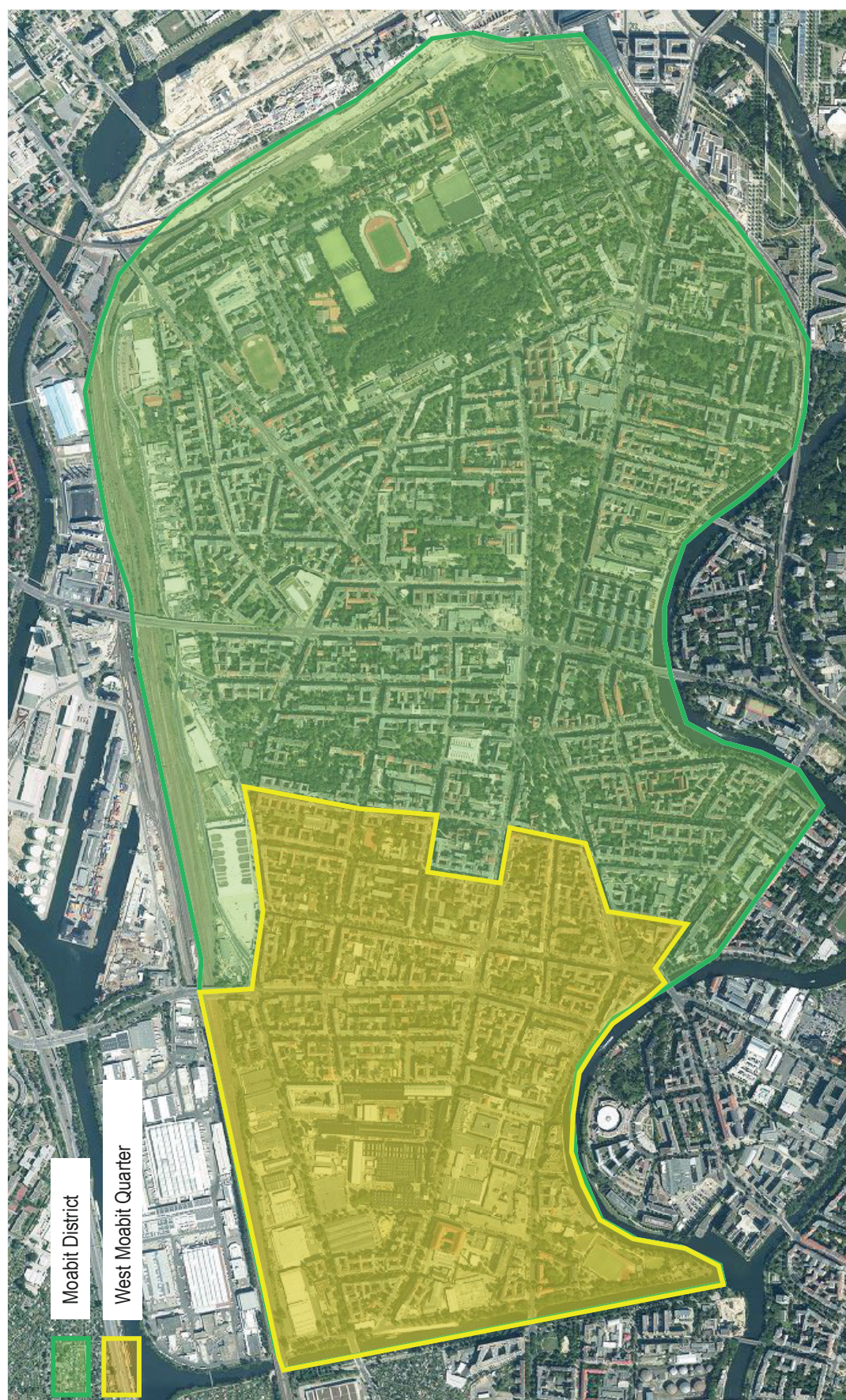
- **Test one: Re-designing plan of Waldstraße Street**

One of the main responsibilities of the QM is to evaluate and improve living conditions in the West Moabit area. The re-designing plan of Waldstraße Street was one the projects of QM, which aims at improving the physical condition of this street and revitalizing some dead parts of it. It is based on financial support of the program “Soziale Stadt”. Citizen engagement was the core element of this plan and the residents of the area were involved in the planning process. Therefore, the residents had the possibilities to see the four proposed draft plans (by four architecture offices) in the QM onsite office from 18th March to 8th April 2015. After this period, there was an information evening event on 14th April 2015 at the building of SOS-Kinderdorf NGO, where all four plans were introduced and discussed by citizens. In the next step, the quarter council selected one of the plans for the implementation and final comments of residents.

In the course of preparation of the plan, FlashPoll was applied as a new participation instrument in addition to face-to-face methods. Doing that, a poll with five questions (single-choice and multiple-choices) was launched on 13th April 2015 for three days. The poll was advertised at the same information evening event (14th April at SOS-Kinderhof) as well as online on the QM's Facebook page and website (Figure 20).

By the end of the polling time on 16th April, 28 persons participated in the poll. The results of the poll are described below. They were delivered to the participants later in form of a five-page report.

Map 1 Spatial scale of the tests



Source: Berlin Open Data Portal, Luftbilder 2015

Figure 17 Result of first question of the first poll



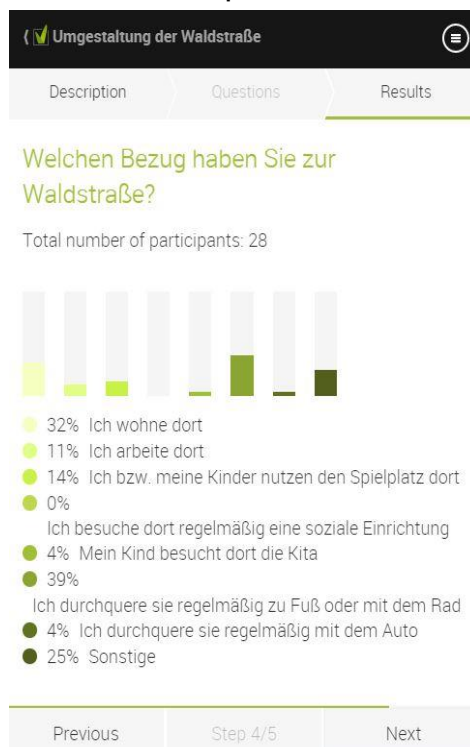
Figure 16 Result of second question of the first poll



Figure 19 Result of third question of the first poll



Figure 18 Result of fourth question of the first poll



The result of the first question show that Facebook and personal chats (with QM onsite office members) were two main important channels for the residents to get information about the plan and participation possibilities (Figure 17). When the poll was posted on the Facebook page of QM, the residents noticeably reacted to the posts, asked for more information and the number of participants in the poll increased (right picture in Figure 20). Additionally, the post was shared three times by other Facebook pages and persons. This showed the important function of social media as it enabled other groups of residents to be at least informed about this plan. According to the second question, information-sharing events were mentioned by 71% of respondents as their favorable way of communication. The third and fourth questions addressed the contents of the plans and their ranking, which are not of interest of our tests. The last question was concerning the demographic of participants. As it can be seen in Figure 21, 64% of the participants in the poll are under 45 years old, so they are counted as the young age group of inhabitants. Given the higher presence of the older age group of inhabitants at the information evening event (14th April), it can be seen that the FlashPoll test included a broader audience with different age groups into the planning process of Waldstraße Street.

Figure 21 Result of fifth question of the first poll



Figure 20 Advertisement for the first poll for the evening event (left) and on the QM's Facebook page (right)

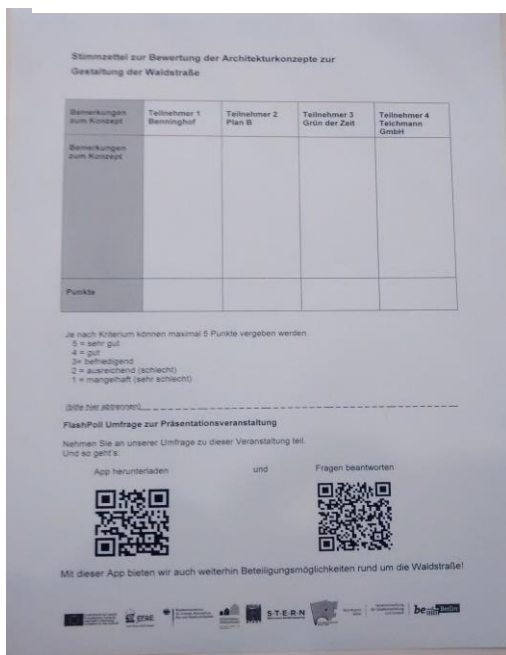


Table 7 Information summary table of the first poll

Poll information table	
Number of participants	<ul style="list-style-type: none"> 28 persons
Topic	<ul style="list-style-type: none"> Re-designing plan for a street
Duration of poll	<ul style="list-style-type: none"> Three days
Questions types	<ul style="list-style-type: none"> Single choice Multiple choice
Number of questions	<ul style="list-style-type: none"> 5
Spatial scale	<ul style="list-style-type: none"> West Moabit
Promotion strategy	<ul style="list-style-type: none"> Information evening event Facebook page of QM West Moabit
Involved actors	<ul style="list-style-type: none"> QM West Moabit office

• Test two: QM's responsibilities and communication channels

After successfully conducting the first poll a new test about the QM's responsibilities and communication channels was initiated. The main goal of this test was to figure out to what extent the residents of West Moabit are informed about the QM's responsibilities and their participation possibilities as well as to identify through which communication channels, they are receiving information in this regard.

As the second testing scenario aimed at testing Flashpoll for a longer timeframe and as the single element of engagement, the second poll was conducted for four months (from 27th May to 30th September), with six questions within the spatial area of QM West Moabit. The questions were prepared by the QM office according to their needs to gain important feedback from residents. One of the additional ideas behind this poll was to test different promotion strategies and channels (online and offline). The poll was launched on 27th May 2015 and initially advertised on the

Figure 22 Neighborhood celebration and FlashPoll promotion



neighborhood celebration (four-hour event) with designed information flyers (with brief instructions). The flyers were located on tables in front of QM's office and distributed to residents during the celebration (Figure 22).

In addition to this event, the information flyer was posted in the website and the Facebook page of QM West Moabit time to time (Figure 23). The poll was also promoted in the newsletter as well as in the quarter magazine (for West Moabit). As the part of offline-methods, flyers were printed and distributed by different existing networks of actors in the area (e.g. SOS-Kinderhof, Moabiter Ratschlag, etc.) and provided at important and frequently used places in the area.

By the end of polling on 30th September, 21

Figure 24 Result of first question of the second poll



Figure 23 Promoting FlashPoll on Facebook page of QM West Moabit



persons participated in the poll. In respect to the duration of the poll, relatively few people took part and despite all promotion efforts, the results were not satisfying. In the first question, the residents were asked to choose the important tasks of QM. As it is shown in Figure 24, more participation of residents and actors, better quality of the living area in the quarter and more social and intercultural integration was chosen by 62%, 52% of participants, respectively. The second question was specifically about awareness for the participation possibility under responsibility of QM which 57% of participants were not informed about this issue (Figure 26).

The third question addressed different communication channels between QM and the residents. The website and Facebook Page of QM were preferred by more residents compared to the face-to-face events such as Statteiplenium (Figure 25). However, it must be considered that this poll was advertised online as well, so this might have biased the answers of this question. According to the fourth question, most of the residents contact QM in the case that some deficits are in the area (Figure 27). The fifth question was an open

question and the people were asked to give their opinion on the future urban development in the area and describe what their vision is. Unfortunately, not many participants answered this question, which might indicate that either the question was vague or not interesting for residents. The last question shows that most of participants (57%) belong to the young age group, which points out a possible digital divide (Figure 28).

Figure 26 Result of second question of the second poll



Figure 27 Result of fourth question of the second poll



Figure 25 Result of third question of the second poll



Figure 28 Result of sixth question of the second poll



Table 8 Information summary table of the second poll

Poll information table	
Number of participants	<ul style="list-style-type: none"> 21 persons
Topic	<ul style="list-style-type: none"> QM's responsibilities and communication channels
Duration of poll	<ul style="list-style-type: none"> Four months
Questions types	<ul style="list-style-type: none"> Single choice Multiple choice Open question
Number of questions	<ul style="list-style-type: none"> 6
Spatial scale	<ul style="list-style-type: none"> West Moabit
Promotion strategy	<ul style="list-style-type: none"> Neighborhood celebration event Facebook page of QM West Moabit Internet Website of QM West Moabit Newsletter of QM West Moabit Quarter Magazine West Moabit Distribution of flyers through networks of actors
Involved actors	<ul style="list-style-type: none"> QM West Moabit office

• Test three: Mobility behavior in Moabit district

The third test focused on the mobility behavior of the residents of the Moabit district. Being part of the SSD project, the contents of the third poll were supported by the research team of CHORA institute, so that the final results of the poll would be integrated in the SSD research project. The third test scenario aimed at testing FlashPoll in a long timeframe (three months) on a larger spatial scale (district scale) as a single element, in order to see if more people would take part in the test. It was launched on 10th June and ended on 30th September 2015. The poll included six questions and the spatial level was of Moabit district.

The initial advertisement for the poll took place during the Moabit's third education festival (Bildungsfest) on 11th June at Otto Playground in the Moabit area. The information flyers designed for this poll included a brief instruction. They were located on a table in front of the stand and distributed between other stands later during the event. After this event, several other promotion strategies were implemented using offline and online media. The poll was promoted on the website and Facebook page of QM West Moabit. Due to a larger spatial scale of the test, QM East Moabit was contacted for supporting the promotion of the poll through their network. Doing that, the poll was also posted on the East Moabit QM's Facebook page, website and announced in their newsletter (Figure 29).

Figure 29 Promoting FlashPoll on the Facebook page of QM East Moabit and information flyers on the education festival

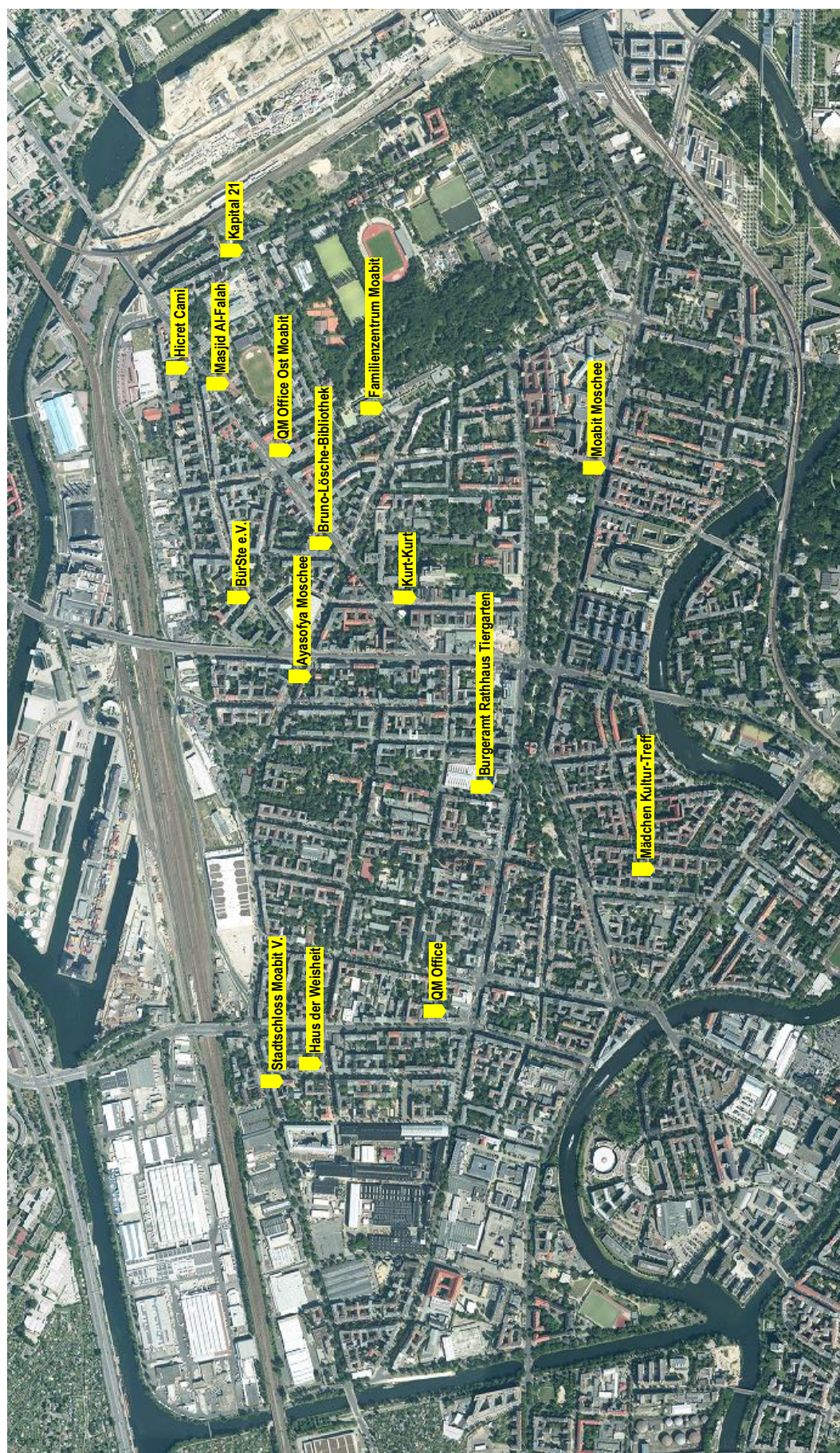


With respect to offline methods, the information flyers were printed in different sizes and colors and distributed through different actors and networks in the entire Moabit district. In order to achieve that, a list of all possible active actors and networks (libraries, NGOs, cultural cafes, mosques, governmental offices) as well as possible meeting points in the district was prepared based on the information available in QM analysis documents (Map 2). Additionally, nearly 200 extra newly designed information flyers (e.g. adding QR codes and information regarding data privacy) were distributed to randomly selected houses in the Moabit district in order to reach more residents. This was a try to see how/if the flyer with new design and translated instruction (Arabic and German) would encourage residents to participate in the poll (Figure 30).

Figure 30 Information flyers translated to Arabic and German with new design



Map 2 Location of active actors and meeting points in Moabit district



Source: Berlin Open Data Portal, Luftbilder 2015

By the end of the third test on 30th September, 22 persons participated in the poll. As it was mentioned above, the content of this poll was specifically focused on the mobility behavior of residents in the Moabit district and related to the research questions of the SSD project; therefore, the participants' proportions of responses to the first five questions are not relevant for this dissertation. In the first question the residents were asked, how they move in the Moabit district. The second question was about the public transportation and the third question asked future alternative transportation modes. The fourth and fifth questions concerned the awareness of residents on the topic of climate-change and the project "Green-Moabit". The last question was about the age of participants and showed the dominance of younger age groups in the poll.

Table 9 Information summary table of the third poll

Poll information table	
Number of participants	<ul style="list-style-type: none"> ▪ 22 persons
Topic	<ul style="list-style-type: none"> ▪ Mobility behaviour in Moabit district
Duration of poll	<ul style="list-style-type: none"> ▪ Three months
Questions types	<ul style="list-style-type: none"> ▪ Single choice ▪ Multiple choice
Number of questions	<ul style="list-style-type: none"> ▪ 6
Spatial scale	<ul style="list-style-type: none"> ▪ Whole Moabit district
Promotion strategy	<ul style="list-style-type: none"> ▪ Moabit education festival ▪ Facebook page of QM West Moabit and East Moabit ▪ Internet Website of QM West Moabit and East Moabit ▪ Newsletter of QM West Moabit and East Moabit ▪ Quarter Magazine West Moabit and East Moabit ▪ Adding short instruction list in the flyer ▪ Translation of flyer to Arabic ▪ Flyers through network of actors ▪ Flyer distribution in randomly selected houses
Involved actors	<ul style="list-style-type: none"> ▪ QM West Moabit office ▪ QM East Moabit office

3.4 Summary

During the last decade, many mParticipation practices have been implemented worldwide in order to exploit the possibilities and opportunities offered by smartphones and tablets in the context of urban development. In this chapter, 23 mParticipation projects/tools are evaluated, which focus on urban planning. This initial evaluation helps the researcher to explore the landscape of mParticipation from a practical perspective. The evaluation of these projects highlights the growing number of start-ups and some bottom-up initiatives focusing on developing solutions for urban authorities in developed and developing countries. These are the new actors, who are driving forward the development process of mParticipation. In addition, many practices use open data and open source formats in their applications. In terms of communication medium, a variety of communication channels (SMS, voice, Internet, etc.) are used which shows the multi-channel communication possibilities of smartphones. The evaluated cases endeavor to achieve higher levels of engagement. Based on the evaluated cases, a typology of mParticipation practices is developed.

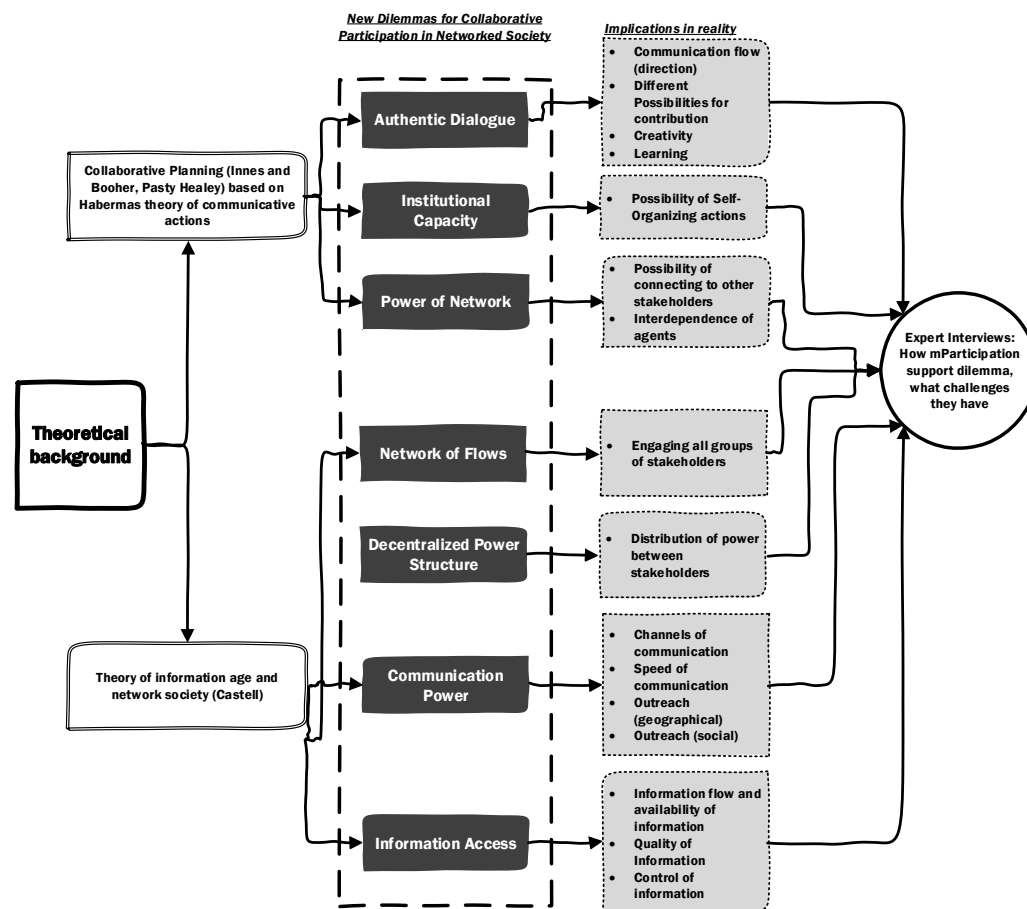
Furthermore, a mParticipation process was tested as a pilot project in Berlin (the West Moabit quarter). The FlashPoll app was used in three pilot tests in order to investigate different kinds of scenarios for promotional strategies, on different geographic scales and various topics. Although the results of the tests were less in number than expected, interesting insights have been generated. They were presented in this chapter.

Chapter IV- Analysis of theoretical reflections and field experiments

4.1 Theoretical reflection

The literature review of this research (section 2) was conducted in two theoretical spheres, named as “collaborative planning” and the “networked society”. The main dilemmas of both theories were discussed in previous sections in order to investigate the possible influence of mParticipation in these two theories. These dilemmas were formulated in three thematic questions with expert interviews regarding the influence of mParticipation on communication between actors, network of citizens and the flow of information. Furthermore, the researcher identified some implications of both theories in reality for later analysis in discussion part (Figure 31).

Figure 31 Theoretical dilemmas of the research



4.1.1 Expert interviews

Lack of academic research in the mParticipation field led to the design of a qualitative research through expert interviews as an exploratory research approach. Nevertheless, the themes and guiding questions were extracted from theoretical background of this research and concerning the research questions. Bogner and colleagues (2009) discuss expert interviews as an effective method for obtaining good results quickly. This anticipated promise

of this method results in frequent use of expert interviews in social science (Bogner *et al.*, 2009). Hence, this research takes advantage of the expert interview method in order to reconstruct the knowledge about mParticipation.

4.1.1.1 Selection process of experts

Due to practical aspects of this research and limited scope of this research, the experts are mainly selected from academic and praxis background. Additionally, due to emergence of new bottom-up initiatives active in the field of mParticipation, some experts were added from this background. The first round of experts were the key experts who were identified based on their relevant publications as well as reviewed practices in section 3.1. The first contact to these experts was made during the American Planning Association annual conference in Atlanta 2014, where the researcher presented this research project. Afterwards, the snowballing method is used for selection of the next experts. This means, after each interview, the experts were asked to introduce a relevant expert for the next interview.

During this process, 17 experts were selected from USA and Germany. They were informed by email about the existence of the investigation and were invited for an interview. A positive feedback from 15 experts was shortly received after the first email. The list of expert can be find in 6.4 Annex4. In the next step, appointments were set with the experts. The experts were between 30 and 60 years old, seven women and eight men. Eight experts were academics, five were from praxis and two were from bottom-up initiatives. Therefore, a very heterogeneous group was interviewed. This was necessary to raise a possible differentiated expertise and to cover all topics that were relevant to the investigation.

4.1.1.2 Construction and implementation of interviews

It is discussed that the objective of this research is to structure the knowledge of mParticipation and the implications for collaborative urban planning. Therefore, there is a need for more concert approach for collecting the knowledge from experts. Bogner and Menz (2009) categorize expert interviews into three categories as exploratory, systematizing, and theory-generating expert interviews. Given the objective of this research, the systematizing type is applied for constructing the expert interview. This type of expert interview is appealing for exploratory research in which the researcher requires specific knowledge regarding the research questions. From this methodological perspective, the expert has the function as an informant who provide information about the topic being investigated (Bogner and Menz, 2009). Considering these methodological frameworks, a semi-structured interview encompassing a set of questions (including ten main questions and two optional) is designed and used for the expert interviews (see the Annex 1.1).

For the implementation of the interviews, first, the experts were informed prior to an interview by email about the target of the investigation and the importance of their involvement. Some of the interviews could not take place face-to-face for logistical reasons and were carried out via Skype. The interviews were recorded and documented with the software audio recorded memos (after asking their permission). In addition, handwritten notes were made during the interviews and postscripts were produced after the survey that contained special features or important information regarding the research focus. The interviews are conducted in English

language (also with experts from Germany) in order to minimize the researcher's influence on the level of raw data gathering. The length of the interviews varied between 30 and 45 minutes based on the dialogue between the experts and the researcher. The expert interviews were carried out during the period of November 2014 to May 2015.

4.1.1.3 Transcription of interviews

The expert interviews have been transcribed using Microsoft Office Word software as a convenient format supported by ATLAS.ti software for importing data format. The transcription process was based on the rules mentioned by Gläser and Laudel (2010):

- The interviews are scripted according to standard spelling of English language
- The verbal expressions were not considered in the transcriptions

In order to protect the privacy of the experts, the interviews and the transcriptions are anonymized in this research. Therefore, the names of companies (related to some experts from praxis) are also eliminated within this research.

4.2 Qualitative analysis method using ATLAS.ti

As it is mentioned in the introduction section (1.4), this research uses ATLAS.ti software for analyzing the expert interviews. ATLAS.ti is a Computer-Aided Qualitative Data Analysis Software (CAQDAS), which is being used in different universities around the globe for qualitative data analysis. During the last decade, many researchers discussed advantages (and disadvantages) of using software for qualitative data analysis (Fielding and Lee, 1998). One of the important advantages of ATLAS.ti is that it supports systematic data analysis and makes it easier to query large volumes of data as well as organize all kind of information in one data pool. It should be also considered that ATLAS.ti - like any other CAQDAS program - does not actually analyze data; it is a tool that supports the qualitative data analysis process (Friese, 2014).

Moreover, Friese (2014), in her book, expresses that there exists a fundamental lack in the literature concerning a data analysis method for computer-assisted data analysis. Based on the available possibilities of today's technology, she argues that there is a need for a new methodology of analysis for CAQDAS to maximize these technological potentials. Therefore, she introduces a method for computer-assisted qualitative data analysis, called NCT. The three basic components of this model are Noticing things, Collecting things and Thinking about things, which are connected with each other in an iterative process. These are commonly used in many of qualitative analysis methods as Creswell discussed the five research traditions (Creswell, 2013).

Noticing things refers to the process that a researcher finds the interesting points in the data level. The data includes transcripts of interviews, documents and reports, scientific article, multi-media files, maps, etc. These segments will be captured, marked or named (coded) in this step, without considering the level of a code. Collecting things refers to the step, in which the researcher starts noticing few things that are similar to some already noticed items (coded segments). It is important to know that the NCT model, unlike grounded theory, does not prescribe particular coding system. It is open based on the research questions, nature

of the research, etc. Thinking about things is the next step that is a conceptual level analysis. Here are the relations between codes the patterns in the data considerable. ATLAS.ti can support this step with several analytical tools inside the software such as query tool and co-occurrence explorer (Friese, 2014). The NCT model is used in this research project for analyzing the expert interviews with ATLAS.ti software. It should be said that ATLAS.ti program offers many analytical possibilities, which enable researchers to use the software according to their needs and research requirements. The process and different steps of analysis are described below:

The first step is to setup the project in ATLAS.ti program. This includes importing the transcripts of the expert interviews into the program. Afterwards, the coding process of the expert interviews starts, which is the most important step of the analysis with ATLAS.ti software. Having an efficient and well-thought coding system helps researchers later with outputting high quality data and accelerates the analysis process. This efficient coding system can be developed through creating subcategories of codes to structure the codes. Having that in mind, the researcher starts coding with an inductive approach (creating categories from bottom up) for the first three interviews. Afterwards, the codes are merged, renamed and some are deleted in order to develop an initial structure for the codes. From a technical perspective, if any of the codes are repeated during the expert interview, these segments are coded separately in order to show the importance of a supposed issue from the perspective of the expert.

In the next step, the rest of the interviews are coded according to the coding structure and, when needed, new codes and categories are added to the coding structure. After completion of the coding system (Annex 3), the researcher begins to analyze the occurrence of the codes mentioned by different experts. This is done via creating the code occurrence table across all of the documents (primary documents in the program named as P1 to P15), which represent the interviews. After this step, the researcher starts identifying the trends and patterns in codes via co-occurrence explorer. This is presented afterwards in the analysis part as the co-occurrence code tables to identify the reasons behind the patterns and answer some research questions.

4.3 Discussion of results from expert interviews

The discussions of results from ATLAS.ti are structured in three parts, which are aligned with the main research questions.

4.3.1 Positioning mParticipation in participatory urban planning discourse

The first research question of this research (RQ1) is to explore the relevance of mParticipation topic in the current discourse of citizen participation in urban planning processes. Therefore, the interviewees were initially asked to give their opinion on enhancement of citizen participation in urban planning processes; on using smartphone and tablets for citizen participation process; on distinguishing between eParticipation and mParticipation; on advantages, possibilities, disadvantages and challenges; and lastly, on the characteristics of mParticipation.

- **Enhancement of citizen participation**

The experts' opinion in terms of enhancing citizen participation can be categorized in two sets of codes focusing on content/output or process of citizen participation.

Table 10 Distribution of the codes under enhancement of citizen participation (ENHCE CP) category across the interviews

Codes	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13	P 14	P 15	TOTALS
enhce cp content/output: increasing the meaning of participation	0	0	1	0	1	0	0	2	0	0	0	1	1	1	1	8
enhce cp process: increasing diversity and broadness of participation	0	1	2	0	2	0	1	0	0	0	0	0	0	1	0	7
enhce cp process: increasing openness in participative processes for governments and citizens	0	0	0	1	0	0	0	1	0	0	2	0	1	1	1	7
enhce cp process: increasing the convenience/attractiveness of participation	0	0	0	1	1	0	1	0	0	0	0	2	0	0	0	5

According to distribution of codes across the different interviews (Table 10), 7 (out of 15) experts emphasized the need to increase the meaning of participation (content/output of citizen participation). The main theme in this code and experts' opinion is about processing the results of citizen participation (citizens' feedbacks, opinion, etc.) and embedding them in the planning process as for instance expert 8 says:

"... But what also could be interesting for enhancement participation is organizing the process of participation in a way that is like more valid or in a way that the results of participation process get more influence in the later on discussions and process of the planning. Therefore, we should not only do participation one moment, but we should really deal with process and with the results and we should implement them into planning process. I think that is the next step... In addition, I think that is really important to keep on this and to say how do you want to get along with ideas and how you implement them? What kind of influence does the people's choice?"

The other three aspects regarding the process of participation focused on broadening the spectrum of participants, increasing the transparency and openness of participation process as well as increasing the convenience. Remarkably, the experts' opinions regarding broadening the spectrum of participation are mainly oriented toward applying new tools and methods including ICT. For instance:

Expert 3:

"I guess we need different electronic tools, to address a larger crowd, to involve a substantial proportion of public. I can't think of any other means and I think we have shown in the past years that it is actually possible to involve more than usual suspects, more than a group of ten, twenty, thirty to hundred people."

Or expert 2 said:

"We need to figure something new out, new ways of doing this and that's when they come and realize that online engagements are something that I think people expect now."

The aspect of convenience that experts emphasized is accompanied either with the fixed time/place of face-to-face participation methods as a challenge (code= "challenge ftf: Time and place barrier in face-to-face methods") or lowering place/time barriers as advantages of mParticipation (and eParticipation).

- **Use of smartphones for citizen participation**

In the next step, the experts were asked for their opinion on the using smartphone (and tablets) for citizen participation processes. Looking at the co-occurrence table of code "#smartphone for CP" and other codes, will indicate that most of the experts have either positive opinion on this aspect or see the relevance of using smartphones (and tablets) in relation to the characteristics of the contemporary citizens (Table 11). For instance, the codes "charch citz: smartphone ownership/smartphone access" and "charch citz: new population accessing web/social media via smartphone" are two important aspects that were repeated often (19 and 14 times) by many experts (see Table 12).

The code "charch citz: smartphone ownership/smartphone access" refers mostly to the issue of digital divide. Looking deeper into quotations from interviews indicates different sets of opinions in this matter. Some experts agreed that there exists an increasing trend in smartphone access among all demographic groups of citizens, which increases the diversity of participants in the participatory process.

For instance, expert 5 said:

"We see so many people carrying this around, obviously smartphones in lots of people's hands as well as the tablets or some other kind of a portable device."

Table 11 Co-occurrence table of codes with the code #smartphone for CP

Codes	#2 smartphone for CP	Codes	#2 smartphone for CP
charch citz: smartphone ownership/smartphone access	9	charch citz: different technology preference	3
adv mp: Having smartphone always with you/portability	7	disadv mp: lack of best practices despite huge potential	3
adv mp: having feedbacks based on real experience	6	disadv mp: not suitable for complex issues	3
adv mp: Broaden Participation range	5	adv mp: location-based (geo-tagged and context-aware) communication	2
charch citz: new population accessing web/social media via smartphone	5	adv mp: lowering time/place barrier	2
charch mp: convenient participation	5	adv mp: usability / userfriendliness of smartphones	2
ep vs mp: not distinguishable	5	challenge mp: app as barrier	2
fact strg mp: mixing face-to-face and ICT supported methods and tools	5	disadv mp: financial costs for government	2
fact strg mp: down time-point of entry for engaging	4	disadv mp: less rich content	2
fact strg mp: Multi-device functionality	4	disadv mp: limit of the screen/characters	2
adv mp: complementary for reaching other group of people	3	eval crit: providing enough supporting information for participants	2
challenge mp: requires know-how and human capacity	3	fact strg mp: promotion ways/importance of PR	2

Or expert 1 emphasized the same aspect and added an example from praxis:

"In terms of smartphones, the way it sort of evolved, mmm smartphone engagement used to be more for youth or young people, increasingly people of all ages are carrying smartphones and wish to engage that way..... I think as soon as we launched our smartphone capability, we had 30% of our participants using smartphones to participate. So it went from 0 to 30 right away. So and we expect that number to go up to 50 over the next years. So I think that any application that is not accessible by smartphone is missing a huge demographic."

On the contrary, some experts disagreed on this aspect and mentioned that the actual smartphone users are basically the younger generation and middle class people. Expert 9 said:

"I do not see, you know, a lot of older people interacting on their phone. ... So that would be your more like working family demographics and younger all the way. College students and high school students."

Table 12 Distribution of the codes under characteristics of contemporary citizens (CHARCH CITZ)
category across the interviews

Codes	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13	P 14	P 15	TOTAL
charch citz: smartphone ownership/smartphone access	5	0	1	0	2	4	1	0	2	0	0	1	1	1	1	19
charch citz: new population accessing web/social media via smartphone	1	6	1	0	0	0	0	0	3	1	0	1	0	0	1	14
charch citz: contemporary life situation and new needs from participants side	2	3	0	0	0	0	0	0	1	0	0	0	0	0	0	6
charch citz: different technology preference	3	1	0	0	0	0	0	0	0	0	0	0	0	1	1	6
charch citz: personal relationship with smartphone	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4

Moreover, some experts (from US) explicitly emphasized the growing trend of access to smartphone among minorities and low-income people. For instance, expert 1 mentioned that:

"And lower income increasingly might not have a personal computer but do have often smartphones so that is coming up and when we give people options to use kiosks in the community centers or that sort of things and have targeted engagement when we are trying to get lower income people to participate, I think that we have been successful."

The code "charch citz: new population accessing web/social media via smartphone" is also an important aspect that needs attention. Seven experts during the interviews referred to smartphones specifically becoming the primary access to the Internet for contemporary citizens. Expert 2 explained that:

"I think there a bigger or growing part of the population whose primary access to the web is using their smartphone. They do not have a computer at home. They may or may not have a tablet at home but you know they have a smartphone with the data plan and even just a basic data plan. So I think that is just you know sort of again the communication habits and patterns are going to change and as part of that like what people like they prefer to primary way of access to the Internet is changing and I think that's why I see it all as a part of the same."

Expert 9 mentioned some statistics from project experiences:

"I was very surprised. We actually had 60 to 70 percent of our users in Port Saint Louis were interacting on mobile. So its way opposite of the statistics on Miami, which was relatively low. It was like 20 percent of users were on mobile. And in Paul County, which is right outside of Orlando, they are doing a huge plan and that's a huge geographic area and they were also around 20 to 30 percent mobile users."

These lines of arguments can confirm the phenomena that contemporary society is a mobile society and ubiquity of Internet is changing the lifestyle of citizens, so participatory processes must catch up with this new trend.

- **eParticipation vs mParticipation**

As it was described in the theoretical background section, mParticipation is defined as a part of the eParticipation concept. This aspect was asked from the experts, in order to form a better understanding about the mParticipation concept.

Table 13 Distribution of the codes under eParticipation vs mParticipation (EP VS MP) category across the interviews

Codes	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13	P 14	P 15	TOTAL
ep vs mp: not distinguishable	1	8	1	1	0	1	0	2	0	1	0	0	0	0	2	17
ep vs mp: depends on type of input	0	0	0	1	1	0	1	1	0	0	0	2	0	0	0	6
ep vs mp: context/location sensitive	0	0	0	0	2	0	0	0	1	0	0	0	1	0	0	4
ep vs mp: data structure in backend/design perspective	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	3
ep vs mp: mobility (type) of the device	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	3

According to distribution of codes across the different interviews (Table 13) the experts' opinion on this issue was quite controversial. Eight out of 15 experts did not distinguished between these two concepts and expressed no specific difference in terms of devices that are being used as communication tool in the eParticipation processes. For instance, expert 8 mentioned:

"I think in reality it is just combined more and more. So you have two ways of offline participation channels, then you have eParticipation channels and then you have mParticipation channels. And I think in the best they work together."

Or expert 2 said:

"you know there was a time couple of years back where people started phrasing and coining that term mParticipation like they made it sound like it was something else and those certainly agree we had this discussion whether it is true or not. So I really feel like that it is one of the same that I think whatever we design, whatever online or the activities we design to participate in, people need to be able to do that from the device that they prefer and I think it is the same in Germany."

What expert 2 emphasized in the interview was that this hype effects new themes and discourses which the contemporary urban planning context is faced with. These new topics or terms normally being introduced, suddenly attract a lot of attentions with a lot of promises but they get rapidly vanished from the discussion without being systematically investigated. This argument is also supported by expert 4 as he said:

"There is this hype effect. I do not know if the Augmented Reality still an up to date topic is, but several years ago we thought that is the topic of future but nothing really came out of this because it was not so complicated and the users and usage of it is not well identified."

However, the other experts distinguished between eParticipation and mParticipation. Five experts emphasized the difference in terms of the type of input you want to receive from participants (content aspect). These experts commonly agreed that eParticipation (using desktop and laptop computers) would be used more in deeper conversation and more time-consuming interactions with more media inputs, while mParticipation would probably use more for writing short texts or quick formulation of ideas. For instance, expert 8 explained this aspect in this way:

"But just from the definitional way, I would say that mobile participation is based on mobile phone and therefore is for less interactive and for smaller (shorter) contents, more short time, focused on smaller topics, smaller events, and even smaller time. You don't take part in a discussion and you don't write comments for 2 hours on your mobile phone what you can do on your PC. But you take 5 minutes on the way to subway and it is time for mParticipation. And eParticipation is really taking part in the discussion, watching video streams from experts and chatting with experts and watching big plans, that what you can not do neither on a mobile phone. So, content and time are different in these two types."

From this perspective, it could also be interpreted that eParticipation processes would be more useful for deliberative processes and higher level of engagement.

Some other experts considered the portability of device as a differentiating factor between eParticipation and mParticipation. This aspect (code) contributes to another distinguishing aspect between eParticipation and mParticipation, which is context/location sensitive. The

important point here is that participants can be engaged in the participation process while they are in the spatial boundaries of a sample project and experiencing it. For instance, expert 13 mentioned:

"... mobile participation is much more context sensitive than online participation with desktop computers because there you cannot say that people have experienced the place, do they know the place, in what kind of mood and situation are people when they respond questions and when you have mobile participation, you have then them on the spot."

Or expert 5 explained:

"What about somebody riding public transit and you want them to participate based on that location or based on that current experience? There are probably not gonna do that on a laptop and they are definitely not gonna do that on a desktop or some other kind of fixed devices. So, I do see a role for that mobile and especially when it is location-based, smartphone and tablet where you are able to contact or identify people based on a certain geography, that's mobile. That's need to be flexible."

The last distinguishing point, that experts emphasized, is related to technical and design of the engagement platform. This aspect is indeed important, as these aspects normally get less attention and often are even being neglected. The main underlying aspect here is the user experience and how these technical and visual features could influence this experience, as experts 11 and 7 explained.

Expert 11:

"I think there is a difference. I mean like you always try to like develop as you said a responsive website that also look good on a smartphone but I think if you really plan an app on smartphone and it is really meant to be used when you are on the street, it probably has to be planed differently from just a normal website which is responsive. So I think it should be a difference because otherwise probably the user experience won't be that great"

Expert 7:

"I distinguish only because on mobile application you have to build it more compact than on laptop. Just to give you one example we recently built planning model that runs on 80-inch screen. Now, to actually take that model and make it ready for laptop, you have to compress all the information and you have to delete a lot of information. Now we build a mobile version of the tool, you have to scroll, so user behavior is very different. So given that from a design perspective, you will have to think

differently in terms of what do the users want, and also how are they going to interact and how often. That's only in the design."

- **Advantage (potentials) and disadvantages (challenges) of mParticipation**

After reviewing the transcription of conducted interviews, 12 codes were identified concerning advantages of mParticipation comparing to conventional type. The table below shows distribution of codes related to advantage of mParticipation across the conducted interviews (Table 14).

Table 14 Distribution of the codes under advantage of mParticipation (ADV MP) category across the interviews

	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13	P 14	P 15	TOTAL
adv mp: Broaden Participation range	5	0	1	0	0	1	2	2	2	0	0	2	0	2	3	20
adv mp: having feedbacks based on real experience	0	5	2	2	4	0	0	0	1	0	0	0	2	0	3	19
adv mp: easing accessibility (pushing) to the context related information to participants	3	0	0	2	2	3	0	1	0	0	1	1	0	0	2	15
adv mp: lowering time/place barrier	2	0	1	0	1	2	1	1	2	1	0	1	1	1	1	15
adv mp: complementary for reaching other group of people	4	0	0	0	1	1	0	0	2	0	0	0	3	1	2	14
adv mp: Having smartphone always with you/portability	3	0	1	2	1	1	0	2	0	0	0	1	1	1	0	13
adv mp: location-based (geo-tagged and context-aware) communication	2	1	0	0	1	0	0	2	1	0	1	0	1	1	1	11
adv mp: usability / userfriendliness of smartphones	0	4	0	0	1	2	0	1	1	0	0	0	0	0	1	10
adv mp: immediate participation (acting possibilities)- Readiness for participation	0	2	0	2	1	0	0	1	1	0	0	0	0	0	1	8
adv mp: cost-saving for government	0	0	0	0	0	0	0	0	5	1	0	0	0	0	0	6
adv mp: real time information gathering/urban sensing	0	0	0	0	1	0	0	5	0	0	0	0	0	0	0	6
adv mp: enabling self-organized participatory processes	0	0	0	0	0	1	0	2	0	1	0	0	0	0	0	4

Analyzing mentioned advantages in deeper level indicates some interesting aspects regarding their conceptual background. Accordingly, the advantages of mParticipation could be categorized in three thematic groups: advantages regarding participation processes, advantages regarding technical features of mobile devices and advantages regarding the content of participation. Advantages regarding participation processes include different aspects such as the participation range (broadening the range of participants range and complementary for reaching new participant groups), participation barriers for conventional methods (lowering time/place barriers), participation costs (cost-saving for government), and communication in participation (location-based and context-aware communication, readiness for participation, enabling self-organized participation). Advantages regarding participation content include feedback based on real experience, easing accessibility to relevant information and real-time information gathering. The last set of advantages is regarding the technical features of mobile devices, which includes portability of device, user-friendliness, readiness as well as context -awareness aspects.

According to the occurrence frequency of codes, broadening range of participants, feedback based on real-experience in the field stand on the top of the list. In terms of broadening participation range, for instance, expert 1 mentioned how enabling participation via smartphones could broaden participation range in their project:

"I think as soon as we launched our smartphone capability, we had 30% of our participants using smartphones to participate. So it went from 0 to 30 right away. So and we expect that number to go up to 50 over the next years. So I think that any application that is not accessible by smartphone is missing a huge demographic."

Expert 8 and 9 expressed this broadening process with some numbers.

Expert 8:

"I think you can spread the words to a big group of thousands and millions of people in the best moment."

Expert 9:

"Well, I mean, obviously, using electronic forms of communication is more efficient in reaching massive amount of people without needing the labor force to go out an engage. So I am working with like a team, it is only four of us. So, to reach 250,000 people and go to every single festival every weekend, it is impossible. There is no money for that. So, mobile makes it a lot more financially feasible, to communicate with."

Regarding the second code (feedback based on real experience), different experts illustrate this aspect as a big advantage of mParticipation comparing to the conventional methods. For instance:

Expert 2:

"I think the big advantage that I see and I think barely anybody is gonna tapping that or taking advantage of this at this point is that is sort of enabling this participation on the go so the idea of you know you are working on transportation plan and people are staying on the bus and they see a sign and they can participate. Let their opinion not be known when they are sitting on the bus, when they are reading on the bus stop while they are checking out whatever rental bike at like a bike share program or whatever that is."

Expert 3:

"So this shows there is a big potential and I think this is a good example because when you use mobile phone, it is mostly interesting benefits, is that people actually engage on topics right next to, when they are actually in the space, which is the topic of discussion."

Expert 5:

"I think if it is again about that particular experience or maybe even difficulties or suggestion that they have based on a particular location, if they are waiting for transit, or some other kind of public service that they are experiencing, or if they are only in places and you wanna get their reaction on how does it feel safe? Or is it accessible? I think that's is the advantage."

After these two codes, easing accessibility to relevant information, lowering time/place barriers and its complementariness for reaching excluded group of people are three other important advantages of mParticipation from experts' point of view.

In terms of easing accessibility to the relevant information, experts emphasized on two aspects. The first aspect is related to technical possibility of smartphones in sending notification (push notification) to users (participants) while delivering information in terms of participation process. Expert 12 and expert 15 respectively explained this aspect:

" So if I could send you push notifications to be able to give you alerts on what is happening with the project, then that might be a real advantage to you if you know, oh, this new development is coming to my neighborhood, here is what is happening with that, then that would be good for you to have."

"I think what mobile can do, they can do with laptops, computers don't always do that well is getting a format for putting information forward like that background information in a manner that can be understood and

digested and doesn't require an extraordinary high reading level and the language in which has been conducted and I think it is crucial."

The second aspect is related to another technical possibility of smartphones and tablets as being location-aware (Location-Based Services). This technical feature in combination with the push notification possibility is repeated often in the quotation of experts in terms of easing accessibility to relevant information. The relevant information was mostly mentioned regarding the spatial context that is the subject of participatory process. For instance, expert 1 illustrated this aspect:

"Well, I think that is a real and very strong role and the best application for smartphone technology because they are aware of where they are in the world. That gives us the opportunity to push information that are relevant to where people are, what do they do, what kind of activities they are engaging, what their search terms are, that sort of things. For example, if I am walking down town and my iPhone says that there is a public meeting that is happening right over here and by the way cross the street a movie starts in 15 minutes. That's useful information delivered at the right time. When I am standing at the bus stop, I can key in the bus stop number, and it tells me that in 3 minutes the bus will be here, that is real time information at the right time. So I think the capacity of our phones to be aware of their location and deliver us that information is the next wave of where technologies gonna leverage in itself."

Or expert 11 explained the same aspect as:

"Of course you can use it for the planning when like I as a citizen don't know where something is planned. So when I am walking down the street, if there is not a big sign or something, I don't know that there is something planed. So I guess it is probably like the real cool idea about using like apps on your mobile phones that you could get a message automatically and then you get informed."

As it was mentioned above, lowering temporal and spatial barriers was commonly mentioned by most of the experts (12 out of 15) as one of the important advantages of mParticipation. For instance, expert 6 and expert 8 mentioned them in their interview. This advantage can also increase flexibility for the participants to be engaged in the process as expert 7 or expert 9 respectively highlighted that:

Expert 6:

"I think mParticipation is easier in terms of the fact that people are not limited to the limitation of time and space..."

Expert 8:

“so you can just in every space and every time you can take part in the participation processes.”

Expert7:

“Through mobile, you can engage larger number of individuals, you can also engage them along the planning process, so everybody does not have to be in a meeting at 8 a.m., they can give their opinion over a week. So that increases flexibility,”

Expert 9:

“Because it is like, you know, you always have your shop open, rather than close it on a specific time.”

However, it should be said that this flexibility in this sense could be also achieved by any kind of eParticipation process.

The other advantage of mParticipation mentioned by experts is in line with broadening range of participants but as a complementary process to include “different” groups of people. These “different” groups of citizens vary in experts’ opinion, but it is commonly agreed that mParticipation can attract the group of citizens that are not normally involved in the decision-making processes. Some experts believed that mParticipation could include people with different demographic characteristics such as age, income level or ethnicity. For instance, expert 6 and expert 5 expressed this aspect below:

Expert 6:

“it is about providing the opportunity for children and youth to participate. A lot of young people and young generation are now using technologies and mobile phones so... Maybe it is better instead of asking...umm... maybe it is better to go where they are, where they already acted, instead of asking them to come to our public meeting. Maybe it is better that we go where they are and we go to their communities.”

Expert 5:

“I think what we have seen in US is that smartphone ownership just as high among racial minorities and even low income classes, so that is almost seen as an opportunity. We have got a mean to communicate more directly with some of these groups that have always been nearly impossible to get to public meetings for whatever reason.”

Some other experts considered these different groups of citizens as “moderated view” citizens or “silent” citizens. These groups of citizens are basically the ones who cannot

normally attend public meetings as expert 1 explained below. However, this group of citizens can be reached via eParticipation process and not necessarily through mParticipation.

“When we lower the barrier [specific time and place] to participation, we start to bring in people who have moderated viewpoints or even support the project. It turns out that anger and fear is the best motivation for the participation.”

Portability of smartphone and possibility of location-based (context-aware) communication are indicated by many experts (9 out of 15) as advantage points. Portability of smartphones, their being pocketsize and the repetitive use of them makes them “always with you” devices, which is a clear advantage from the view of interviewed experts. Moreover, it is a potential for the participation process. For instance, expert 1 explained this advantage as followed:

“Maybe they have their iPad or they have their smartphone in their pockets. Maybe they are sitting on the bus and they have a few minutes. And everybody you see in the bus is like looking at their smartphone [...] Usually whenever anybody has some extra minutes at their hands, they pull out their phones and they are doing something. That’s the perfect time for them to do a little bit of a civic engagement.”

The location-based communication advantage mostly discussed in easing accessibility to the relevant information advantage, but what should be added here is that this context-aware communication can provide valuable geo-information as expert 14 explained:

“With all those issue management apps, it is very helpful to have a geo-tag photo of a like dirty area or whatever that should be done away with.”

Usability/user-friendliness of smartphones and readiness for participation were two other codes that were mentioned by 6 experts as advantages of mParticipation. The usability/user-friendliness of smartphones is related to their intuitive design as for instance expert 2 and expert 5 illustrated that, respectively:

“I mean if you use good mapping tool then you can pinch zoom in and out then you know I mean everybody uses Google map on their phones to navigate around the towns. I don’t really see a disadvantage in that and I think it is more often or not you know there is likely it is gonna be that there”

“The device that somebody is using for their regular communication and other types of uses, and so, you know, versus having to have somebody go home and get on a website, fill out the questionnaire, or discussion forum, I think that mParticipation, smartphone, tablet and whatever the next devices gonna be, makes sense.”

Readiness for participation is mainly related to specific feature of smartphones as “always-on” device. Expert 2 discussed this advantage in the context of contemporary urban life and emphasized the necessity of this readiness aspect in future participation processes from the citizen’s side.

Expert 2:

“So this immediate ability, so that we live in a society that our societies where sort of instant gratification you want to know you know where is your opinion right here now or I think they enable that I think here and new kind of participation that enables that, I think that is what people are more and more looking for.”

The last noticeable advantage of mParticipation, which was mentioned only by two experts (from US) is related to the cost of participation process for government. It is often discussed in the literature that using online engagement and online tools would be cost effective for governments as the main organizer of participatory events in urban planning field. For instance, expert 9 mentioned:

“Well, I mean, obviously, using electronic forms of communication is more efficient in reaching massive amount of people without needing the labor force to go out an engage. So I am working with like a team, it is only four of us. So, to reach 250,000 people and go to every single festival every weekend, it is impossible. There is no money for that. So, mobile makes it a lot more financially feasible, to communicate with.”

As very few experts only mentioned this aspect, it could be interpreted that the cost of participatory process may not be considered an advantage. However, it could be stated that in bigger scale and longer participation processes (spatial territory and number of participants) this can be cost effective for citizens as the government could save organizational costs as well as promotional/campaigning costs.

In addition to many advantages and possibilities of mParticipation, the experts were asked about disadvantages and challenges of mParticipation. Together 19 codes were identified by the researcher after reviewing the conducted interviews. The distribution of these codes across the interviews is shown in the table below (Table 15). According to the total occurrence frequency of codes, limitation of screen and characters, lack of best practices, lack of deliberation and dialogue, less equitable and inclusive participation, less rich content and short attention span on mobile device were repeatedly mentioned by experts. However, the distribution of codes across different interviews indicates that the limitations of screen and characters as well as lack of deliberation and dialogue were highlighted by many of interviewees (11 out of 15). Additionally, more than half of the interviewed experts (8 out of 15) emphasized less equitable and inclusive participation, short attention span on mobile device and mobile app as barrier as disadvantages and challenges of mParticipation.

Table 15 Distribution of the codes under disadvantage and challenges of mParticipation (DISADV MP) category across the interviews

Codes	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13	P 14	P 15	TOTALS
disadv mp: limit of the screen/characters	1	5	1	0	0	0	1	2	2	2	2	1	1	0	2	20
disadv mp: lack of best practices despite huge potential	3	3	1	0	0	0	0	0	0	0	0	0	0	6	3	16
disadv mp: lack of deliberation and dialogue/lower participation level	2	1	0	2	0	1	1	1	0	1	0	2	1	1	3	16
disadv mp: not equitable/inclusive	0	1	0	0	1	5	0	0	1	0	2	1	1	2	0	14
disadv mp: less rich content	0	0	1	3	2	0	0	2	0	0	0	1	2	0	2	13
disadv mp: short timeframe spending on mobile device/short attention span	2	1	1	0	0	0	0	2	1	2	2	2	0	0	0	13
challenge mp: app as barrier	0	1	1	2	0	1	0	2	2	1	0	0	1	0	0	11
challenge mp: privacy issue	1	0	4	1	0	0	0	0	0	0	0	0	1	3	1	11
challenge mp: requires know-how and human capacity	0	0	1	0	0	3	0	0	0	1	1	0	1	2	2	11
disadv mp: not suitable for complex issues	2	1	0	0	0	1	1	1	0	0	0	0	0	0	1	7
challenge mp: building mParticipation knowledge upon face to face participation	0	0	0	0	0	1	0	0	0	0	0	0	0	3	1	5
disadv mp: financial costs for government	0	0	0	0	0	2	0	0	2	1	0	0	0	0	0	5
disadv mp: lack human face to face communication power	3	0	0	0	0	0	0	0	0	1	0	1	0	0	0	5
challenge mp: danger of overflow of information while using mobile phone	0	0	1	0	2	0	0	0	0	0	0	0	0	1	0	4
challenge mp: compressing engagement process for people with low time	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
challenge mp: danger of manipulating results	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
disadv mp: certain technical prerequisites for smartphone	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
disadv mp: sign up as barrier	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2

Taking a deeper analytical look at the codes in **Table 15**, disadvantages and challenges of mParticipation can be divided in four thematic categories: Disadvantages and challenges regarding process, regarding the technicality of mobile devices, regarding the content of participation and regarding participants (as users). Disadvantages and challenges regarding process include different aspects such as participation level (lack of deliberation and dialogue), participation range (less equitable and inclusive participation, long tail effect), participation barriers (app as barrier and sign-up as barrier), costs (financial costs for governments), communication in the process (lack of power of human face-to-face communication, danger of overflow of information), compressing engagement process as people have less time, applying conventional participation methods rules in mParticipation

processes and lack of best practices in this field. In terms of the technicality of mobile devices, disadvantages and challenges are screen limitation, short attention span on mobile devices and certain technical prerequisite for smartphones. Disadvantages and challenges regarding participation content are less rich content, not suitable for complex issues and danger of manipulating results of participation. The last category compiles disadvantages and challenges regarding participants, which are privacy issues, prior knowledge and know-how and existence of human capacity for organizers of process.

In terms of limitation in screen size and input length (characters) as a technical challenge of smartphones experts expressed different implications. The first implication of this disadvantage is on how you present the needed information to participants and how you receive their contribution. For instance, expert 5 mentioned his opinion on the presentation of information as followed:

“you cannot provide much information with smartphone with spaces and characters; you cannot show pictures very well and so on. So the depth of information you provide before participation is not so big.”

Or expert 11 discussed on capturing of contributions from participants:

“So I guess when probably you are on your mobile phone, you are kind of forced to make information really clear. Because you don’t have much space. Maybe this could help to make information... or visualize it better. [...] if you want to type in like a long statement of what you think about something you probably won’t want to do it on your mobile phone you want to do it on your laptop at home. So you always have to consider what is doable on a mobile phone.”

Contrary to these opinions, expert 10 sees this disadvantage as a possibility for getting more focused and well elaborated contribution from participants:

“So, you instead of asking 15 different questions about someone’s background, so the people span attention won’t last so long, and surprise in that is that it turns out when you ask people something on their mobile device, often their feedbacks are very focused, there is no room for them to trample...”

The second sort of implication of this limitation is related to the technical backend of mParticipation and is a challenge for technical developers to design the mobile platform in a way that does not effect the responsiveness and reflexiveness of mParticipation application. Expert 9 addressed this aspect:

“So that is totally altered the way, in which we are gonna go about showing our needs plan on community remarks. So this week I started to heavily focus on the mobile version of this with all the bells and whistles that it needed to most user friendly yet not sacrifices. You know, they are not

being able to interact with the map for this that the other. But you know, have all the same desktop functionality but on mobile, which is very difficult design challenge.”

Lack of best practice in the field of mParticipation and urban planning is a very controversial issue that experts have agreed is a disadvantage of mParticipation. Looking at the quotations of experts regarding this code indicates that many experts explained this lack of best practice regarding the level of engagement and deliberation in the participatory process of the current mParticipation platforms. For instance, expert 2 addressed this issue:

“...like I think you know there is some specific use cases that are you know mobile only think of the pothole reporting or something like that. I don’t know if that is truly civic engagement but I think there is beside of some of those rare sort of edge cases...”

or expert 1:

“as I said I don’t think that usually there is only very few projects that I think they are fully sort of tapping the potential of that at this point. I think it is not just on people radars enough. Even though I see everybody talks about you know we need to engage people on their mobile phones they don’t think it through until that level of like well how do we get the people to take their phone out of their pocket and tell us something while they are there.”

Following the same line of thinking, many experts highlighted directly the lack of deliberation as one of the important disadvantages of mParticipation. For instance, expert 5 and expert 12 appointed this aspect in their interviews, respectively:

“For example, when we are talking about engagement, a lot of cases we are talking about trust building, we are talking about reaching to mutual understanding, we are talking about moving toward consistence building, and those types of things, which is probably hard in some cases if we want to just use only mParticipation.”

“You have challenge that you cannot get as deep of engagement toward information and that is probably the biggest one. And you cannot go to significant detail.”

Additionally, receiving less rich content via mParticipation as a disadvantage supports the low level of deliberation code. Expert 5 explained this aspect by comparing mParticipation to face-to-face participation as:

“On the other hand, what kind of a platform do you provide, so that you can get a rich sort of response from them like they would get you in face-to-face interview. So, let say you just going to send them a quick little

survey on their phone (it's going to be yes, no, maybe, I do not know, and maybe some really fix sort of choices) you are not getting the rich responses that you would get interviewing them."

Another disadvantage of mParticipation is that it is not equitable or inclusive. This code contradicts one of the important advantages of mParticipation as broadening participation range. Take a deeper look at quotations shows that most of the experts saw this inequity in terms of accessing to technology (smartphones) or having a compatible device for participating in the process. For instance, expert 11 pointed out this issue; however, considering other codes regarding wide access to smartphone among different demographic group may justify this disadvantage.

"I think It is always a small user group that they have the right app, they have the right smartphone, they have understood how to use it."

The code "disadv mp: short timeframe spending on mobile device/short attention span" explains another technical limitation of smartphones, which is also related to the small size of screen comparing to bigger devices like desktop computer or laptop as for instance expert 9 and expert 11 illustrated, respectively:

"... and a very short attention span. So, those to me are disadvantages over the desktop version, people are more likely to spend a little bit longer on the website."

"If you want to type in like a long statement of what you think about something you probably won't want to do it on your mobile phone you want to do it on your laptop at home. So you always have to consider what is doable on a mobile phone."

Mobile apps were seen as an important barrier in mParticipation and quite challenging issue. On the one hand, the experts addressed different obstacles regarding apps such as installation, technical compatibility of smartphones, having different operating systems (OS) or being expensive. For instance:

Expert 4:

"Sometime, I do not even want to update my system and the apps and when I do the update, maybe the app is not compatible with the system version. I mean, there was a time that apps were amazing and cool, but at the moment, there is millions of app and it is annoying."

Or expert 3:

"Maybe Telegram is a nice app, but it is a big step for citizens to install the app in order to use it in this respect. That's one of the biggest down turn with apps, that's why we actually focused on designing websites in a

responsive manner. Because we think that is a big step for citizens to install the app.”

On the other hand, using native Apps have its positive aspect as it may be the only way to fully use the sensors and technical features of smartphones (e.g. Location-Based Service, GPS, or push notification). Expert 2 explained this issue:

“I think there is a specific use cases that require all these additional features that a phone provides I think that also shows where to draw barriers, web apps don’t or are not feasible anymore when you need a native app like the whole idea of road tracking and sort of those kind of stuffs is only possible with those kind of apps so I think it is sort of media driven input or specific feedback.”

Looking at the quotation of the code “challenge mp: requires know-how and human capacity” reveals that many experts see this know-how requirement not only for participants but also for the government or planner side. Expert 14 addressed this issue:

“It needs some technical know-how, so in order for administration to use mParticipation also eParticipation, they need someone who has certain knowledge of setting up this format and communicating them, which is also different like you need to use different ways of channels of communication. So, mParticipation certainly needs different skills to some extent. Some different skills also needed by the participants.”

“Not suitable for complex issue” is one other disadvantage mentioned by experts. The co-occurrence of this code with the code “limitation of screen” and “short attention span” indicates that due to these technical limitation mParticipation can not be applicable in participatory processes where a long deliberative process is happening due to its complexity, which is a normal case in urban planning field. Expert 6, for example addressed this point:

“On the other hand it depends on the type of problem that people are going to discuss. For example, if the problem is very complicated, maybe it is better not to use maybe smartphone. Maybe it is better to use another type of program which work on desktop, where people can easily look at other sources, or I don’t know.”

An interesting point made by thee experts during the interviews was related to the existing knowledge of mParticipation. These experts believed that the current mParticipation examples and projects transfer the face-to-face methods and techniques (or frames) to mobile aspects as for instance expert 14 mentioned:

“... I also think there is not much experience for practice of using these devices because there are no new methods yet, so it is mostly transferring existing face-to-face methods to the mobile aspect and there is not enough experience to develop proper tool, because there is not much

communication between developer and participation researchers yet. So, it needs much more communication in order to understand the practical potential of using smartphone and tablets.”

This could be also one of the reasons that many experts believed in very few successful examples of mParticipation projects in the current situation. Therefore, the main question as expert 15 said, should be:

“I think the big question is going to be, I think the tensional, we need to define basically a new language. and I don’t mean language in terms of letters and numbers but I mean a new way of framing that in the mobile context.”

- **Characteristics of mParticipation**

One of the important aspects for positioning mParticipation in the public engagement discourse is the specific characteristic related to mParticipation. This aspect has attracted less attention in the previous lines of research, however, some researchers did indeed endeavor to investigate this aspect regarding mParticipation. The terms such as participation on the go (Ertiö, 2013), participation on-demand (Fey and Landau, 2010), etc. are some of these characteristics highlighted in the theoretical background of this research. Nevertheless, these specific characteristics to some extent are derived from the advantage and possibilities of mParticipation processes. After asking question about advantages and challenges of mParticipation, the experts were asked to give their opinion on the characteristics of mParticipation. Most of the interviewees found this question interesting and mentioned that they needed a bit more time to think about it. Nevertheless, experts' opinions were categorized in 10 codes. Their reputation and distribution among different experts are shown in Table 16.

Convenience was the most important aspect that most experts (13 out of 15) highlighted. Looking deeper at quotations, three thematic groups of quotations are recognizable. The first group of quotations explains the convenience of mParticipation in terms of user experience. This focuses on how easy it would be for participants to use their smartphone device in order to contribute to the participatory process. For instance, expert 2 mentioned:

“I think there is an added value when we look at mapping and you know submitting places that we like around town or these kind of activities that using smartphone is convenient because you can just you know press a button and get the location so like the GPS enabled phones really have an advantage where you don’t have to drag and mark it and navigate the map but like you know you just say, hey this is interaction that I don’t think is safe, here is why and you start typing and you say ok you know locate me and drops mark right where you are and then you know you submit it. So I think there is a convenience element to that, too that comes to play it depending on the sort of activities. ... I think it is ultimately easier done on

a mobile phone where you just like go to the forum and say hey I don't like this and then snap a picture and upload it and then you tag it."

Table 16 Distribution of the codes under characteristics of mParticipation (CHARCH MP) category across the interviews

Code	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13	P 14	P 15	TOTAL
charch mp: convenient participation	3	4	1	1	3	3	1	1	3	3	0	2	0	0	1	26
charch mp: participation on the go/ anywhere	1	3	0	0	1	1	2	2	0	1	0	0	0	3	0	14
charch mp: geo-centric/site specific/embedded/context	0	5	1	1	2	1	0	0	1	0	1	0	1	0	0	13
charch mp: richer engagement-media rich (enhanced with geo and new information)	0	2	0	0	0	0	0	0	0	2	0	1	0	2	1	8
charch mp: participation on demand	1	0	0	1	0	0	0	1	0	1	0	0	0	2	1	7
charch mp: timeliness participation	0	0	0	1	0	0	0	1	0	1	0	0	1	2	0	6
charch mp: inclusive for broader audience	0	1	0	0	0	0	2	0	0	1	0	0	0	0	0	4
charch mp: quick and immediate (real-time)	0	0	0	0	2	0	0	0	1	0	0	0	1	0	0	4
charch mp: micro-participation	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
charch mp: ad hoc participation	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1

The second group of quotations considers the convenience of mParticipation in terms of flexibility in time and place of participation. However, this aspect could be shared between most electronic devices such as desktop computer, laptop, smartphones and tablets; therefore, it would not be specifically for mParticipation processes. Nevertheless, one of the possible underlying points regarding this aspect is that the participants are enabled to contribute when it is convenient for them while the time and place barriers are removed. For instance, expert 12 and 10 highlighted this aspect in their interviews:

Expert 12:

"So, I think the opportunity for online participation whether it is through mobile devices, through the Web, or through whatever, it offers the opportunities to people to participate when it is convenient to them, rather than having to be tight to a fix time and place. "

Expert 10:

"the biggest advantage is that people can do it on their (own.), it is more convenient for everybody."

The third group of quotations explains convenience in regard to portability of mobile devices, which makes it an "always-with-you" device. This feature in combination with intuitive design of smartphones results in more frequent use of these devices by contemporary citizens and transforms it to a very influential part of urban life while being easy to use. Therefore, using this existing potential for participatory processes could be considered as a convenient form of participation. Expert 5 and 12 emphasized this aspect as follows:

Expert 5:

"Well, I think, that goes to the point about convenience. We see so many people carrying this around, obviously smartphones in lots of people's hands as well as the tablets or some other kind of a portable device. That seems to make a lot of senses as far as the question of convenience is."

Expert 12:

"And so, if you have something that is with you all the time, then why would not you use it? So if we look back twenty years ago, people were really into doing phone surveys, because you could catch someone at home and you could spend 10 or 20 minutes and talking to them. Now, it is the mobile device, right? And so it is with you all the time, and so it is quite easy for you to be able to participate. The challenge is then of course, ok you have this device, but I still I have to motivate participation."

In order to investigate more deeply the convenience aspect of mParticipation, the co-occurring of the code "charch mp: convenient participation" was analyzed (table below). As it is shown in the table, the codes "adv mp: usability/user-friendliness of smartphones", "adv mp: Having smartphone always with you/portability" and "chrch citz: smartphone ownership/smartphone access" co-occurred many times with convenience aspect as the characteristics of mParticipation. These advantages of smartphones in combination with the high rate of smartphone ownership can explain the underlying reasons for convenience of mParticipation compared to other type of participation.

Furthermore, the codes "adv mp: Broaden Participation range" also co-occured in regard to convenience of mParticipation. Therefore, it may be interpreted that this convenient possibility for participation can lead to more inclusive participatory process. Co-occurrence of the code "adv mp: immediate participation (acting possibilities)- Readiness for participation" and "charch mp: quick and immediate (real-time)", in this context, can be considered as one of the other reasons for convenience of mParticipation, because it is possible for the citizens to quickly contribute via their devices.

Table 17 Co-occurrence table of codes with the code charch mp: convenient participation

Code	charch mp: convenient participation	Code	charch mp: convenient participation	Code	charch mp: convenient participation
adv mp: usability / userfriendliness of smartphones	5	charch mp: participation on the go/ anywhere	2	com actors: real-time (instant and iterative) communication feedback possibility	1
adv mp: Having smartphone always with you/portability	4	adv mp: cost-saving for government	1	disadv mp: less rich content	1
charch citz: smartphone ownership/smartphone access	4	adv mp: easing accessibility (pushing) to the context related information to participants	1	disadv mp: not equitable/inclusive	1
charch mp: richer engagement-media rich (enhanced with geo and new information)	4	adv mp: enabling self-organized participatory processes	1	disadv mp: short timeframe spending on mobile device/short attention span	1
adv mp: Broaden Participation range	3	challenge ftf: Time and place barrier in face-to-face methods	1	disadv mp: sign up as barrier	1
adv mp: immediate participation (acting possibilities)- Readiness for participation	3	challenge mp: long tail effect	1	enhce cp process: increasing the convenience/attractiveness of participation	1
charch mp: geo-centric/site specific/embedded/context	3	challenge mp: requires know-how and human capacity	1	flow info: huge volume of non-processed information/interactions in short time frame	1
charch mp: quick and immediate (real-time)	3	charch citz: contemporary life situation and new needs from participants side	1	qul eng: less quality because of less spending time	1
adv mp: location-based (geo-tagged and context-aware) communication	2	charch citz: new population accessing web/social media via smartphone	1	qul eng: providing new type of information	1
adv mp: lowering time/place barrier	2	charch citz: personal relationship with smartphone	1	qul eng: quality out of quantity	1
adv mp: real time information gathering/urban sensing	2	charch mp: participation on demand	1	qul eng: visual elements/structures for info helps for better understanding	1

The ease of participation could result in limited form of participation or lower level of engagement via mobile devices. The co-occurrence of the codes "disadv mp: less rich content" and "qul eng: less quality because of less spending time" can confirm this point. Expert 5 mentioned this point very clearly:

"You know on one hand, we are trying to make it convenient as possible, but on the other hand, are we really getting the depth and richness of their feedbacks or inputs? On a mobile device are we just asking them a simple

kind of survey type question or are we really letting them to give their full kind of reaction. Can they actually fully describe what they are feeling? But like I also mentioned before, that can be overcome by creative sorts of approaches on getting people's input."

The second characteristic of mParticipation that was mentioned by the experts was participation on the go, as 8 out of 15 experts emphasized on this aspect (code "charch mp: participation on the go/everywhere"). The basic idea of participation on the go or everywhere refers to the possibility for participants to contribute while they are on move or not in a fix place and time frame, as for instance experts 8, 10 and 14 highlighted in their interviews.

Expert 8:

"The things that I also said about time and space. mParticipation has the advantages of getting connected every time, at nearly every place..."

Expert 14:

"... but I suppose that the mobility of the devices makes some differences in cases. So that would be the main major difference having the mobile devices being taken with you wherever you go and like participating around the clock all over the world."

Expert 10:

"And for the participants, they can do it on their own time. So they can do it if they have 5 minutes at their home, they can do it from a bus. It is really about bringing participation to where they are."

The co-occurrence of the code "participation on the go/everywhere" (Table 18) with the code "adv mp: Having smartphone always with you/probability" and "adv mp: lowering the time/place barriers" shows the important role of portability as a feature of smartphones in term of this characteristics of mParticipation. Therefore, the main idea here is that mParticipation can enable participants to contribute around the clock. The co-occurrence with the code "charch mp: geo-centric/site specific/embedded/context related" shows also the slight edge between participation on the go/everywhere and the geo-centric aspect as the other characteristics of mParticipation.

The third characteristics of mParticipation mentioned by 8 out of 15 experts is geo-centric or embedded participation (the code "charch mp: geo-centric/site specific/embedded/context"). Looking at the quotations from the experts indicates that the main focal underlying point is the spatial context that the participatory process is embedded in. This aspect of Urban Planning is considerable as most of urban development projects have a spatial territory. Expert 3, expert 5 and expert 9 described this characteristic of mParticipation in their interviews as:

Table 18 Co-occurrence table of codes with the code charch mp: participation on the go/everywhere

Code	charch mp: participation on the go/everywhere	Code	charch mp: participation on the go/everywhere
adv mp: Having smartphone always with you/portability	3	adv mp: immediate participation (acting possibilities)- Readiness for participation	1
charch mp: geo-centric/site specific/embedded/context	3	adv mp: real time information gathering/urban sensing	1
charch mp: timeliness participation	3	charch mp: richer engagement-media rich (enhanced with geo and new information)	1
adv mp: lowering time/place barrier	2	com actors: real-time (instant and iterative) communication feedback possibility	1
charch mp: convenient participation	2	disadv mp: lack of best practices despite huge potential	1
charch mp: inclusive for broader audience	2	disadv mp: short timeframe spending on mobile device/short attention span	1
charch mp: participation on demand	2	enhce cp process: increasing diversity and broadness of participation	1
charch mp: quick and immediate (real-time)	2	enhce cp process: increasing the convenience/attractiveness of participation	1
fact strg mp: promotion ways/importance of PR	2	ep vs mp: mobility (type) of the device	1
qul eng: increasing quality of inputs (people in the setting)	2	ep vs mp: not distinguishable	1
adv mp: cost-saving for government	1	eval crit: integration of inputs to plan	1
adv mp: easing accessibility (pushing) to the context related information to participants	1	fact strg mp: Multi-device functionality	1
adv mp: having feedbacks based on real experience	1	qul eng: more efficient and accurate inputs	1

Expert 3:

"I would call it embedded. It refers to what I said before. It is really triggering to have people participating on issues which surround them at the same time. It is not, when the people on their desktop computers, they are somehow physically removed from the environment, which is the topic. That's what I found. Maybe embedded participation"

Expert 5:

"I mainly connected to you know where it's based on that you know that while somebody is in that experience. If there is some kind of information that can only be gathered, then. Because again along with the transit experience somebody could go home and say the vehicle that I was in, was dirty, I didn't feel safe it didn't take me to where I wanted to go I mean

they could provide that information without being kind of Mobile- based I think its."

Expert 9:

"What originally comes to my mind is geo-centric. So, for mobile engagement its, I think its very place-specific so it kind of like, where am I standing and what is in relationship to where am I located right now and how can I augment that interaction with government base on where I am. I am physically, or if I even physically am moving through space."

The co-occurrence of this code (Table 19) with the code "adv mp: having feedbacks based on real experience", "qul eng: increasing quality of inputs (people in the setting)" and "qul eng: more efficient and accurate inputs" (table below) shows the possible positive influence of mParticipation on the output of engagement processes specifically in urban planning discourses. The above quotations are aligned with this aspect as they concretely emphasize the experience of participants based on the spatial context.

Table 19 Co-occurrence table of codes with the code charch mp: geo-centric/site specific/embedded/context

Code	charch mp: geo-centric/site specific/embedded/context	charch mp: geo-centric/site specific/embedded/context	charch mp: geo-centric/site specific/embedded/context
adv mp: having feedbacks based on real experience	3	adv mp: usability / userfriendliness of smartphones	1
charch mp: convenient participation	3	charch citz: contemporary life situation and new needs from participants side	1
charch mp: participation on the go/ anywhere	3	charch mp: ad hoc participation	1
qul eng: increasing quality of inputs (people in the setting)	3	charch mp: participation on demand	1
charch mp: timeliness participation	2	charch mp: quick and immediate (real-time)	1
qul eng: more efficient and accurate inputs	2	charch mp: richer engagement-media rich (enhanced with geo and new information)	1
adv mp: easing accessibility (pushing) to the context related information to participants	1	com actors: real-time (instant and iterative) communication feedback possibility	1
adv mp: immediate participation (acting possibilities)- Readiness for participation	1	disadv mp: lack of best practices despite huge potential	1
adv mp: real time information gathering/urban sensing	1	disadv mp: short timeframe spending on mobile device/short attention span	1
		eval crit: integration of inputs to plan	1

The other characteristic of mParticipation that experts (5 out of 15) mentioned is media-rich engagement (the code "charch mp: richer engagement-media rich (enhanced with geo and new information)"). The main aspect that the experts emphasized in this regard was the use of visualization and other media sources (such as video, graphics, etc.) in mParticipation processes. For instance, expert 12 explained this characteristic as:

"...then I also think through mParticipation there is so much opportunities with streaming media, that you can share videos, you can share other things that can really help tell the story of planning and engage people in a way that you might not otherwise be able to engage people. "

The co-occurrence of this characteristic (Table 20)with the code "qul eng: visual elements/structures for infos helps for better understanding" combined with "charch mp: convenient participation" indicates the possible influence of visual elements and media (charts, diagrams or video) on the engagement process in terms of higher quality output as well as more convenient process, through better and easier understanding of problems and removing some language barriers as expert 14 explained:

"One should be aware that the possibility of using visualizations and mobile devices might have different consequences than using text. This is also saying its not only bad to use visualization, it can also be good, like overcoming language problems with written text. And sometimes one picture shows much more than one page of text. So it should be looked quite carefully in what ways you would allow using visualization and texts."

Table 20 Co-occurrence table of codes with the code charch mp: richer engagement-media rich (enhanced with geo and new information)

Code	charch mp: richer engagement-media rich	charch mp: richer engagement-media rich	charch mp: richer engagement-media rich
charch mp: convenient participation	4	disadv mp: financial costs for government	1
qul eng: visual elements/structures for info helps for better understanding	3	disadv mp: lack human face to face communication power	1
adv mp: usability / userfriendliness of smartphones	2	disadv mp: lack of deliberation and dialogue/lower participation level	1
adv mp: Broaden Participation range	1	ep vs mp: not distinguishable	1
challenge mp: requires know-how and human capacity	1	flow info: huge volume of non-processed information/interactions in short time frame	1
charch mp: geo-centric/site specific/embedded/context	1	napp vs resd: better usage of phone features in native app	1
charch mp: participation on the go/ anywhere	1	qul eng: providing new type of information	1

In addition to these positive opinions, it must be stated that one of the disadvantages/challenges of mParticipation is the relative small size of smartphones' screens, which may decrease the willingness of participants to stream for instance a video on their phone or check a big map on their mobile devices.

On demand participation was another important characteristic of mParticipation in the mind of some (6 out of 15) experts (the code "charch mp: participation on demand"). This characteristic of mParticipation is focused on the possibility of reaching out participants and asking for their contributions. For instance, expert 4 described this characteristic as follow:

"they (participants) will be prompted and asked for participation. I walk in the city and receive a push notification that here is something happening and I can say what I think or I can even develop my idea about the place that I am in it right now. This is huge potential but it is not really well applied and used yet".

Looking at the co-occurrence table of this code (Table 21) with the codes "adv mp: easing accessibility (pushing) to the context related information to participants", "adv mp: Having smartphone always with you/portability" and "adv mp: immediate participation (acting possibilities)- Readiness for participation" can illustrate how some advantages and features of smartphones (e.g. push notification, location-based services, portability and being always-on device) can shape this characteristic of mParticipation.

Table 21 Co-occurrence table of codes with the code charch mp: participation on demand

Code	charch mp: participation on demand
charch mp: participation on the go/ anywhere	2
adv mp: easing accessibility (pushing) to the context related information to participants	1
adv mp: having feedbacks based on real experience	1
adv mp: Having smartphone always with you/portability	1
adv mp: immediate participation (acting possibilities)- Readiness for participation	1
charch citz: personal relationship with smartphone	1
charch mp: convenient participation	1
charch mp: geo-centric/site specific/embedded/context	1
charch mp: timeliness participation	1
disadv mp: lack of best practices despite huge potential	1

Timeliness, immediate and quick participation are some other keywords that experts used to define the characteristics of mParticipation. These terms refer to the temporal aspects and are concentrated on the timespan that participatory process will happen. Timeliness participation basically means having participation at the right moment, which suites the participants at their most convenient time and removes time barriers (co-occurrence with the

code “adv mp: lowering time/place barriers”). Expert 10 and expert 12 explained this characteristic, respectively:

“And the third is timeliness. With face-to-face event you have to schedule it so far in advance.”

“it makes participation spatial and just in time.”

Looking at the co-occurrence of the code “timeliness participation” with other codes (Table 22) shows that portability of mobile devices (code “adv mp: having smartphone with you/portability”) is important in terms of this characteristic. Another aspect is the co-occurrence with the codes “charch mp: participation on the go/ anywhere” and “charch mp: geo-centric/site specific/embedded/context”, which shows the interdependence of spatial and temporal dimensions in mParticipation.

Table 22 Co-occurrence table of codes with the code charch mp: timeliness participation

Code	charch mp: timeliness participation
charch mp: participation on the go/ anywhere	3
adv mp: Having smartphone always with you/portability	2
charch mp: geo-centric/site specific/embedded/context	2
disadv mp: lack of best practices despite huge potential	2
adv mp: easing accessibility (pushing) to the context related information to participants	1
adv mp: having feedbacks based on real experience	1
adv mp: immediate participation (acting possibilities)- Readiness for participation	1
adv mp: lowering time/place barrier	1
charch mp: participation on demand	1
disadv mp: short timeframe spending on mobile device/short attention span	1
ep vs mp: mobility (type) of the device	1
ep vs mp: not distinguishable	1

Quick and immediate participation mostly refers to a shorter participation process time-wise. This means, mParticipation gives citizens the opportunity to quickly submit their contributions and participate in the decision-making processes. Expert 9 and expert 13 explained this characteristic in their interview as followed:

Expert 9:

“But for mobile, when I originally programmed community remarks I envisioned, because I understand that citizens want an easy accessible way to, I call it, “hit it a go”. They just wanna give you their comment and they are not really gonna spend a lot of time on the site.”

Expert 13:

"I mean much quicker. When you have questions, you can send them out and you get the feedbacks immediately. You don't have to organize face to face events when you need some months for or some weeks at least."

This immediate participation could also be too quick making the participatory process very near to real-time, as expert 5 explained:

"I guess the other thing about mobile participation if there is a use of that information in real time or close to real time in order to modify the experience or in order to send feedback to the system, then the mobile platform itself is the only way to do that in order to capture data information at the time or on the go."

The co-occurrence of the code "charch mp: quick and immediate (real-time)" (Table 23) with the codes "adv mp: immediate participation (acting possibilities)- Readiness for participation", "adv mp: real time information gathering/urban sensing" and "com actors: real-time (instant and iterative) communication feedback possibility" illustrates the underlying aspects for this characteristics of mParticipation. Another remarkable aspect in this regard is the co-occurrence with the codes related to convenience of mParticipation (codes "charch mp: convenient participation" and "adv mp: easing accessibility (pushing) to the context related information to participants"). A possible interpretation of this is that an immediate and quicker participation process could increase convenience of participating for citizens.

Table 23 Co-occurrence table of codes with the code charch mp: quick and immediate (real-time)

Code	charch mp: quick and immediate (real-time)
adv mp: immediate participation (acting possibilities)- Readiness for participation	3
charch mp: convenient participation	3
adv mp: easing accessibility (pushing) to the context related information to participants	2
adv mp: real time information gathering/urban sensing	2
charch mp: participation on the go/ anywhere	2
com actors: real-time (instant and iterative) communication feedback possibility	2
adv mp: having feedbacks based on real experience	1
adv mp: location-based (geo-tagged and context-aware) communication	1
adv mp: useability / userfriendliness of smartphones	1
challenge ftf: Time and place barrier in face-to-face methods	1
charch mp: geo-centric/site specific/embedded/context	1
eval crit: integration of inputs to plan	1

Another effect of this quick, immediate or real-time participation could be on the output of the participation, as expert 8 characterized it as micro participation:

“micro-participation I think is a quite good word when you just what I said before, it is kind of short interaction”.

Therefore, on the one hand such short timespan for participatory process may increase more input and contribution from citizens, but it may also limit the contributions of participants to short interactions and some small inputs.

4.3.2 mParticipation, collaborative urban planning and networked society

The second part of the interviews was concentrated on the theoretical aspects derived from collaborative planning and the network society (RQ2). Experts were asked to give their opinion about possible influences of mParticipation on communication between actors, information flow and the network of relations between actors.

- **Communication between actors**

Communication between actors is one of the investigated theoretical aspects regarding collaborative planning and networked society. Experts were asked to give their opinion on possible influences of mParticipation on communication between different actors involved in the urban planning processes. After reviewing transcripts of all conducted interviews, 13 codes were identified. Their occurrence, frequency and distribution across all interviews is shown in Table 24.

More than half of the experts (8 out of 15) repeatedly mentioned real-time/instant communication and feedback possibility as an influential factor in this regard. For instance, expert 8 mentioned this point and explained how this instant communication enables citizens for self-organizing collective actions:

“in one way it could improve the communication between the actors for self-organizational processes or projects because people get instantly the information that they need, Flashmob is like one example where you can organize a few hundred people or the ride clean up.”

Expert 10 also explained how this instant communication provide the urban authorities for quick organization and reach out in spontaneous situations:

“A third one is timeliness, like I mentioned, if you have something urgent happening tomorrow, you can do that.”

Lack of communication with the general public was emphasized by almost half of the experts (7 out of 15). This aspect is not directly related to mParticipation as the focus of this research. It shows a general problem that exists in the current planning and participatory processes. Some experts consider the potentials of new communication channels (e.g. mParticipation) to tackle this problem.

Table 24 Distribution of the codes under communication between actors (COM ACTORS) category across the interviews

Code	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13	P 14	P 15	TOTALS
com actors: real-time (instant and iterative) communication feedback possibility	1	1	1	0	0	1	1	4	2	1	0	0	0	0	0	12
com actors: lack of communication with general public	0	0	1	1	1	1	0	1	2	0	0	0	0	0	1	8
com actors: structured communication/different level	3	0	1	0	0	0	2	0	0	0	0	0	0	0	0	6
com actors: depend on topic and setting (emotions)	2	0	0	0	0	2	0	0	0	0	1	0	0	0	0	5
com actors: importance of cross-media communication	1	1	0	0	0	0	0	0	0	0	1	1	1	0	0	5
com actors: transparency and openness	1	0	0	0	0	0	1	1	2	0	0	0	0	0	0	5
com actors: more convenient communication	0	0	0	0	0	0	1	1	0	0	0	0	0	2	0	4
com actors: surprising the government with positive inputs from public	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	4
com actors: Increasing legitimacy of urban authorities' decisions	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2
com actors: not support dialogue and two way communication	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
com actors: complexity of planning language	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
com actors: no necessity of mass communication in participation context	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
com actors: possibilities for data gathering/crowdsourcing	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1

Other aspects (emphasized by 3 to 4 experts) are the importance of cross-media communication, transparency and openness, possibility of structured communication in different level. These aspects should be considered in mParticipation process. The cross-media communication aspect indicates that applying only mParticipation is not enough to have a broad participation range and more deliberative communication.

Expert 3 thinks:

“... They (participants) rather express themselves and maybe they get their feedback through different channels. I mean, that is sort of very important to my thinking is probably that you combine different media. Our company Zebralog likes to combine the soft channels. Maybe you have one channel, communication to send messages but to get an overview of the whole discussion, you use different device”.

Expert 3 mentioned clearly the necessity of using different channels of communication (including different social media networks), which encompass multi-device functionality aspect (code “fact strg mp: Multi-device functionality”); and indirectly emphasizes the aspect that mParticipation would not work as a stand-alone piece in participatory processes. Looking at co-occurrence of code “fact strg mp: Multi-device functionality” with other code shows that this multi-device functionality is also related to technology preference of citizens. Expert 1 explained this aspect as followed:

“We were in business of surveying in public opinion. We want to make sure that each person’s opinion is comparable to regardless of how they access the survey. So if we show people different things on their phones compare to what they see on their computer, we would not have a comparable data set that of opinion from one to the next”

Expert 13:

“..., there you really need better dialogue not only one-way communication or two-way communication; I think you need many communications. I do not know, maybe through other kinds of social media tools or so maybe that would be possible but I think it is still has to be established to facilitate the communication between different actors.”

Furthermore, expert 13 pointed out the importance of cross-media communication accompanying the weakness of mobile devices in establishing dialogue and deliberative process and lack of good example in this aspect. Both aspects have been discussed as the disadvantages of mParticipation.

In terms of openness and transparency the experts discussed how the seamless and instant information exchange through mobile devices provide the chance of informing citizens about their participation possibilities; as well as showing the citizens, how they are being heard and how their feedback could be integrated in the planning process.

For instance, regarding the first aspect, expert 8 and expert 5 respectively mentioned:

“And it can open the process of government, between governments and citizens if you have this kind of really instant communication and holistic information exchange via mobile phones.”

“Knowing there is somebody I can talk to, knowing somebody that I can provide my feedback to. [...] So I think improving communication it goes even one step before that. Letting them know that the communication network or structure exist even though it does today in a more of a face-to-face [...]. But making it more seamless somehow. I think it about that kind of website that there you’re ordering something or buying something online and then you get that live chat box or dialogue box that comes up and says how can I help you out with this? It seems like something like that as people are out. So there is somebody that can help me, give me information and take my information.”

Regarding the second aspect, expert 10 and expert 14 expressed their opinions as:

Expert 10:

“I think that builds some trust because people are feel that the official authorities are actually considering their circumstances when they are asking for their inputs.”

Expert 14:

“Depending on how it is designed. So, if there are proper ways of facilitating communication like if there is a possibility for feedback and the resources for feedback, and then there should also be a way of showing how people’s opinion were integrated in further processes. So I am not sure how that can be done which appeals to transparency of processes.”

The last influence of mParticipation on communication between actors is listed under the code “com actors: structured communication/different level”. The main point is that mParticipation provide the possibility to have a structured communication in different levels of detail. For instance, expert 10 believes that mParticipation could ease the process of gathering contributions and analyzing them:

“One is often they are structured in a way that it produces data easily. So in terms of, either planners or individuals presenting evidence to authorities that is a very good tool to use.”

Expert 12 addressed how using mParticipation enables different levels of communication, which could be useful in the planning process and at each step of planning.

“And I think that the opportunity of mParticipation is that it allows us to choose the level of communication we would like to have between actors and urban planning process. So for example, you as a citizen maybe quite interested in knowing and participating more in fore service planning but only at a certain level of detail. So I think that mobile offers opportunities to be able to move back and forth and have things in a different way”

- **Information flow**

The flow of information is another investigated theoretical aspects regarding collaborative planning and networked society. Hence, possible influences of mParticipation on flow of information were the theme of another set of questions in expert interviews. After reviewing interviews' texts, six codes were identified. Their occurrence frequency and their distribution across the different interviews are shown in Table 25.

Table 25 Distribution of the codes under flow of information (FLOW INFO) category across the interviews

Code	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13	P 14	P 15	TOTAL
flow info: huge volume of non-processed information/interactions in short time frame	0	1	2	0	1	0	0	1	2	1	2	0	0	0	0	10
flow info: instant communication/synchronicity/quicker	0	1	1	0	1	0	1	2	0	0	1	0	1	0	0	8
flow info: sharing information through social media network	0	0	0	0	0	2	0	0	0	0	0	0	1	5	0	8
flow info: compressed and well elaborated (structured/framed) information	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	4
flow info: diverse flow of information between actors	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
flow info: old planning structure hindering mobile capacity	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1

In terms of the occurrence frequency, the code “huge volume of non-processed information/interactions in short time frame” was repeated often by 7 experts (out of 15). For instance, expert 13 and expert 5 mostly discussed the challenges of dealing with a huge volume of information and the capacity required by municipalities or governments to manage and analyze this information.

Expert 13:

“So, I think people can provide a lot of information, they can get a lot of information but still it needs someone who assesses what comes in, what goes out, what we should do with it. I think it is not easy to organize a self-organized process, or to facilitate a self-organized planning process.”

Expert 5:

“Let’s just say we got comments from millions of people from our city about a particular issue. How would we handle all of that information? And I was talking about creating these connections and conversations, how would we handle millions of conversations that are going on say between

planners and residents or between residents and residents. But if there are limited kind of resources as far as staff in a city and planning department or whomever that is providing the information, that share volume would be overwhelming and what then?"

Expert 12 mentioned the short timeframe aspect for gathering big volume of information from participants as she said:

"(in one of projects) I wanna to know where people want more bike-share stations. So, I have got 1700 responses to that in a week. There is no way I could talk to 1700 people in the course of a week. So I would say, that is an advantage that the number of people you can engage."

Furthermore, code of instant communication/synchronicity/quicker is repeated and emphasized by 7 experts. Instant communication/quicker/synchronicity describes the faster speed in transferring information due to ubiquity of Internet in mobile device on the one hand; and readiness and portability of mobile devices, on the other hand. As the expert 13 and expert 15 mentioned:

Expert 13:

"You have Internet everywhere. You have it in the subway, in the bus, on the bike. And you can gather information from the web whenever you want to and you can provide information wherever and whenever you want to."

Expert 15:

"Well, one of the key pieces is we talked about it is the immediacy or the ability to be physically in the place and looking around and either giving feedback on or actually discussing issues associated with that physical place in that physical time."

The codes "sharing information through social media network" and "compressed and structured information", are two other aspects that are emphasized by 3 experts. In terms of sharing of information through social media, the experts mostly talked about how sharing information through social media (Facebook and Twitter) could be easier and could affect participants access to project information. For instance, expert 9 said:

"Especially when you are integrating a citizen engagement application with social media or on a distinct platform. That gonna be driving that traffic."

And another example is as expert 3 expressed:

"It could spread more easily among networks."

However, the main reason behind that is that people often use social media networks through their mobile phone applications (co-occurrence of code "flow info: sharing

information through social media network” and code “charch citz: new population accessing web/social media via smartphone”). Expert 2 explained this aspect in an example of a project:

“We recently had this project in the zoo or it was like this huge Facebook presence. So you could tell that a big chunk of the participation is came from people learning about it in social media re-sharing it, telling their peers like hey you know let the zoo know what they should do with their master plan you can just win a free ticket or something like that. So you know the driver in this case will be the free ticket and you get excited and you know it is like you want to go to the zoo for free help them, provide some feedback. ... So you know we were hoping that they will put up signs in the zoo and visit us in the zoo could pull it up but for whatever reason that is not something that they got into and so the thirty percent of people in that project that participated with their smartphone were all driven by the social media channels because I think majority of people now use Facebook app on their phone. Those people were the ones that participated in the activity using their mobile phone.”

In terms of the code “compressed and structured information”, the experts discussed the structure of information from technical and contextual from their points of view. The technicality aspect refers to user-friendliness of mParticipation tool and the role of information structures on that as expert 11 described. The contextual aspect refers to making information understandable for users with well-compressed information as expert 15 emphasized.

Expert 11:

“I think like the information can’t be too complex if it wants to be transferred to mobile phone. It can be complex but it has to be visualized in a good way so that you could still understand it and you don’t have to read like a long text on a mobile phone... so this is kind of a chance but I think some information might... it is maybe like a disadvantage of the mobile phones that if you want to have like a good user experience you really have to see what you really can do on smart phone on a website most of the time you can do more stuff.”

Expert 15:

“The challenge is that the infographic and information and all of that stuffs have to be done in a manner where it is understandable and where it actually put on the correct information.”

- **Network of citizen**

The network and the relations between different actors is another investigated theoretical aspects regarding collaborative planning and networked society. In this regard, the interviewees were asked to give their opinion on how the communication happening through mParticipation can influence the network of citizens or network them together. After reviewing interviews, 9 codes were identified by the researcher with their occurrence frequency and distribution among different interviews is shown in Table 26.

Table 26 Distribution of the codes under network of citizen (NETWORK OF CITIZEN) category across the interviews

Code	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13	P 14	P 15	TOTAL
network of citizen: increasing cooperation between citizens/organizing	1	0	0	0	1	0	1	0	1	0	2	0	0	1	0	7
network of citizen: intersection of virtual network with spatial context	0	0	0	0	0	1	0	0	1	1	0	0	1	1	0	5
network of citizen: using already existing networks like Facebook	0	0	1	0	0	0	0	1	0	0	1	0	0	0	2	5
network of citizen: through interactions (comments, vote, etc.)	0	0	0	0	1	1	0	0	0	0	0	1	0	0	1	4
network of citizen: hard to identify (happening outside of project boundaries)	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3
network of citizen: project topic based	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	3
network of citizen: geographical scale is influential	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2
network of citizen: learning effect	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
network of citizen: not support community building	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2

The first aspect that is often repeated by nearly half of the experts (7 out of 15) is the code “increasing cooperation between citizens and organizations”. For instance, expert 5 mentioned that:

“I think we have seen some cases on this, where it is allowed neighbors and communities in order to meet up or to organize themselves and realized that they have issues and concerns in common besides being common geographically. So, I think that creates those connections as well and then as well as helping them identify what common issues, concerns they have that they can organize themselves around those as well.”

Or expert 6 said:

“For example, there are communities that are using Facebook, it can be on mobile phones or desktops, they are using Facebook to mobilize actions.”

The second most repeated aspect in terms of citizens' network is “intersection of virtual network with spatial context”. This means that the communication that is happening in the virtual space through mobile devices can bring about connecting citizens in reality in their urban areas. For instance, expert 3 explained this influence in an example of one of their project:

“And in this area, neighbors where talking to each other about the participation process and spread messages probably via email maybe also via phone or maybe via talking over the fence that they made a proposal and the others should go there and support it, through liking it and so on. And through this sort of peripheral communication, if you like to, they also exchange lots of knowledge. ...But it was not this peripheral communication was not on the platform itself. It was triggered through the platform.”

However, two of other experts claimed that this network effect is hard to identify as it normally happens outside of the project boundaries as expert 2 illustrated:

“It is interesting because again it is mostly few evidence in the projects that we were part of. I think there is that element but it is hard to quantify that. Because in often times it just happens offsite or you know out of our eyes. It is like somebody says ok or you know you can't tell somebody like read an article, a post like you mentioned it. It is like I should talk to these people because they are doing some interesting work that I didn't know about so they will contact them and you know work together. But it is something that we would have never known if not for the few times when somebody reports back you can't tell those things.... The unfortunate thing is that there is no good way of tracking that which is you know that is sort of how networks work. A lot of them are more informal. A lot of those things might spark something and that might turn into something that we will never find out about it.”

Using already existing networks such as Facebook was another code that is emphasized by four experts. This aspect highlights the importance of using existing networks since people are already using them and have their network there, rather than building extra applications for this purpose. Expert 1 and expert 6 explained this aspect, respectively:

“I think that there are tools that are available that can help us network with each other and to spread ideas around like Facebook where you can use Facebook to promote a certain project and people are already networked

on Facebook with people that they trust and that they know and there is a relationship that built up so we use Facebook to spread the words about projects to increase participation because if the recommendation comes from somebody that they trust, it is much more credible than coming from somewhere else.”

“I think you can also spread events and local idea on these platforms via mobile phones, which is working or can work.”

Furthermore, 4 experts mentioned networking of citizens through interactions that are happening in the mParticipation projects (comments, votes, rankings, etc.). For instance, two experts expressed their opinions in this regard:

Expert 9:

“... and it was creating a network among the citizens. It seemed like a lot of people that were on community remarks, started to comment and some way it performs either they have already known each other or were acquainted somehow. And so, it was like a voyeur and watching they were back and forth and it was sarcastic and fun. Nobody was negative and ugly. But you were watching all these people and I kind of wonder, because they were responding (there was a lot of responses to comments) rather than just putting a comment on a map and leaving. They were responding.”

Expert 4:

“... it is possible that through commenting a dialogue can be formed and everybody can say their idea or problem and the others can respond and discuss that.”

Two other aspects mentioned by two experts were “the influence of geographical scale” as well as “the learning effect that can happen as citizens are networked”. In terms of geographical scale, it is understandable that the smaller scale projects can lead to more networked citizens as expert 13 explained:

“When you do citizen participation in a very local context, I think that could happen and changes the networks of communication between citizens. But it very much depends on the size of the area. If it gets too big, I think it won’t happen, but if you have very local spatially defined context, it can happen.”

In terms of learning effect, expert 2 claimed that there is a learning process that can happen as citizens become networked; however, this is arguable, as this learning effect happens due to the communication and the participatory process and it is not specifically related to mParticipation.

Expert 2:

"I have seen, I think there is a lot of a big learning effect in it, in the sense that people realize you know we can't do it all with the limited fund that we have and so be smart about it and then things happened when you know different day cares realize that Oh!"

4.3.3 Influences of mParticipation on participation process outcome

The third research question of this research is focused on how utilizing mobile technologies can influence the output of participatory processes (RQ3). In this respect, the issue of quality of participation was discussed with the experts during the interviews. After finishing the coding process, six codes were identified by the researcher, which their occurrence frequency and distribution across interviews are indicated in Table 27.

Table 27 Distribution of the codes under quality of engagement (QUL ENG) category across the interviews

Code	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13	P 14	P 15	TOTAL
qul eng: providing new type of information	0	0	1	0	2	1	0	2	2	0	0	0	0	0	0	8
qul eng: increasing quality of inputs (people in the setting)	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0	4
qul eng: more efficient and accurate inputs	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	4
qul eng: quality out of quantity	1	0	0	0	0	0	0	1	0	1	0	1	0	0	0	4
qul eng: visual elements/structures for info helps for better understanding	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	4
qul eng: less quality because of less spending time	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	2

The first important aspect emphasized by 5 experts is the code "providing new type of information". Concerning the limitations of face-to-face participation methods, this new type of information is not possible to be gathered as expert 8 mentioned:

"I think data can definitely influence the quality because you can now collect the data that you were not able to collect before. You can collect data faster."

One example of this new information is about the behavior of citizens in urban areas, which can be useful for planning purposes as expert 5 highlighted. In addition, this could lead to a new form of participation as the citizens participate by providing information and data for planners.

Expert 5:

“And the other thing that I thought about too, is that we think about participation a lot in terms of information that citizens give us about a particular issue or a project or whatever it might be, but I think participation can also be information about their behavior or their uses or their involvement with something. So the fact that somebody walks through the parks and stops and uses particular area of the park, is that information can feed in to say, ok, well people that go through the park always stop in a particular area and they always spend time there versus other areas.... I think that is a form of participation and we see people do this kind of tracking their location or logging what their activities are. They go to park; they use swimming pool or they take their kids. That can be valuable information for planners. And so does the type of what we are calling participation as far as the information is concerned, what would be the term for that, where it is more of an activity tracking, that is almost like voting.”

Another important aspect repeated by two experts is the effect of mParticipation on the quality of inputs that are coming from citizens, as they are living in the setting where planning is happening. For instance, expert 2 mentioned that:

“I think that makes it a lot more efficient and the answers are a lot more routed in the moment by what they are doing but I think they are more accurate if you are doing it some sort of remote or while they are at home or they might have different mindset and I think that is the key piece where I see that specially for things like you know park master plans or transportation or bicycle plans or something like that. I truly think having that sort of participation on the go that mParticipation needs. I think really raises the quality of the conversation of the feedback and input.”

The underlying point here is that this increase of quality is mainly due to the advantages of mobile devices as being portable, which is being confirmed by co-occurrence of these codes.

Having “more accurate and efficient inputs”, increasing “quality due to higher quantity of inputs”, as well as increasing citizens' understanding due to “visual elements”, and “structured information” are other three important aspects that are emphasized by 3 to 4 experts. In regard to accuracy and efficiency of inputs mParticipation has been criticized for not having rich content and good inputs (which were also mentioned as disadvantages of mParticipation in previous chapter). Few experts (only 2) in the question of quality believed that mParticipation led to less quality inputs, but some experts (4 out of 15) during the interviews positively argued about this issue. For instance, expert 3 illustrated the possibility of meaningful conversation with short text messages and character limitation:

"I am not so pessimistic, because people says it is only short messages do not carry lots of meaning and it is superficial. I do not buy this. It is actually people have lots of interesting points they can put in a few words. I think you can have a meaningful twitter conversation. You can have, or lots of people have meaningful social interactions, with short messages. That should be possible."

Or expert 10 discussed the efficient inputs from citizens in terms of their short attention span:

"But, in terms of the quality of the content, our company at least tries to work very closely with all the agencies and departments you would work with to structure the dialogue, structure the questions, so it captures the feedback that will make a difference. So, you instead of asking 15 different questions about someone's background, so the people span attention won't last so long, and surprise in that is that it turns out when you ask people something on their mobile device, often their feedbacks are very focused, there is no room for them to trample, so its representative, you now, it make very high quality quotes."

Regarding increase of quality due to higher quantity of inputs the experts argued that when there are more people who are participating in the planning process, the possibility of receiving innovative ideas as well as often cited problems is likely to be higher. Experts 4 and 14 explain:

Expert 4:

"You may get some quality out of quantity when for instance 500 persons say that this place is not looking good, you can somehow be sure that there is something wrong with this place."

Expert 14:

"So if its very easy to use, it could increase the quantity of engagement but the quality of engagement rather depends on who is actually involved. Several people with very innovative ideas or whatever. So if you find those people for any participatory processes, then the quality might be enhanced but it is always difficult to find those or to engage those people whether its being face-to-face or mParticipation or eParticipation processes. So I am not sure whether it make a difference at all, if you follow the line of thoughts that engaging more people must somehow lead to greater quality, or like is it more representative, then it might help if the tools allow for appealing to more people than other processes."

In terms of the influence of visual elements and structured information on citizens' understanding, expert 1 elaborated how using visualization elements help citizens to understand the planning issue better.

"I think with tools that help people to understand in a visual way what option there are being given or the trade-offs associated with different choices we have the ability with technology to help people express what is important to them but also evaluate their choices based on the things that are important to them. It is very hard to do that in a meeting. But when you have your tablets or smartphones and you can rank your priorities and then look at three different options according to your top priorities that is very relevant information that is customized by my things, the things that I think are important. That is, I think the best way to use technology to help people understand the choice that they are being given they goes way beyond the multiple choices, sort of text based survey that has been our first sort of attempt at engaging people online."

The experts talked about this influence but the point here is how visualization elements result in more informed decision by citizens.

4.4 Discussion of findings from field experiment

This part of the analysis focuses on the findings of the pilot test of FlashPoll app in Berlin (section 3.3.3 above) and their comparison with the findings from expert interviews. The findings from implemented tests are mostly related to the process, as the content was not the focus of tests.

- **Participation scope**

As it was described in section 3.3.3, the numbers of participants in all three implemented polls seems quite low while they are almost the same in all cases. This issue could be assessed as a negative point for the three implemented polls. There are some underlying reasons that will be discussed. One of the reasons could be related to the topic of mParticipation polls. As the topic of the first poll focused on a very local topic and direct association of the participation topic (re-designing Waldstrasse) with everyday-life of the inhabitants, it attracted more attention and more participants. Furthermore, FlashPoll App was used as complementary component of a broader public participation process, which was happening in the area. The second poll encompassed nearly the same geographic area, but the topic was not connected to the everyday concerns of most of the inhabitants. The third poll had a bigger spatial outreach, but was not directly connected to any running participation process or any urgent local problem. It addressed mobility as the topic, which most of the time is not considered as an urgent matter. Furthermore, in the second and third polls, the participation method was only mParticipation and was not accompanied with any face-to-face methods.

In terms of participant range, the age group of 19-35 years was the main participants' group in all three examples. Considering the experts' interviews and their statements on the inclusiveness of mParticipation, it could be discussed that this aspect to some extent depends on the context, in which participatory process is happening. Some doubts and controversial opinions of experts can be confirmed by the results of these polls as well.

Therefore, in regard to West Moabit quarter, these results were predictable as the age structure of inhabitants in the area is not very old.

- **Outreach strategies and promotion**

One of the main obstacles in all kinds of participatory processes is outreach and PR activity. During the interviews, some experts pointed out this issue as a challenge to face-to-face participation, and some experts (specially from praxis) indeed emphasized the role of promotion and PR in attracting a broader spectrum of citizens in the participation process. Based on the evidence from implemented tests in West Moabit quarter, outreaching people has been found to be as hard in face-to-face participation as in mParticipation processes. Despite trying different sets of online (website of QM, online magazine, Facebook page) and offline (flyer, neighborhood magazine, event-based promotions) outreach channels in the tests, it has been challenging to outreach citizens and to motivate them to participate in the process. Therefore, it can be said that mParticipation should have been used as one element within a participation process with multiple participation offers. This also confirms the importance of cross-media communication and a mix of online and offline methods that were highlighted during the expert interviews.

- **Language as a barrier**

Deficit of language knowledge has been recognized as a very important barrier for any kind of participation. However, removing language barriers is named as advantage of eParticipation and mParticipation. In the expert interviews, some experts pointed out this issue. During the meetings with the different actors, who are active in the area (QM office, different NGOs and initiatives), language problem of inhabitants was mentioned as one of the reasons for low level of participation in general in the neighborhood. To tackle this challenge, the designed information flyers for polls were translated into Arabic and English, so that more inhabitants were informed about the possibility of participation via their mobile phones. However, these efforts seemed to not be successful as there were not much difference in the number of participants in the last poll compared to the first two polls.

- **Mobile apps, technical compatibility and data privacy**

The discussions around advantages and disadvantages of mobile apps are analyzed in the previous sections. Requirements for downloading were discussed as one of the disadvantages regarding mParticipation, which the experts agreed on. In addition, there are some technical pre-requisites that are needed, which demotivates participants. In addition, some experts have emphasized the issue of privacy. In all cases of the implemented tests in West Moabit, the participants were required to download the FlashPoll app, in order to participate in the process. At least during the promotional events, people hesitated to download the FlashPoll app on their smartphones. Some technical-related issues were reported by many inhabitants. For instance, compatibility of the app with the smartphones of some inhabitants and lack of storage space on mobile devices were problems that people mentioned.

On the top of these technical issues, the aspect of privacy and data protection were mentioned by many inhabitants as one of the determining factors for the lack of willingness

to install the app and participate in the polls. This issue was also raised in online promotion channels (e.g. Facebook page of the QM) where inhabitants questioned this aspect. Despite the explanations of the researcher (in-person and in the flyer instruction) and QM employees regarding the anonymity of their contribution via FlashPoll app and strict privacy concerns of the developers of the app inhabitants were still hesitant to download the app. This shows, on the one hand, the huge concern and to some extent extreme consciousness of German citizens regarding the privacy issue. On the other hand, this calls for a long and intensive trust building process, in which the inhabitants would be informed in detail about their concerns to minimize the extreme fear about the data privacy issue.

- **Time/place barrier**

Removing time and place barriers was also discussed as an advantage of mParticipation in the expert interview section. Due to the few participants of all three cases in West Moabit, this aspect could not really be discussed. However, during the first poll, as the poll and announcement was posted on the Facebook page of the QM, there were some specific comments addressing this issue. One of the inhabitants specifically mentioned that since she had to go to work she was not able to participate in the face-to-face meeting regarding re-designing of Waldstrasse. This kind of specific comment confirms the current situation of living in the contemporary urban society, where most of the people have to work until late evening. Therefore, there is a requirement for flexibility in participatory processes, if one would like to have broader engagement spectrum of inhabitants. Therefore, it could be said that mParticipation allows for context (time and space) related engagement of the inhabitants without the need of 'spending time' and 'going there' in order to participate.

- **Structured, instant communication and visualized output**

Structuring the communication and the output of participation process was also one of the influences of the mParticipation. This aspect has been highlighted during the tests in West Moabit area. One of the advantages of using FlashPoll is that it immediately visualizes the results and hence provides an instant feedback to the participants. Most methods of participation cannot compete with this quick feedback possibility. This provides a great chance for citizens to contribute to the process and see (in visual graphics and diagrams) afterwards what other people's opinion are. Moreover, using pre-defined type of questions in the app for creating the polls (e.g. open ended, single/multiple choice, ranking possibility, etc.) will result in already structured data (participation inputs). This structured data will increase the analytical possibilities of the results (especially when a larger crowd is involved), while saving time and money. The cost saving aspect was not really the case in the implemented tests in West Moabit, as it was done based on the researcher personal efforts. The administrative setting up of the complete polls for all tests in Moabit was done by the researcher, which was uncomplicated and time-efficient. For instance, the setup of the three polls in the back-end of the FlashPoll app took only few hours, which is considerably less than the amount of the time that somebody would need for only an information meeting regarding a participation project.

In addition to that, visualizing the results as an important feature of FlashPoll also improves the transparency of the decision-making process as the participants can see how the other citizens (in total) answered the questions. This openness aspect was also mentioned during the expert interviews.

4.5 Summary

The main dilemmas of “collaborative planning” and the “networked society” are extracted from the literature review section in order to be investigated during the expert interviews. These are grouped in communication between actors, network of citizens and the flow of information. The possible influences of mParticipation on these dilemmas are part of the expert interviews. The rest of the interview incorporates the questions regarding the relevance of mParticipation topic in the current discourse of citizen participation in urban planning processes. A semi-structured interview questionnaire including ten questions is designed.

Accordingly, the researcher conducted 15 expert interviews from USA and Germany. These interviews are analyzed with the support of ATLAS.ti (and NTC analysis model). During the analysis process with the software, a coding system with 17 categories and 166 codes are developed and analyzed. The findings and discussions of the expert interviews are formulated in three sections as position of mParticipation in urban planning discourse, implications of mParticipation in collaborative planning and the networked society, as well as influences on the participation outcomes.

In addition, the findings of implemented tests in Berlin are discussed in this chapter. These are compiled by participation scope, outreach strategies and promotion, language, mobile apps, technical compatibility, data privacy, time/place barrier as well as structured, instant communication and visualized output.

Chapter V- Summary, Conclusion and Reflections: mParticipation as an enhancement concept for urban planning in the new millennium

5.1 Theoretical framework for mParticipation in the context of urban planning

The different aspects regarding the mParticipation concept have been discussed in the previous chapter. The possibilities and advantages, disadvantages and challenges, characteristics of mParticipation, and the differences between mParticipation and eParticipation are some of these aspects, which are investigated to position mParticipation in the context of urban planning (RQ1). The controversial discussions and inputs from experts in combination with the findings of the field study indicate that mParticipation research and practice are still in their initial steps. Many of the current problems and challenges of face-to-face participation methods (which have been discussed in the theoretical section 2.3.1) were confirmed by experts during the interviews. This shows the need for new techniques, methods or tools to change this unsatisfying situation as well as to enhance the engagement processes in terms of process and content/output. The positive opinions of the experts regarding the usage of smartphones and tablets for enhancing citizen participation processes considering the characteristics of living in contemporary urban societies emphasize the importance of mParticipation.

From the definitional points of view, mParticipation is defined as a subset of a broader concept eParticipation. This was confirmed during the expert interviews, as many of the interviewees do not see a huge difference between mParticipation and eParticipation. The recent trend that shows more people access the Internet through their smartphones resulted in a more combined use of multiple-devices (desktop, laptop, tablet, and smartphone) as communication channel. This should emphasize that defining mParticipation as a subset of eParticipation does not decrease the importance of mParticipation; instead, it indicates the necessity of having the participation platform available via mobile devices for ensuring an inclusive participatory process and broader spectrum of participants in a project. Therefore, it can be concluded that mParticipation is indeed an important subset of any eParticipation processes.

- **Potential and challenges**

In terms of advantages and possibilities, all of the potentials that were mentioned in the theoretical part, were confirmed and the experts added new possibilities during the interviews. According to the categorization of mParticipation's advantages and potentials in respect to participation process, smartphones features as well as the content of participation, it can be stated that mParticipation can broaden the spectrum of participants, engage the missing demographic group of citizens that have not normally been heard, remove the spatial and temporal barriers for participation, increase the readiness for participation, add context-related communication, include feedback based on real experience and provide real-time information gathering possibility.

In terms of disadvantages and challenges of mParticipation, the reviewed challenges and barriers addressed in the literature were addressed again by the interviewees. However, some extra challenges and disadvantages were added by experts. Having the categorization

of disadvantages and challenges of mParticipation in respect to participation process and content, technicality of smartphones, and participants, it can be concluded that mParticipation supports lower engagement level with less deliberation, has some barriers regarding app installation and sign-in efforts, requires a preliminary know-how from government and user side, and has shortage regarding specific knowledge related to mParticipation processes as well as best practices. The technical limitations of smartphones (limitation of screen size, compatibility issues) in combination with privacy concerns are two important challenges that have to be solved in mParticipation projects.

- **Characteristics**

Some of the characteristics of mParticipation have been reviewed in the theoretical section. These characteristics were also mentioned by some experts during the expert interviews and some new aspects were added. Based on the finding of the expert interviews, mParticipation can be characterized as a process, which is:

Convenient and flexible, for participants to take part quickly and instantly in the decision-making process anytime and anywhere (at home or embedded in the spatial context of the project). This also indirectly refers to mParticipation as a flexible process;

Context-sensitive (embedded), and can influence the output of participatory processes as it includes the feedback of participants, which is based on the spatial context of planning;

Real-time and quick, mostly due to the possibility of real-time and instant feedback that can support planners for reporting and deciding urgent matters;

Inclusive, as it can enable participants from different demographic and economic situation to contribute to the participatory process.

- **Smartphones features as the central element**

Smartphones and tablets with their specification and features are the central element of mParticipation processes. This point was validated by the results of the expert interviews. The direct influences of smartphones capabilities (e.g. portability, location-based services, push notification, GPS sensors, mobile Internet, intuitive design) on the advantages, disadvantages and characteristics of mParticipation reveal the central role of these devices.

Furthermore, smartphone (and in general ICTs) are under a high-pace continuous development and advancement process, which makes it a dynamic research field as new features and capabilities are being instantly introduced and the technical limitations are gradually fading. On the one hand, for instance, the Augmented Reality (AR) or Near Field Communication (NFC) is recently being used in smartphones requiring a need for their potentials for participatory processes to be researched. On the other hand, for example, the limited screen size and battery shortages are gradually changing as new batteries being introduced and more manufacturers produce bigger size smartphones known as “Phablets”.

In addition, the widespread use of smartphones among different demographic and economic groups indicates an evident decrease in digital divide and a pervasive use of mobile devices in the daily life. In the meantime, mobile devices are going to be the primary device for accessing the Internet among many citizens. In this sense, smartphones have a huge potential to play a central element in the future participatory processes.

- **Users involved in mParticipation and their attributes**

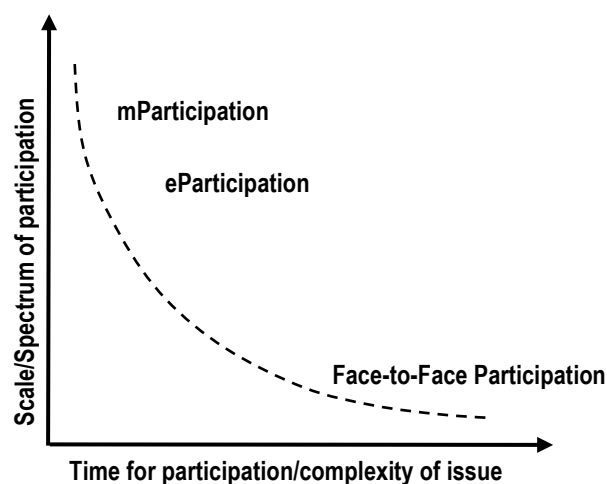
From the expert interviews and the different codes that are produced in the analysis section, two groups of people are involved in an mParticipation process. From a systematic point of view, they can be named as the users of the system (as mParticipation application). The first and the most important parties in every participatory process are the participants. According to the findings of the expert interviews, the contemporary citizens normally deal with their busy lifestyle (maybe it is more in the context of the USA) and are fully occupied with the daily routines such as working, shopping, family relationships, etc. Therefore, they have a very short attention span and expect a very quick process for participation, which needs to be considered carefully when an mParticipation application is going to be designed. Moreover, the users might have different technological preferences; therefore, mParticipation applications should be accessible over different type of devices with different sizes and compatibility systems to meet this attribute of users. The users of mParticipation applications are normally sensitive about the privacy issues and they consider their smartphones as a very personal device.

The other group is responsible for the preparation and organization of the mParticipation process, which normally includes urban authorities, urban planners, and technical developers. The urban authorities, as the responsible body for urban development of cities, initiate the participation process and should endeavor to ensure a broad spectrum of citizens and stakeholders will be involved in the decision-making process. Unfortunately, it was out of scope of this research to interview experts from urban authorities to investigate this in more detail; however, the clear need for more open and transparent governance processes from the urban authorities' side, lack of government knowledge about these new engagement processes (e-/mParticipation), or lack of knowledge about how to analyze the results of mParticipation process were emphasized during the interviews. These indicate the need for a reform in the government body to be adaptable and more compatible with such new developments. Urban planners and technical developers are normally responsible for preparing, while the other party in this group design and organize the mParticipation process. The interdisciplinary knowledge and understanding regarding technical limitations and the requirements of participatory urban planning are vital here to design a mParticipation process (including application), which fulfill the demands of both parties while expanding participation range.

- **Strategies for planning the process of mParticipation**

It has been discussed in the interviews that any kind of ICT-supported engagement processes can not be a replacement for face-to-face methods. Therefore, different sets of methods and tools should be designed according to the aim of each participatory process. This means the scale and scope of participation (time for participation, complexity of the issue) can clearly define in which stage of the participatory process each sets of methods shall be applied to. For instance, one can gather ideas from a bigger crowd via e-/mParticipation processes and discuss them with a smaller crowd via face-to-face methods and then again decide with a bigger crowd via e-/mParticipation the possible outcomes. It should also be considered that each device requires its own strategies.

Figure 32 Mix of participation methods based on complexity/time



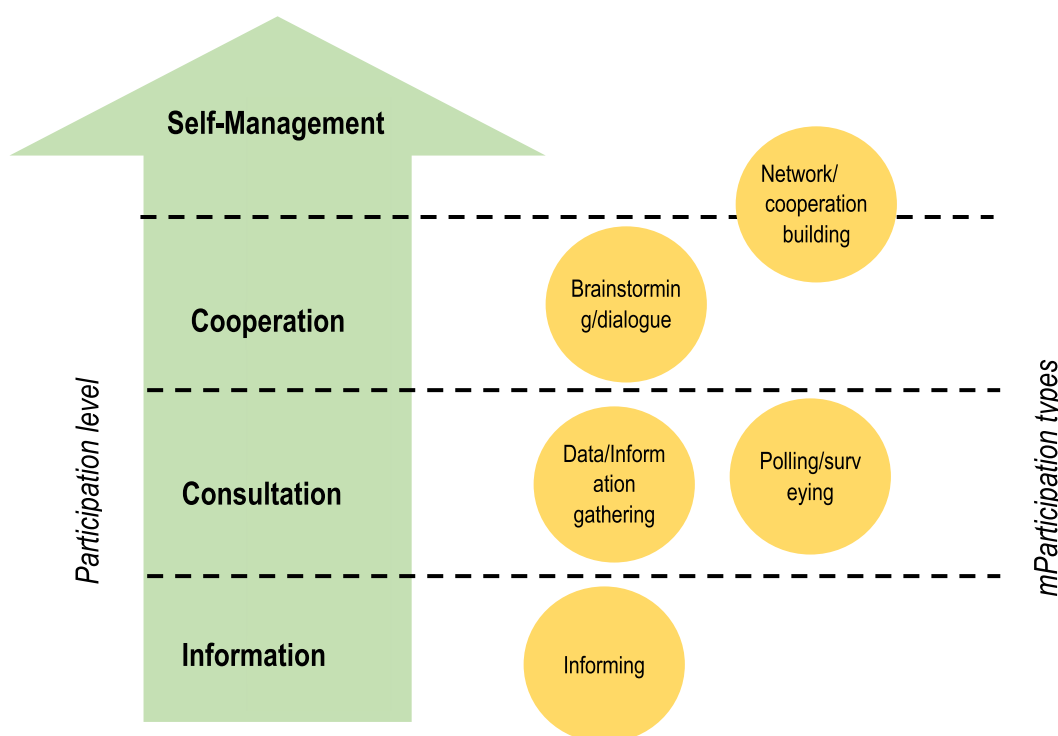
The other influential factor in mParticipation process is promotion and PR work. This issue was repeatedly mentioned during the expert interviews, which calls for tailor-made strategies. Furthermore, the experiences from the tests in the West Moabit area also confirmed the importance of promotion and PR, which is often underestimated. It is a common expectation that by only setting up an online platform, the participants will contribute in the process; however, in reality, there is not a huge difference in the amount of PR work needed for face-to-face methods compare to e-/mParticipation methods. The only difference can be in terms of mParticipation (especially when an app is designed), as one may invest in PR activities in the beginning of the project. After building the virtual community, one can easily reach back to them much quicker and easier (with less amount of efforts) due to the direct communication build with their primary communication device (smartphones). Nevertheless, it can be stated that every participatory process, despite of the applied methods, requires PR (which is mostly resource consuming) if a broad spectrum of participants is targeted by the project. One important factor in PR can be the incentive for participation in the process. This incentive can be, for instance, some economic benefits (vouchers, discounts, etc.) or can be the joy of playing game (Gamification approaches).

Furthermore, the power of visualization and attractive design of the mParticipation application should not be neglected. These issues are often mentioned during the expert interviews, and therefore, they should be considered specifically in mParticipation as participants have a relatively small-size screen in front of their eyes and a short attention span. Here the visual elements and the intuitive design of an mParticipation application can play a very important role to keep participants motivated and eager to contribute into the participatory process.

- **mParticipation and level of participation**

The level of participation is an important aspect in any participation discourse, no matter which techniques and methods are used. Based on the typology of mParticipation (introduced in section 3.2), each type of mParticipation can contribute to different participation levels defined as information, consultation, cooperation and self-management (Lüttringhaus, 2000) (Figure 33).

Figure 33 mParticipation typology and citizen participation level



Accordingly, the **informing type** contributes to information level (as the first level of participation), because in this type only information or data is communicated in one direction. Citizens can be informed through the information that is provided by authorities regarding a development concept for their neighborhood or city. The **information/data collecting type** of mParticipation is an emerging form in the discourse of citizen participation, which can be influential in the urban planning context. In terms of participation level, this type of

mParticipation projects can directly contribute to the consultation level, as they only provide the needed data or information.

In regard to the participation level, the **polling/surveying type** of mParticipation practices can contribute to consultation level, as the participants are being asked directly by the urban authorities about certain topic. This topic will be discussed less. The **brainstorming/dialogue type** of projects can contribute to the cooperation level as here the actors are provided with a platform to discuss different ideas, generate new ideas, rank and vote. Therefore, there will be common discussions and negotiations among different actors. However, at the end, the urban authorities would make the final decision. Although many of the experts during the expert interviews challenged the ability of mParticipation applications in terms of deliberation and dialogue, the researcher believes that this aspect can be handled with the design and visual enhancement.

According to level of participation, the **network/cooperation building type** of mParticipation practices can be effective in the cooperation and self-management level. In this type people are connected with each other; this network power enables them to organize the processes and necessary actions for accelerating decision-making processes as well as development process, much easier.

5.2 Co-creation as the new form of collaborative planning in the age of information and communication

The new approach in participation discourse calls for a more collaborative form of planning, which incorporates different sets of actors (with different interests) interacting and communicating in a common planning framework. This collaborative process focuses on dialogue, diverse participants, mutual interests and knowledge as well as continuous engagement. Moreover, (authentic) dialogue, network (power) and institutional capacity are identified as the three main dilemmas for the success of collaborative planning processes. On the other hand, reviewing the lines of research on the “networked society” theory illustrates the implications of pervasive ICT diffusion in the urban societies for urban planning context. These can be summarized as decentralized power structure and reduced hierarchy in the social structures, open flow of information for everybody, shift toward more inclusive processes, more interactions between people in virtual space and fading of face-to-face communication, as well as power of (many-to-many) communication. Therefore, four main underlying dilemmas are networks of flow, decentralized power structure, communication power and information access (and flow). The influences of mParticipation on these dilemmas shape the answers to the second research questions (RQ2).

Given the characteristics of mParticipation from the experts’ point of view, mParticipation can engage a broad range of audience through dialogue (even if not deep discussions), share knowledge and information among participants in a continuous form. Regarding the **dialogue** and its transformative power, it can be concluded that mParticipation will not be an ideal process, as its shortcoming and limitations in deliberation process were repeatedly mentioned during the expert interviews. However, through eParticipation processes this

dialogue can be achieved due to technical advantages of desktop computers and laptops (bigger screen).

The results of the expert interviews indicate that mParticipation can influence the **network** of citizens through the interactions that happens in mParticipation processes (comments, votes, etc.); therefore, it can increase the cooperation between citizens and organizations, as it connects different actors with different interdependences with each other. The example of Chip-in project in USA (network/cooperation building type of mParticipation) can confirm this claim. This network effect is often hard to be identified and depends on the topic of the project. Nevertheless, according to the interviews, these networks in virtual space can be transferred to the spatial spaces (real world) according to their geographical scale of mParticipation process. The learning effect that is derived from network of citizens also mentioned during the expert interviews, which indicates the possible influence of mParticipation on collaborative form of urban planning. In general, the researcher believes that the discussions on the network effect are controversial, thus requiring more investigation.

The possible effects of mParticipation on **institutional capacity** did not appear directly across the expert interviews. However, it is discussed that the network/cooperation building type of mParticipation can contribute to cooperation and self-management level of participation. This possibility of mParticipation for self-organizing processes can be interpreted as an important tool that enables and facilitates formation of institutional capacity. One other example is the results of Next Hamburg project. The follow-up projects in other cities in Germany, Switzerland, India, Portugal, and Turkey, accompanied by establishment of a network institution called “The Next Network”⁵ can conform the potential influence of mParticipation project on institutional capacity. Moreover, mParticipation as a quick and easy implementable form of process can be applied as incubators projects aiming at bigger scale participatory processes. This capability at the end facilitates establishment of institutional capacity in form of initiatives via community building. The examples that are mentioned during the expert interviews (e.g. Leerstandsmelder, open street map community, etc.) can confirm this aspect and how an mParticipation project can result in an online community and later an initiative.

Concerning **decentralized power structures**, the possible influences of mParticipation can be discussed regarding the network effect as well as possibility for self-organizing processes. Through the network effect, the different stakeholders will be connected with each other and therefore, their power can be joined together and can counterbalance the urban authorities (or top-down forces). Furthermore, the self-organizing possibility via mParticipation application for variety of stakeholders enables them to show their power. This encounter between different stakeholders can intensify the decentralization of power structures and facilitate the opening process of local governance.

⁵ <http://www.wearenext.org/>

The other important dilemma of collaborative planning and networked society is **communication**. It has been discussed in the theoretical section (see 2.3.1) how the Internet, as a low-threshold medium, empowers individuals to communicate with other individuals in multi-direction communication way. The ubiquity of Internet via mobile devices in combination with high rate of smartphone access in contemporary urban settings (which were emphasized during the expert interviews) will intensify this aspect, as the citizens have the instant communication possibility. The findings of the expert interviews confirmed possible influence of mParticipation on communication between actors in several ways. It can be initially stated that mParticipation addresses one of the main challenges of urban authorities. The lack of communication with the public is a problem that mentioned in the literature review and during the expert interviews. mParticipation as an inclusive and convenient form of participation can solve this challenge.

Moreover, the speed of communication can be influenced due to real-time and communication and instant feedback possibilities that can support iterative processes. This can be useful in case of collaborative urban planning processes, as they normally encompass several loops of decision-making steps. Further to the speed of communication, it is discussed that mParticipation can influence the format of the communication between actors. mParticipation can provide a flexible and multi-level communication by structuring the process and results of the participatory process. For example, utilizing different communication channels and cross-media communication structure in mParticipation applications (text, voice, picture, etc.) make it possible to have different communication level with different sets of data. This means that the organizer of the mParticipation process can include different sets of media and content for different steps according to the objectives of each step. Additionally, these different communication channels accompanied by visualizations also enable citizens with communication barriers (language, shy to talk, etc.) to be able to participate in the decision-making process. At the end, these aforementioned influences of mParticipation on communication between different actors can bring about more transparency in the decision-making processes.

The last dilemma is the **information**, which is an important aspect in the urban planning context. It has been discussed in the theoretical section (2.3.1) that flow of information in the networked society is open and not limited to specific group of people. According to the findings of the conducted expert interviews, mParticipation can effect flow of information from two aspects. The first aspect is the volume of information. Given the mobile computing possibilities of smartphones, the volume of information and data (being exchanged between citizens or between sensors and citizens) can drastically increase. What should be carefully considered is the existing danger of overflowing citizens and participants with this huge amount of information and data. The second aspect is regarding the speed in the flow of information. Here again, mParticipation can provide the instant, quick information exchange and synchronicity mostly due to ubiquity of mobile Internet and the readiness of smartphones. Therefore, the ratio between volumes of information (data), the timeframe that is needed for gathering/exchanging this information and the needed investment/costs is the key element concerning mParticipation.

Considering all the aforementioned aspects, **co-creation** approach as a very recent trend in urban development process can be seen as a potential approach, in which mParticipation can be a facilitator. According to Leading Cities, co-creation (or co-production) is defined as “the active flow of information and ideas among five sectors of society: government, academia, business, non-profits and citizens - the Quintuple Helix - which allows for participation, engagement, and empowerment in, developing policy, creating programs, improving services, and tackling systemic change with each dimension of society represented from the beginning.” (Leading Cities, 2014, p. 3) This co-creation process is also technology dependent to a considerable degree, which reveals the necessity of mParticipation and its role in co-creation process. This approach has been used frequently in smart cities discourse, which indicates the importance of this approach (Pahl-Weber and Knyphausen-Aufseß, 2016; Pahl-Weber, 2016). Despite of the communalities of this concept with citizen participation in collaborative planning, there are some differences identifiable (Watson, 2014).

Some differences are concerning the bottom-up nature of co-creation process and its view on governance structures (works outside of the current structures). Here mParticipation can support co-creation processes with the self-organizing possibilities, institutional capacity, decentralizing power structure and networking of different actors with each other. Some other differences are in relation to the visual nature of co-creation processes, which can also be facilitated with cross-media communication possibilities of mParticipation.

5.3 mParticipation and its implications to urban planning processes and outputs

As the focus of this research is on urban planning issues, it is important to explore the implications of mParticipation on urban planning processes and their outputs. These implications answer the third questions of this research (RQ3) from two aspects. The first aspect is the implication of mParticipation for different urban planning steps; and the second set of implications is regarding the planning process and quality of outputs.

Regarding the planning steps, a common urban planning process encompasses several steps such as informing, ideation/articulate concerns, data gathering, analysis, scenario and decision-making, implementation (Figure 34). In the first step, the informing type of mParticipation applications can obviously contribute and support this step, where the initial information about the aim of the project will be disseminated among different stakeholders. The second step of urban planning is ideation/articulate concerns. In this step, polling/surveying type and brainstorming/dialogue type can be helpful, as many ideas can be gathered from a broad range of different stakeholders via mParticipation. One extra benefit of mParticipation in this step is that the ideas can have a spatial location (geo-referenced ideation).

Figure 34 Contribution of mParticipation typology to different urban planning steps

	Urban Planning steps					
	Informing actors	Ideation/ articulate concerns	Data gathering	Analysis	Scenario and decision- making	implementa tion
mParticipation typology	Informing					
	Information/ data collecting					
	Polling/ surveying					
	Brainstorming/ dialogue					
	Network/ cooperation building					

The information/data collecting type of mParticipation can directly contribute to the data-gathering step of the planning process. It has been also discussed that this form of mParticipation might need more practice and tests in the future, as it can be useful in urban planning context. The analysis step of urban planning is a specialized step, which requires expertise knowledge. However, with well-designed visualizations and illustrations regarding the planning context, citizens can walk in the planning areas and give their opinions via polling/surveying type of mParticipation. This can increase also the quality of analysis as it contains reflections based on real experiences of stakeholders from the setting.

The brainstorming/dialogue type of mParticipation can contribute to the next step of urban planning as scenario and decision-making. Same as previous step, the geo-referencing possibility can play an important role in scenario development. One other possibility can be that citizens evaluate the future scenarios, which are augmented in the setting via augmented reality technology to see how it can look like and then vote the best scenarios. The last phase of urban planning is focused on the implementation of the plan. The network/cooperation building type of mParticipation can respectively support this step. Through connecting different actors with different abilities, the implementation process of the plan can be facilitated and accelerated.

Regarding the planning process and quality of the outputs, mParticipation has some influences. The first one is the influence of the mParticipation on the planning data and process. This means, applying mParticipation in urban planning steps can structure the outcome of urban planning processes, which can be easier analyzed, as they are mostly digitized and geo-referenced. Doing that, the urban planner can save a considerable amount of time and energy for digitizing and geo-referencing materials and information generated during the participatory events. The other implication is on the quality of urban planning output. Due to the geo-referenced ideas and analysis (which can be combined with other

kinds of information in picture, or voice format) and even possibility of gathering new and up-to-date data with mParticipation, output of urban planning processes can be improved.

5.4 Critical reflections on mParticipation

The challenges and disadvantages of mParticipation were discussed in the section 5.1. However, there are still some critical reflections from the researcher's point of view. The first issue is the lack of promising and well-implemented examples in the field of mParticipation. This can be due to the dynamic nature and instant development of this field as well as being a relatively new field of research in participation discourse. Nevertheless, this important issue can hinder willingness of urban authorities to implement this kind of processes and the underlying potentials of mParticipation. Therefore, more investigation and lines of research need to be conducted to test different features and possibilities that can maximize these potentials. Gamification and Augmented Reality can be for instance some example of the approaches that can be further tested in mParticipation.

From the perspective of democratic and legitimate decision-making process, the contribution of mParticipation can be argued. From one side, it provides the possibility (in idealist situation) to involve quickly a broad spectrum of citizens (e.g. fast polling) in different steps of the decision-making process over a plan, which can be different in different planning context. This can naturally increase the speed in decision-making processes, which is sometime discussed as a nature dynamic of decision-making process in smart cities. But on the other hand, the question is to what extent this fast participation attribute of mParticipation is legitimate; and whether it is a logical approach to increase the speed of decision-making processes regarding urban planning process, when we are dealing with the complexity of cities and resulting uncertainties.

The next critical aspect is related to the data privacy issue. This issue was raised during the expert interviews mostly from experts in Germany. This is a sensitive issue and the arguments concerning the negative aspect of mParticipation and privacy issues are understandable. Nevertheless, the researcher believes that the whole data privacy issue (especially in Germany) took an extreme conservative approach in this regard. This can, from one side, result in an unnecessarily panic reaction of citizens (derived from the lack of trust) when they hear the name of any kind of mParticipation process. From the other side, this will block the further development and advancement in this new and emerging field.

The next aspect is related to the results of mParticipation processes. mParticipation can be implemented in a large scale with a broad spectrum of people. In this case, many contributions will be collected from citizen. The main question here is: what shall the urban authorities do with the produced contributions, when the volume of these contributions is too big or there is low consensus in the output? This aspect draws the attention toward the topic of big data (but in a qualitative form of data). This aspect also needs more research and investigation.

Finally, the discussion of native app/web app versus design-responsive website is a critical issue in mParticipation discourse. On the one hand, native apps have important benefits

regarding the technicality and performance of the application. On the other hand, the barriers of downloading and compatibility problems of apps call for design-responsive websites in mParticipation processes. This controversial discussion around the app also needs consideration during the design of mParticipation processes. This means, the main function of mParticipation application should be carefully investigated before investing money on development of a native app, which less people would install and use for participation process.

5.5 Outlook: Smart cities, smart (and networked) citizens and smart participation

The pervasive and ubiquitous computing and digitally instrumented devices built into urban environments (as everywares) utilize monitoring and managing of urban processes in real-time, and provide engagement and navigation opportunities for many citizens to interact with city via using mobile computing (e.g., smart phones). On the other hand, the evolving discussions around smart cities in the planning discourse have shown a strong shift from solely technical-related development toward human-centered development. This is mostly due to the establishment of numerous bottom-up initiatives that actively focus on people-centric and innovative solutions to deal with the contemporary urban challenges. This gives citizens of future (smart) cities a more important role, as they will not be the only users of the cities, rather they will be also part of the urban development process.

Moreover, ubiquity of Internet (due to the widespread of affordable smartphones) has intensified the digitalization process of the contemporary urban life, as the citizens are in instant communication and information (data) exchange with the urban environment. This has resulted in a shift in the citizens' role from consumer to "prosumer". Prosumers are networked with other actors and claim their rights to be part of the development of the future smart cities. The huge volume of data that is being generated and exchanged among prosumers can be valuable for urban planning purposes. Hence, the possibilities derived from interconnectedness of the above mentioned everywares (as decentralized infrastructures) and the demand of prosumers for their rights indicate a clear necessity for engaging these citizens in urban planning processes.

To be able to fulfill this need, the urban planning processes should encompass the networked citizens and connected actors, at best, with a (new) form of participatory processes that are aligned with their daily routines. Given the high number of "mobile citizens" in the contemporary urban agglomerations, which are always connected, give and receive information, mParticipation can be of use to maximize these potentials and include the citizens in the planning processes. The contribution of prosumers directly from the urban setting (or the so called "citizen science"), can help the urban planner and urban authorities to increase the quality of planning output while re-defining citizens' important role. For instance, their participation can be considered in form of making their daily mobility behaviour data available for planning purposes, as a new form of participation. This could be in a passive way, as they will not be actively participating in a participatory process (which is often time-consuming), rather by making their (personal) data available. Availability of

data/information is a crucial aspect in decision-making process in urban planning context. Therefore, this new form of participation, where citizens team up with urban organizations and contribute to the development process via their efforts in terms of data gathering, can result in more accurate planning for smart cities.

From another perspective, smart cities incorporate also fast and dynamic processes, which consequently demand faster, more flexible planning and participatory processes. The old planning processes shall be subject of change toward more flexible and responsive approaches, which are compatible with dynamic changes. Accordingly, mParticipation can fulfill these requirements and emerging demands, as it can offer citizens flexible options for instant contribution. Given the ubiquity of mobile Internet and instant communication possibilities, mParticipation can provide a real-time participation process, where citizens contribute to the process and they can quickly see the results of their contribution. Urban authorities, on the other hand, can have the possibilities of pre-investigating of citizens' opinion or react dynamically in short timeframes.

Although, mParticipation offers new and unique opportunities to urban planning processes, the results of this research shows that there is still room for knowledge generation in this field of study. In addition, the continuous technological advancement in the field of mobile technologies shape mParticipation field as a dynamic field of research. Finding the influential factors on the success of mParticipation and defining an evaluation framework in addition to defining the roles of each actor in this field could be tasks for future researchers. Moreover, new form of mParticipation for generating data and collecting data needed in different urban planning steps should be further researched.

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Annex VI



6.1 Annex 1

Table 28 Definitions of smart city and the used keywords (adapted from Albino et al., 2015)

Definition	Keywords
Smart city as a high-tech intensive and advanced city that connects people, information and city elements using new technologies in order to create a sustainable, greener city, competitive and innovative commerce, and an increased life quality. (Bakıcı et al., 2013)	Technology, people, connected city elements, sustainability, innovative economy, quality of life
Being a smart city means using all available technology and resources in an intelligent and coordinated manner to develop urban centers that are at once integrated, habitable, and sustainable. (Barrionuevo et al., 2012)	Technology, integrated , livability and sustainability
A city is smart when investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance. (Caragliu et al., 2011)	Social and human capital, ICT technology, sustainability economic growth, quality of life, participatory governance
Smart cities will take advantage of communications and sensor capabilities sewn into the cities' infrastructures to optimize electrical, transportation, and other logistical operations supporting daily life, thereby improving the quality of life for everyone. (Chen, 2010)	Communications and sensors, infrastructure, quality of life
Smart community – a community which makes a conscious decision to aggressively deploy technology as a catalyst to solving its social and business needs – will undoubtedly focus on building its high-speed broadband infrastructures, but the real opportunity is in rebuilding and renewing a sense of place, and in the process a sense of civic pride. [. . .] Smart communities are not, at their core, exercises in the deployment and use of technology, but in the promotion of economic development, job growth, and an increased quality of life. In other words, technological propagation of smart communities isn't an end in itself, but only a means to reinventing cities for a new economy and society with clear and compelling community benefit. (Eger, 2009)	Technology deployment, ICT infrastructure, rebuilding scene of place, economic development, quality of life
A city well performing in a forward-looking way in economy, people, governance, mobility, environment, and living, built on the smart combination of endowments and activities of self-decisive, independent and aware citizens. Smart city generally refers to the search and identification of intelligent solutions which allow modern cities to enhance the quality of the services provided to citizens. (Giffinger et al., 2007)	Well-performance of economy, people, governance, mobility, environment and living, self-decisive, aware citizens, quality of services for citizens

Definition	Keywords
A city that monitors and integrates conditions of all of its critical infrastructures, including roads, bridges, tunnels, rails, subways, airports, seaports, communications, water, power, even major buildings, can better optimize its resources, plan its preventive maintenance activities, and monitor security aspects while maximizing services to its citizens. (Hall et al., 2000)	Monitoring critical infrastructure, optimize source of resources, services for citizens
Smart cities of the future will need sustainable urban development policies where all residents, including the poor, can live well and the attraction of the towns and cities is preserved. [. . .] Smart cities are cities that have a high quality of life; those that pursue sustainable economic development through investments in human and social capital, and traditional and modern communications infrastructure (transport and information communication technology); and manage natural resources through participatory policies. Smart cities should also be sustainable, converging economic, social, and environmental goals. (Thuzar, 2011)	Sustainable development, quality of life, human and social capital, communication infrastructure (transport and ICT), participatory policies
(Smart) cities as territories with high capacity for learning and innovation, which is built-in the creativity of their population, their institutions of knowledge creation, and their digital infrastructure for communication and knowledge management. (Komninos, 2011)	Learning and innovation, creativity of people, knowledge institutions, digital infrastructure
Smart cities are the result of knowledge-intensive and creative strategies aiming at enhancing the socio-economic, ecological, logistic and competitive performance of cities. Such smart cities are based on a promising mix of human capital (e.g. skilled labor force), infrastructural capital (e.g. high-tech communication facilities), social capital (e.g. intense and open network linkages) and entrepreneurial capital (e.g. creative and risk-taking business activities). (Kourtit and Nijkamp, 2012)	Knowledge, creative strategy, enhancing socio-economic and ecological logistics, human capital, infrastructural capital, social capital, entrepreneurial capital
Smart cities have high productivity as they have a relatively high share of highly educated people, knowledge-intensive jobs, output-oriented planning systems, creative activities and sustainability-oriented initiatives. (Kourtit et al., 2012)	Productivity, high education, knowledge-intensive jobs, output-oriented planning, creative activities, sustainability
The application of information and communications technology (ICT) with their effects on human capital/education, social and relational capital, and environmental issues is often indicated by the notion of smart city. (Lombardi et al., 2012)	ICT deployment, human capital/education, social and relational capital, environmental issues

Definition	Keywords
A smart city infuses information into its physical infrastructure to improve conveniences, facilitate mobility, add efficiencies, conserve energy, improve the quality of air and water, identify problems and fix them quickly, recover rapidly from disasters, collect data to make better decisions, deploy resources effectively, and share data to enable collaboration across entities and domains. (Nam and Pardo, 2011)	Information connecting to physical infrastructure, efficiency in resource management, quality of environment, recovery, problem identification
Creative or smart city experiments [. . .] aimed at nurturing a creative economy through investment in quality of life which in turn attracts knowledge workers to live and work in smart cities. The nexus of competitive advantage has [. . .] shifted to those regions that can generate, retain, and attract the best talent. (Thite, 2011)	Creative economy, quality of life, knowledge society
A smart city is understood as a certain intellectual ability that addresses several innovative socio-technical and socio-economic aspects of growth. These aspects lead to smart city conceptions as “green” referring to urban infrastructure for environment protection and reduction of CO2 emission, “interconnected” related to revolution of broadband economy, “intelligent” declaring the capacity to produce added value information from the processing of city’s real-time data from sensors and activators, whereas the terms “innovating”, “knowledge” cities interchangeably refer to the city’s ability to raise innovation based on knowledgeable and creative human capital. (Zygiaris, 2013)	Intellectual ability, innovative aspect of growth, green infrastructure (environment protection), interconnected (processing real-time data from sensors and activators), creative human capital
Smart city [that] actively embraces new technologies, should seek to be a more open society where technology makes it easier for people to have their say, gain access to services and to stay in touch with what is happening around them, simply and cheaply. All residents will have access to the Internet, and the ability to use it. (Partridge, 2004)	New technologies, open society, freedom of speech, connected citizens, Internet access for all
A city connecting the physical infrastructure, the IT infrastructure, the social infrastructure, and the business infrastructure to leverage the collective intelligence of the city. (Harrison et al., 2010)	Connecting different infrastructures (physical, social, IT and business), collective intelligence

6.2 Annex 2

Expert Interviews' questions

- 1- How citizen engagement can be enhanced in urban planning processes?
- 2- What is your opinion about using smartphones and tablets for engaging citizens in urban planning processes? (mParticipation as a subset of eParticipation)
- 3- How do you distinguish mParticipation from eParticipation?
- 4- What advantages and possibilities does mParticipation have comparing to face-to-face methods?
- 5- What disadvantages and challenges does mParticipation have comparing to face-to-face methods?
- 6- What are the main specific characteristics of mParticipation?
- 7- Do you think that applying mParticipation can improve communication between actors in urban planning processes?
- 8- How do you think this communication can improve the network of citizens?
- 9- How mParticipation can influence the flow of information between all stakeholders in urban planning processes?
- 10- To what extent do you think mobile devices can increase the quality of engagement (regarding content and process)?
- 11- If I want to evaluate mParticipation practices, in your opinion which criteria are important to be evaluated?
- 12- According to your experience, what range of participants (numbers and demographic) do you normally have in your mParticipation projects?
- 13- Who else do you recommend for conducting an interview?

6.3 Annex 3

Code list (ATLAS.ti)

#1 enhancing CP	dem nm: online participants are same group as ftf people
#2 smartphone for CP	
#3 EP vs. MP	dem nm: participation range
#4 adv MP	dem nm: topic is important
#5 disadv. challenge MP	DISADV MP DISADVANTAGE OF MPARTICIPATION
#6 character. MP	disadv mp: certain technical prerequisites for smartphone
#7 communication actors	
#8 network citizen	disadv mp: financial costs for government
#9 flow of Information	disadv mp: lack human face to face communication power
#9.10 quality of engagement	
#9.11 evaluation criteria	disadv mp: lack of best practices despite huge potential
#9.12 Project demographics	
ADV FTF ADVANTAGE OF FACE TO FACE PARTICIPATION	disadv mp: lack of deliberation and dialogue/lower participation level
adv ftf: for richer (deeper) contents	disadv mp: less rich content
adv ftf: having more time to discuss	disadv mp: limit of the screen/characters
adv ftf: trust building	disadv mp: not equitable/inclusive
ADV MP AVANTAGE OF MPARTICIPATION	disadv mp: not suitable for complex issues
adv mp: Broaden Participation range	disadv mp: short timeframe spending on mobile device/short attention span
adv mp: complementary for reaching other group of people	disadv mp: sign up as barrier
adv mp: cost-saving for government	ENHCE CP ENHANCEMENT OF CITIZEN PARTICIPATION
adv mp: easing accessibility (pushing) to the context related information to participants	enhce cp content/output: increasing the meaning of participation
adv mp: enabling self-organized participatory processes	enhce cp process: increasing diversity and broadness of participation
adv mp: having feedbacks based on real experience	enhce cp process: increasing openness in participative processes for governments and citizens
adv mp: Having smartphone always with you/portability	

adv mp: immediate participation (acting possibilities)- Readiness for participation	enhce cp process: increasing the convenience/attractiveness of participation
adv mp: location-based (geo-tagged and context-aware) communication	EP VS MP EPARTICIPATION VS MPARTICIPATION
adv mp: lowering time/place barrier	ep vs mp: context/location sensitive
adv mp: real time information gathering/urban sensing	ep vs mp: data structure in backend/design perspective
adv mp: usability / user-friendliness of smartphones	ep vs mp: depends on type of input
CHALLENGE FTF CHALLENGE FACE TO FACE PARTICIPATION	ep vs mp: mobility (type) of the device
challenge ftf: do not include moderate view point people	ep vs mp: not distinguishable
challenge ftf: lack of instant communication possibility with large group	EVAL CRIT EVALUATION CRITERIA
challenge ftf: language barrier and people are shy	eval crit: community building aspect
challenge ftf: Not enough information provided	eval crit: depends on project settings and goals
challenge ftf: specific group of people/not broad audience	eval crit: further support of community for decision afterwards
challenge ftf: Time and place barrier in face-to-face methods	eval crit: integration of inputs to plan
CHALLENGE MP CHALLENGE OF MPARTICIPATION	eval crit: mobile element in the whole planning process
challenge mp: app as barrier	eval crit: Number and demographic range
challenge mp: building mParticipation knowledge upon face to face participation	eval crit: political will of project initiator
challenge mp: compressing engagement process for people with low time	eval crit: providing enough supporting information for participants
challenge mp: danger of manipulating results	eval crit: representativeness
challenge mp: danger of overflow of information while using mobile phone	eval crit: usability and design
challenge mp: long tail effect	eval crit: usability of inputs from participants
challenge mp: privacy issue	eval crit: usage of application/conversion rate
	FACT STRG MP FACTORS STRETEGIES FOR PLANNING MPARTICIPATION
	fact strg mp: climate limitations
	fact strg mp: different stages of planning, different participation (participants) type/scale

challenge mp: requires know-how and human capacity	fact strg mp: down time-point of entry for engaging
CHARCH CITZ CHARACTERISTICS OF CONTEMPORARY CITIZENS	fact strg mp: every device needs its own outreach strategy
charch citz: contemporary life situation and new needs from participant's side	fact strg mp: face to face with online are not replaceable
charch citz: different technology preference	fact strg mp: handling limit of the screen size with design
charch citz: new population accessing web/social media via smartphone	fact strg mp: mixing face-to-face and ICT supported methods and tools
charch citz: personal relationship with smartphone	fact strg mp: Multi-device functionality
charch citz: smartphone ownership/smartphone access	fact strg mp: promotion ways/importance of PR
CHARCH MP CHARACTERISTICS OF MPARTICIPATION	fact strg mp: removing barriers for participation
charch mp: ad hoc participation	fact strg mp: strong sense of community/incentives
charch mp: convenient participation	fact strg mp: Unsuccessful example of using Kiosk/Stall/computer
charch mp: geo-centric/site specific/embedded/context	fact strg mp: Visual enhancement
charch mp: inclusive for broader audience	FLOW INFO FLOW OF INFORMATION
charch mp: micro-participation	flow info: compressed and well elaborated (structured/framed) information
charch mp: participation on demand	flow info: diverse flow of information between actors
charch mp: participation on the go/ anywhere	flow info: huge volume of non-processed information/interactions in short time frame
charch mp: quick and immediate (real-time)	flow info: instant communication/synchronicity/quicker
charch mp: richer engagement-media rich (enhanced with geo and new information)	flow info: old planning structure hindering mobile capacity
charch mp: timeliness participation	flow info: sharing information through social media network
COM ACTORS COMMUNICATION BETWEEN DIF ACTORS	NAPP VS RESD NATIVE APP VS RESPONSIVE DESIGN
com actors: complexity of planning language	napp vs resd: better usage of phone features in native app
com actors: depend on topic and setting (emotions)	
com actors: importance of cross-media communication	

com actors: Increasing legitimacy of urban authorities' decisions	napp vs resd: having app that never used
com actors: lack of communication with general public	NETWORK OF CITIZEN
com actors: more convenient communication	network of citizen: example project leading to network
com actors: no necessity of mass communication in participation context	network of citizen: geographical scale is influential
com actors: not support dialogue and two-way communication	network of citizen: hard to identify (happening outside of project boundaries)
com actors: possibilities for data gathering/crowdsourcing	network of citizen: increasing cooperation between citizens/organizing
com actors: real-time (instant and iterative) communication feedback possibility	network of citizen: intersection of virtual network with spatial context
com actors: structured communication/different level	network of citizen: learning effect
com actors: surprising the government with positive inputs from public	network of citizen: project topic based
com actors: transparency and openness	network of citizen: through interactions (comments, vote, etc.)
DEM NM PROJECT DEMOGRAPHIC AND NUMBERS	network of citizen: using already existing networks like Facebook
dem nm: geographic scale and diversity of audience	network of citizen: not support community building
dem nm: no digital divide	QUL ENG QUALITY OF ENGAGEMENT
	qul eng: increasing quality of inputs (people in the setting)
	qul eng: less quality because of less spending time
	qul eng: more efficient and accurate inputs
	qul eng: providing new type of information
	qul eng: quality out of quantity
	qul eng: visual elements/structures for info helps for better understanding

6.4 Annex 4

List of interviewed experts

Name	Affiliation	Country
David Biggs	MetroQuest Company, Chief Engagement Officer	USA
Chris Haller	Urban Interactive Studio, Founder and CEO	USA
Matthias Trénel	Zebalog Agentur für crossmediale Bürgerbeteiligung, Co-founder	Germany
Stephan Landau	Next Hamburg Initiative, Member of managing board	Germany
Prof. Tom Sanchez	Virginia Tech University, Urban Affairs and Planning	USA
Dr. Nader Afzalan	Chair of APA-Technology Division, Visiting Assistant Professor at the University of Redlands	USA
Prof. Kevin Desouza	Arizona State University, School of Public Affairs	USA
Dr.-Ing. Stefan Höffken	URBANOPHIL, Co-Founder	Germany
Crystal Wilson	Community Remarks, Director	USA
Michelle Lee	Textizen, Founder	USA
Magdalena Noffke	Berlin OK Lab, Manager, Code for Germany Burgerbaustadt Project, Founder	Germany
Prof. Jennifer Evans-Cowley	The Ohio State University, Vice Provost for Capital Planning and Regional Campuses, City and Regional Planning Section	USA
Dr. Angela Jain	Nexus Institute, Head of Research Unit Space and Society (FlashPoll project)	Germany
Dr.-Ing. Carolin Schröder	Technische Universität Berlin, Centre for Technology and Society, Head of Participation Research Unit	Germany
Della Rucker	Wise Economy, the Chief Catalyzer	USA