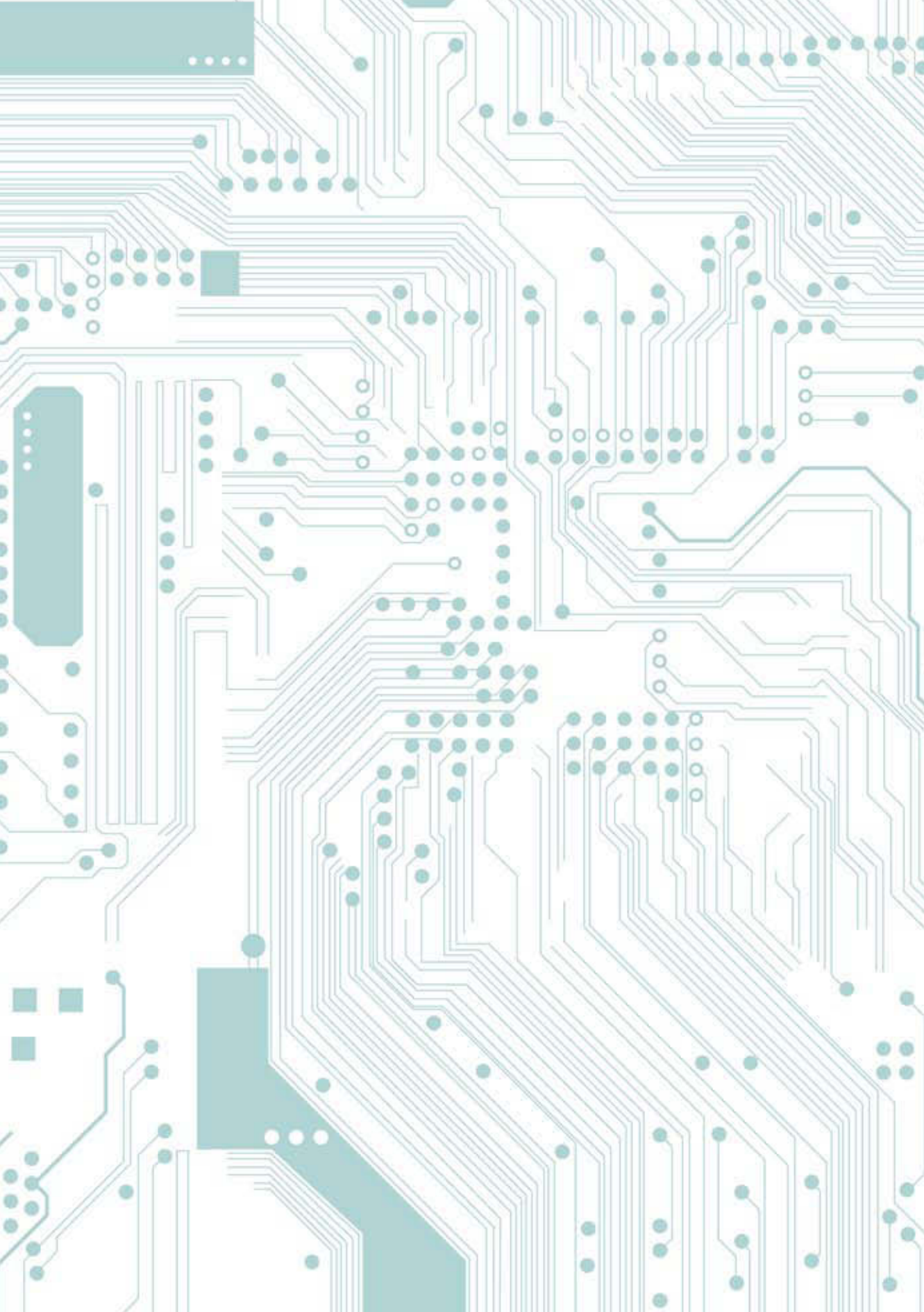




Joanna Saad-Sulonen

COMBINING PARTICIPATIONS

*Expanding the Locus of Participatory E-Planning
by Combining Participatory Approaches
in the Design of Digital Technology
and in Urban Planning*



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Abstract

The thesis is a trans-disciplinary work on participatory e-planning. It highlights the importance of taking participation in the design of digital technology into consideration when exploring the way participatory e-planning is currently evolving and how it might be shaped in the near future. The focus on the design of digital technology is balanced with sensitivity to urban planning. The outcome is a work that introduces a mixed conceptual vocabulary and provides outcomes of relevance to several different fields operating at the intersection of digital technology, urban planning, and participation. The thesis aims in particular to reduce the current gap between the fields of urban informatics and e-planning.

The thesis also provides a new conceptualization of participatory e-planning, one that aims to be more in tune with the realities of the digital age and its emerging cultures of participation. These are cultures of information-centred and digitally mediated peer production and sharing. So far, participatory e-planning, as approached in the urban planning and e-planning fields, has only considered the meaning of participation in urban planning, and ignored participation in the design of technology. By acknowledging the latter, it becomes easier to understand and tap into the dynamics of the new cultures of participation, as well as face the challenges and uncertainties of the new technological landscape of mundane digital tools associated with it.

My quest for a new conceptualization of participatory e-planning has emerged from and gone hand in hand with my involvement in the participatory design of the Urban Mediator (UM), an online map-based tool for locative media creation and sharing. By engaging in design activities, insight was gained into re-conceptualizing participatory e-planning, and vice versa. The concrete participatory design of the UM gave impetus to the Expanded Participatory Design (EPD) approach, which combines different but interconnected activities of participation in the design of digital technology. The EPD can also be embedded in different types of participation in urban planning. The EPD approach expands the locus of participatory e-planning towards collaborative work based on digital media production and sharing by experts and non-experts alike.

List of original articles

- Article 1:** Botero, A. & Saad-Sulonen, J. (2008). *Co-designing for New City-Citizen Interaction Possibilities: Weaving Prototypes and Interventions in the Design and Development of Urban Mediator*. In J. Simonsen, T. Robertson & D. Hakken (Eds), *Proceedings of the 10th Participatory Design Conference* (pp. 266–269). New York: ACM.
- Article 2:** Saad-Sulonen, J. (2010). *eParticipation as an Information Ecology: a Micro-scale Examination of Two Cases in Helsinki*. In M. Brereton, S. Viller & B. Kraal (Eds.). *Proceedings of the 22nd Conference of the Computer-Human Interaction Special Interest Group of Australia on Computer-Human Interaction (OZCHI'10)*. (pp. 384–387). New York: ACM.
- Article 3:** Saad-Sulonen, J. & Horelli, L. (2010). *The Value of Community Informatics to Participatory Urban Planning: a Case-study in Helsinki*. *Journal of Community Informatics*, 6(2).
- Article 4:** Wallin, S., Saad-Sulonen, J., Amati, M. & Horelli, L. (2012). *Exploring Participatory E-planning Practices in Different Contexts: Similarities and Differences between Helsinki and Sydney*. *International Journal of E-Planning Research (IJEPR)*. 1(3), 17–39.
- Article 5:** Saad-Sulonen, J. (2012). *The Role of Digital Media Content Creation and Sharing in Participatory E-planning*. *International Journal of E-Planning Research (IJEPR)*. 1(2), 1–22.
- Article 6:** Saad-Sulonen, J., Botero, A. & Kuutti, K. (2012). *A long-term Strategy for Designing (in) the Wild: Lessons from the Urban Mediator and Traffic Planning in Helsinki*. In *Proceedings of DIS'12 Designing Interactive Systems* (pp. 166–175). New York: ACM.

NOTE ON CO-AUTHORED ARTICLES:

Article 1 is an exploratory paper written together with Andrea Botero. Andrea, as the first author, set the topic and structure of the paper. I mostly contributed to the section “Exploring software tools and social practices”, as I had planned and led the participatory design activities described in the paper. I also contributed to other sections of the paper, but to a slightly lesser extent. Linking the conceptual framework of participatory design to that of innovation management, as presented in this article, is part of Andrea’s research.

Article 3 was written in collaboration with my primary advisor, Liisa Horelli. I was the main author for most of the paper and responsible for setting the topic and structuring the paper. We wrote the introduction and conclusion together. Liisa particularly contributed to the theoretical framework section, where we describe the learning-based approach to planning and the community development model. This model had already been introduced in Liisa’s earlier research (Horelli, 2002; 2006), but here we used it for the first time in the context

of Community Informatics-assisted participatory planning.

Article 4 was written in collaboration with Sirkku Wallin, Marco Amati, and Liisa Horelli. Sirkku was the main author. Sirkku, Liisa and I covered the Helsinki case study, whereas Marco covered the Sydney one. I was responsible for writing the following sections: The changing relationship between ICTs, citizen participation, and urban planning and The evolving contexts of planning and planning systems. I also contributed extensively to the section entitled E-planning in a welfare state and its centralized municipal system: case Helsinki, and well as the introduction section of the article: Emerging tools and practices of e-planning.

Article 6 was written with Andrea Botero and Kari Kuutti, my secondary advisor. I was the main author and responsible for setting the topic and structuring the paper. Andrea and Kari contributed with comments throughout the writing process, as well as to writing some of the paragraphs.

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Abbreviations

- 4P:** *Public-Private-People-Partnerships*
- API:** *Application Programming Interfaces*
- apps:** *mobile phone applications*
- AR:** *Action Research*
- CI:** *Community Informatics*
- CPD:** *City of Helsinki Planning Department*
- CSV:** *comma-separated values*
- EPD:** *Expanded Participatory Design*
- EUD:** *End-User Development*
- F/OSS:** *free and open source software*
- GIS:** *Geographic Information Systems*
- GPS:** *Global Positioning System*
- GUI:** *graphical user interface*
- HCI:** *Human-Computer Interaction*
- Helka ry:** *Helsingin kaupunginosayhdistykset ry*
(Helsinki Neighbourhoods Association)
- HTML:** *HyperText Markup Language*
- ICING:** *Innovative Cities for the Next Generation (a research project)*
- ICT:** *Information and Communication Technologies*
- IS:** *Information System*
- IT:** *Information Technology*
- NGO:** *non-governmental organization*
- Palco:** *Participatory Local Communities*
(a research project and group)
- PC:** *personal computer*
- PD:** *Participatory Design (as in the Scandinavian approach)*
- PPGIS:** *Public Participation GIS*
- RSS:** *Really Simple Syndication*
- SDK:** *software development kit(s)*
- UCD:** *User Centered Design*
- UM:** *Urban Mediator*



1. INTRODUCTION

1. Introduction

Cities are places where an ever-increasing number of people are born, play, grow up, learn, work, live, and die. Cities are also complex organisms where various infrastructures, buildings, natural resources, modes of transport, residents, visitors, and ways of life come together. The aim of the discipline and practice of urban planning has been to provide some control and order over the way cities develop. The role of urban planning has been a regulatory one, aiming to ensure that the city is the best it can be for a majority of people. Despite this aim, the institutionalized and rigid bureaucracy associated with urban planning has often alienated it from citizens and their everyday concerns. Many attempts have been made to open up urban planning to citizen participation as a way to implement representational democracy at the municipal level. However, these attempts have for the most part been thought of and designed from the top down, in other words, from the perspective of institutionalized and process-centred urban planning. The options proposed for participation typically follow the consultation model, where citizens are presented with solutions and are given the opportunity to comment on them. Only the most active citizens, those who passionately devote their time to following the planning processes, are likely to sustain an involvement with such possibilities for participation. Moreover, as Jyrki Vanamo (2013), a Finnish architect and urban culture activist puts it, such models lead to a culture of participation as resistance: it is easy to criticize a proposed solution when one is not given the

option to propose one's own in the first place. Thus, average citizens, busy with their work, family, and social life, will only bother with the motions of formal participation when planning and implementation threaten their own comfort, their own everyday life. Otherwise, they will only catch themselves dreaming from time to time: *I wish there were a cycling route along the seashore... What if this plot of land next to the supermarket was a community park? A pedestrian street would work well here, with a lot of nice cafés!*

1.1 Participatory e-planning and the rise of mundane digital technologies

The development of Information and Communication Technologies (ICTs) has been seen as providing a window of opportunity for citizen participation in urban planning in the form of participatory e-planning. A variety of tools have been introduced that facilitate communication between citizens and official bodies, such as governments, municipalities and planners. These tools typically include e-participation tools, such as official online discussion forums and web portals, voting systems, quick polls, as well as Geographic Information Systems (GIS)-based tools. The latter originally only served professionals, but are being opened up for use by the general public with new applications such as WebGIS and Public Participation GIS (PPGIS) (see Demo-net, n.d.; Kubicek, 2010). These tools are, for the most part, ready-to-use packaged technologies that are introduced to the formal processes of participation, such as consultation, with the aim of enabling officials and planners to ask citizens to contribute information about specific issues. As it has traditionally unfolded, the work of urban planning professionals has then taken – or not – such information into consideration.

1. Dourish et al. (2010) borrow the term "mundane technologies" from Michael (2000) to refer to technologies that are commonplace and which many people use.

At the same time as tools for participatory e-planning have been imposed from the top-down, a variety of casual digital technologies, dubbed "mundane"¹ by Dourish et al. (2010) as they become "an unremarkable part of everyday life", have enabled citizens to document, analyse, and organize themselves around issues related to their urban environments (Saad-Sulonen, 2008). Digital devices – from personal computers to mobile phones – have opened up the possibility to

create digital media content². Moreover, blogs and wikis have simplified online publishing and provided a channel for citizen reporting and journalism (Kolbitsch & Maurer, 2006). Lately, social networking platforms such as Facebook, or microblogging platforms such as Twitter, have further simplified online publishing and played an important role in the way citizens organize themselves around issues of interest, for instance as happened during the Arab Spring uprisings or the Occupy Wall Street movement (Saletan, 2011). These mundane technologies are also important tools for emergent self-organized local communities. In Helsinki, for example, Facebook has had a key role in supporting grassroots activities such as the Restaurant Day and Cleaning Day initiatives, which came up with alternative ways of using urban public space (Botero et al., 2012; Horelli et al., 2013).

In addition to facilitating the production, sharing, and publishing of digital media content in general, many mundane technologies currently also make it possible to handle location-based information. Global Positioning System (GPS) receivers embedded in digital devices, as well as local positioning systems, have made it possible to record and attach geo-referenced data to the digital media, thus turning them into location-based media, digital media that contains location-related metadata, such as geographical coordinates. Technology enthusiasts have quickly tapped into the potential of locative technologies. The availability of online maps, such as Google Maps and Open Street Maps, and the provision of open Application Programming Interfaces (APIs) has made it possible easily and freely to create “map mashups” that display locative media accessed from different platforms on the online maps.³

From around 2003–2005, the new media arts scene was particularly active in exploring the potential and the critical implications of locative technologies beyond their original expert-based niche in geography, GIS, and the military (see e.g. Tarkka, 2005; Wilken, 2012). The term “locative media” was also presumably coined in 2003 during a media arts festival held in Latvia, and it generally refers to “media of communication that are functionally bound to a location” (Wilken, 2012, p. 243). After 2005, locative technologies started to become more mainstream. Blogs, photo-sharing sites, and even the emerging social networking platforms started to provide features that support

2.

I refer to digital media as per Flew’s definition of the term: “Digital media are forms of media content that combine and integrate data, text, sound, and images of all kinds; are stored in digital formats; and are increasingly distributed through networks such as those based on broadband fibre-optic cables, satellites, and microwave transmission systems.” (Flew, 2008, p. 2)

3.

One of the first map mashups, Housingmaps, combined real estate data available on the Craigslist platform in the US, with a Google map. Another early map mashup, Geobloggers, was created in 2005 to show geo-referenced pictures stored on the photo-sharing platform Flickr on a Google map. Its creator came up with Geobloggers for his own personal use, but it soon proved popular for many others. Chicagocrime.org is also an early Google maps mashup that makes use of data provided by the Chicago Police, making it one of the first examples of use of official data in mashups.

the recognition of locative metadata and the possibility of viewing digital media on a map interface. Citizens' locative audio-visual documentation of their everyday urban environment found their way online (Saad-Sulonen, 2008).

Online maps and map-mashups are now used for a variety of purposes, including setting up quick crowdsourcing activities. The Ushahidi platform, for example, makes use of the Google Maps API along with other building blocks, to situate SMS and e-mail messages on an online map. (The original Ushahidi site was quickly set up by bloggers and software developers during the 2008 Kenyan post-election violence to map eyewitness reports of violence, while at the same time paying attention to the verifiability of the information being shared (see e.g. Hirsch, 2011). The site's open source software has since been further improved and taken up in various contexts globally.) Other online map-based platforms have subsequently been developed for crowdsourcing reasons; some of these, such as the much-cited Fix my street platform⁴, even have a specific focus on urban planning issues.

Mundane technologies of various kinds have supported citizen and community-driven actions, even including handling issues traditionally bound to urban planning (Hamilton, 2009; Foth et al., 2011). However, it is not enough to refer only to the *use* of these technologies. What is new and important, is the spread of the capability to create digital media content, share it and publish it, as well as the relative ease of tinkering with digital technologies. A do-it-yourself culture of expert amateurs comfortable with digital technologies is developing, with citizen science⁵-type activities gaining ground in many domains (Paulos et al., 2011; Devisch & Veestraeten, 2010). Although some of the practices associated with these activities were already present in the early days of the World Wide Web, new applications, with their increased usability and opportunities for laymen to produce, share, and publish media, have contributed to a major increase in the creation and sharing of digital media content (Schäffer, 2011, p. 35). The emerging digital age is being shaped by information-centred and digitally mediated peer production and sharing (Negroponte, 1995; Benkler, 2006): we are no more "what we consume", rather "we are what we share" (Leadbeater, 2008). The new realities of the digital

4.

FixMyStreet was developed by the UK-based charity MySociety to give UK citizens the possibility to report issues in their neighborhoods. The success of the FixMyStreet trials prompted the development of FixMyStreet for Councils, which promises easy integration with the technologies already in use in city councils in the UK (mySociety, n.d.). Later, the US-based SeeClickFix started to provide a similar service and web tools (SeeClickFix, n.d.).

5.

Citizen science refers to the engagement of laymen in scientific work. The term has lately been used in reference to several projects where the use of relatively cheap sensors, often connected to mobile phones, has enabled the average citizen to contribute environmental data (Devisch & Veestraeten, 2010; Paulos et al., 2011).

age, which are reflected through the capability to operate with everything digital, from digital media content to software code, have given birth to new cultures of participation that challenge the previously established cultures of passive (media) consumption (Fischer, 2011; Schäffer, 2011; Jenkins, 2006). The emerging cultures of participation also challenge the role of experts, including those who have until now monopolized the handling of location-based information, and have possessed the expert technology to do so.

1.2 The research problem and approach

There is a gap between the conventional way that digital technologies have been used in participatory e-planning, with official and GIS-based tools being set up for consultation purposes on the one hand, and more mundane digital technologies being used and tinkered with by casual users on the other. This is not to say that participatory e-planning is ignoring mundane technologies. On the contrary, there is growing interest in exploring ways to integrate the use of Facebook, Twitter, or even Second Life into citizen participation (e.g. Evans-Cowley & Hollander, 2010; Foth et al., 2009). Planning departments, municipalities, and city councils in many places have created a presence for themselves on these networking sites, with varying degrees of success. In Helsinki for example, the City Planning Department is slowly experimenting with social networking sites; the department's exhibition centre and meeting place, Laituri joined Facebook in Spring 2010, and the department launched its own page on Facebook in 2012, "Helsinki suunnittelee" – which translates into "Helsinki plans" – and later also established its own Twitter account.

However, the way this emerging interest in mundane technologies has manifested itself in the context of formal urban planning has remained superficial (DiCindio & Peraboni, 2011). On the one hand, planners have not questioned their own understandings of participation, with participatory e-planning remaining limited to uses of Facebook, Twitter, or Second Life as applied from a planner-centred, broadly consultation-based understanding of participation. Much as in more conventional digital technologies, these new technologies are viewed as individual solutions for facilitating and enhancing

existing participation practices. On the other hand, there has been no effort in the development of participatory e-planning to explore the essence of the emerging digital age and its new cultures of participation. Little attention has been given to the activities of producing, sharing, and publishing digital media, of tinkering with digital technologies, nor to the challenges these pose to the expert-based conventional approach to both urban planning and technological development. Moreover, for many planners and city administrators, the link between their professional work and everyday, mundane digital technologies remains unclear.

Those in the e-planning disciplines who do call for a reconceptualization of participation, such as Silva (2010b), have fallen back on urban planning theory. Silva calls for e-planning to embrace a more collaborative approach, inspired by the communicative turn in urban planning (e.g. Healey, 1997). Such a model of participatory e-planning would be driven by “the commitment to empower citizens and to share power, by those that hold political authority to decide on planning matters” (Silva, 2010b, p. 6). In this case, technology, mostly expert and official, but also social media and Web 2.0, would then be applied to serve the needs of the communicative and collaborative planning approach. However, despite the historical role it has had, the communicative approach to urban planning is still very much planner-driven. It relies on the planner-as-expert to initiate participation as deliberation, which then informs urban planning processes (Forester, 1999).

In this thesis I address the following research problem: the way that participatory e-planning has been shaped so far is not in tune with the realities of the emerging digital age and its emerging cultures of participation. This leads to two research questions: 1) How should we re-conceptualize participatory e-planning? and, stemming from my role as a designer: 2) What and how should we design for participatory e-planning? These two questions are intimately intertwined. As a designer of digital tools, I have a choice between either designing tools that support the currently established understanding of participatory e-planning, or designing tools that challenge this understanding. My engagement in design activities informed my understanding of participatory e-planning, and vice versa. Thus, the

overarching aim of the research is to propose a reconceptualization of participatory e-planning in tune with the digital age, and at the same time, to inform the design of digital technology so that it would support a more contemporary form of participatory e-planning.

I have approached these two interconnected research questions by taking part in the design of an online map-based platform, the Urban Mediator (UM). The UM provides possibilities for locative media creation and sharing, and it contains features borrowed from social technologies, such as open access, tools for sharing content, and folksonomies (Articles 1, 2). It is available to citizens as well as officials and planners to use for initiating locative media gathering activities.

I also construct a conceptual and theoretical framework (Chapter 2) that relies on perspectives on participation drawn from the fields of Information Technology/Human Computer Interaction (IT/HCI) and urban planning. This framework permits me to examine participatory e-planning in relation to participation in the design of digital technology and participation in urban planning. Each of these two types of participation can further be understood as either non-existent (*non participation*), staged by experts such as designers or planners (*staged participation*), or as happening through use (*participation as design-in-use* in the case of digital technology) or through citizen action (*participation as self-organization* in the case of urban planning). Participation as design-in-use and participation as self-organization lie at the heart of the cultures of participation of the digital age.

A methodological approach based on design research (Chapter 3) makes it possible to explore participation in the design of the UM both as staged participation and as participation as design-in-use. Especially the latter makes it possible to explore some emerging practices associated with digital media and technology, such as handling locative media, as well as configuring and adapting digital technologies, and connecting different tools to one another. Moreover, by integrating the design-in-use of the UM into three cases of participation in urban planning in Helsinki, I was able to carry out a comparative analysis of the impact that participation in the design of technology can have on urban planning. The three cases represent staged types of participation in urban planning (Case Study 1 as consultation and

Case Study 2 as collaborative planning), and participation as self-organization (Case Study 3). The addition of an action research strategy makes it possible to step back from the initial focus on the UM as a designed artefact, and to address changes in how participatory e-planning can be implemented.

1.3 Main outcomes and significance of the research

One of the main outcomes of the thesis is the development of a shared conceptual vocabulary that facilitates the positioning of various fields of research and practice operating at the intersection of participation, digital technology, and urban planning. Such a vocabulary permits improved collaboration between these fields. It is developed from different conceptual and theoretical perspectives on participation that stem from the fields of IT/HCI design, as well as the field of urban planning. The proposed *matrix of multiple participations* brings together the different concepts in one analytical tool (Chapter 2).

Another key outcome is the expansion of the understanding of the concept of participation in the field of participatory e-planning to include participation in the design of digital technology. To achieve this, I propose what I shall call the Expanded Participatory Design (EPD) approach (Chapter 4). The EPD approach combines different participatory activities in the design of digital technology, such as digital media and tool handling activities as well as support and staged participation activities. Whilst digital media and tool handling activities are clearly associated with the emerging digital cultures of participation, support and staged participation activities are just as important because digital technology is not equally available to everyone, nor is it grasped as easily by all who encounter it. From a theoretical perspective, the EPD approach is grounded in the Scandinavian Participatory Design, Community Informatics, and in the End User Development approaches to information systems development. These approaches help to avoid the traps of technological determinism by emphasizing that participation in the design of technology indeed shapes it, and that this enables those concerned to better understand and control the resulting technology.

The proposed EPD approach for participatory e-planning also

situates participation in the design of digital technology specifically in the context of urban planning. EPD can be embedded in different types of participation in urban planning, such as consultation, partnership and collaboration, and self-organization (Chapter 4). The EPD approach supports an expansion of the participatory e-planning locus towards collaborative work between experts and non-experts, anchored in mutual digital-media production and sharing. This means understanding collaborative work in a different way from that proposed in the collaborative approach to urban planning, in which it is still planners who facilitate and orchestrate the deliberative activities underpinning urban planning and decision-making.

The need to acknowledge the role of participation in the design of digital technology is an important message for all who are involved in participatory e-planning activities 'on the ground': active citizens, NGOs, city officials and planners, and most particularly, those in charge of procurement in municipalities. There can be no one technology or tool to enhance participation in urban planning. Instead of pouring resources into top-down, rigid technological solutions, it would be more fruitful to first assess the mundane technologies already in use, to recognize that digital and locative media are already being produced in the community, and to explore the possibilities for creating links between mundane and official or professional tools. This would help generate an ecology of participatory e-planning tools suitable for each urban planning-related situation. Generating such an ecology requires that all those concerned join in its co-design and co-production.

The thesis also contributes to a rapprochement between fields associated with urban planning/e-planning⁶ on one hand and IT/HCI on the other. A concrete example of the need for such a rapprochement is the fact that there are at the moment two major handbooks that cover very similar issues related to participation, digital technology, and urban issues, but from different perspectives. *The Handbook of Research on E-planning* (Silva, 2010a) is based on an urban planning and governance perspective, whereas *The Handbook of Research on Urban Informatics* (Foth, 2009) builds on IT/HCI foundations. The e-planning field sees digital technologies as tools for enhancing citizen participation as defined in urban planning, that is,

6. I will thereafter use 'urban/e-planning' instead of the more typographically heavy 'urban planning/e-planning' to refer to the urban planning and e-planning research fields addressed together.

without acknowledging the role of participation in the design of digital technologies themselves. The urban informatics field focuses on everyday, mundane media and technology, and finds ways to adapt them to support citizen engagement in shaping the urban environment, but it does not always fully explore possible interactions with processes of planning and governance. The two fields have so far remained isolated one from the other. Finally, the thesis also highlights the necessity for IT/HCI design to return to the goals of the original Scandinavian Participatory Design approach, which emerged out of a need to support democracy in the workplace. Today, the context is wider. As Dourish (2010) puts it, there is a need for IT and HCI designers to be involved in political issues and embrace the “design of politics”. In parallel, those in urban planning and governance also have to acknowledge the role of the design of digital technology and its impacts on their activities.

1.4 The structure of the thesis and the collection of articles

The thesis is divided into two main sections: the introductory essay, and the articles. The introductory essay begins with the theory chapter (Chapter 2), where I build a shared conceptual framework that brings together different understandings of participation from different fields. The shared conceptual framework enables me to situate my work with respect to existing fields of research that operate at the intersection of participation, digital technology, and urban planning. This chapter also introduces one of the main outcomes of my work, the matrix of multiple participations. I then move to the methods and data chapter (Chapter 3), where I describe the research design and its three phases. I also report the methods chosen for data gathering and analysis in each phase. The results chapter (Chapter 4) presents the main empirical results by focusing on the way participation in the design of digital technology has been apparent in three case studies, and the way it has affected participation in urban planning. Finally, in Chapter 5 I answer my research questions and reflect on possibilities for further research.

The collection of articles includes six articles that revolve

around the research problem and research questions presented above. Their arguments are shaped by the context in which each article is embedded. Articles 1, 2, 3 and 6 have been written for an audience familiar with technology design, whereas articles 4 and 5 have been written for an e-planning and urban planning audience. Thus, the theoretical and conceptual frameworks vary from article to article. Table 1 provides a summary of the key concepts and findings presented in each article.

Table 1.
The original articles with their key findings and concepts

NAME OF THE PUBLICATION	KEY FINDINGS	KEY CONCEPTS
Article 1: Botero A. & Saad-Sulonen J. (2008). Co-designing for new city-citizen interaction possibilities: weaving prototypes and interventions in the design and development of Urban Mediator. In J. Simonsen, T. Robertson & D. Hakken (Eds), <i>Proceedings of the 10th Participatory Design Conference</i> (pp. 266–269). New York: ACM.	<p>Mediating environments, such as the UM, and flexible and modular tools that can be combined with other existing systems (official or not), offer a promising direction for developing new city-citizen interaction possibilities.</p> <p>The use of exchange formats (both popular and those recognized by expert systems) supports portability, compatibility and re-use of the information gathered.</p> <p>The participatory approach to designing prototypes and interventions, which involves citizens, is effective in eliciting new ideas regarding how new types of city-citizen interaction could be configured.</p>	<ul style="list-style-type: none"> • Mediating tools • Citizen-based media practices • Exchange formats • Design as “living interventions”
Article 2: Saad-Sulonen, J. (2010). eParticipation as an information ecology: a micro-scale examination of two cases in Helsinki. In M. Brereton, S. Viller & B. Kraal (Eds.). <i>Proceedings of the 22nd Conference of the Computer-Human Interaction Special Interest Group of Australia on Computer-Human Interaction (OZCHI'10)</i> . (pp. 384–387). New York: ACM.	The micro-level building blocks of e-participation include text, images, HTML links, iframe code, CSV format and RSS feeds. Key actors include webmasters of city departments and community websites, as well as citizens who are active online and take part in various technological “bricolage” activities.	<ul style="list-style-type: none"> • Information ecology • Micro-level building blocks • Bricolage and artful integrations
Article 3: Saad-Sulonen, J. & Horelli, L. (2010). The Value of Community Informatics to Participatory Urban Planning: a case-study in Helsinki. <i>Journal of Community Informatics</i> , 6(2).	Community Informatics (CI) involves a step towards a more holistic understanding of the relationships between planning and technology. The horizontal expansion of urban planning through CI means that the planning process, aided by a variety of tools, is embedded in community development and co-governance. CI also enhances a local and collective bottom-up perspective that turns urban planning into participatory e-planning.	<ul style="list-style-type: none"> • Urban planning as embedded in community development and co-governance. • The catalytic role of CI for empowerment and learning

<p>Article 4: Wallin, S., Saad-Sulonen, J., Amati, M. & Horelli, L. (2012). Exploring participatory e-planning practices in different contexts: similarities and differences between Helsinki and Sydney. <i>International Journal of E-Planning Research (IJEPR)</i>. 1(3), 17–39.</p>	<p>The socio-political context matters greatly for the way e-planning is understood and adopted. Formal planning will eventually expand to adopt a variety of tools, official and unofficial, expert and mundane. Also the practices of “do it yourself” and “do it with others” may change the route to and timing of participation.</p>	<ul style="list-style-type: none"> • The importance of the socio-political context, which enables or constrains participation • Formal, informal, official, and unofficial participatory e-planning tools
<p>Article 5: Saad-Sulonen, J. (2012). The role of digital media content creation and sharing in participatory e-planning. <i>International Journal of E-Planning Research (IJEPR)</i>. 1(2), 1–22.</p>	<p>Media content creation and sharing enable a new type of participation. They play an important role in participatory e-planning as they complement traditional collaborative planning, where strategies are based on face-to-face meetings and discussions. Participation includes new actors and media activities (informing, broadcasting, documenting, analysis of data etc.).</p>	<ul style="list-style-type: none"> • Participation in the creation and sharing of digital media content.
<p>Article 6: Saad-Sulonen, J., Botero, A. & Kuutti, K. (2012). A long-term strategy for designing (in) the wild: lessons from the Urban Mediator and traffic planning in Helsinki. In <i>Proceedings of the Designing Interactive Systems Conference (DIS '12)</i> (pp. 166–175). New York: ACM.</p>	<p>The design of technology can impact the processes of participation in urban planning by following an expanded approach to participatory design. The timeframe and rhythm of change of the context where technology is used can be out of phase with those of technological design. It is therefore important to leave open the possibilities for delayed actions and outcomes, which can feed the iterative process of design in general, be it of technology, politics, or of both. New strategic considerations, such as thinking in terms of ecologies of tools, devising ways to share knowledge and best practices, and mediating and forging connections between communities of users, need to be acknowledged.</p>	<ul style="list-style-type: none"> • Design-in-use / design in the wild • The EPD approach • “Designing politics”



2. MULTIPLE PARTICIPATIONS

2. Multiple Participations

The aim of this chapter is to build a shared conceptual framework for the various fields of research and practice that operate at the intersection of participation, digital technology, and urban planning. This will allow me to identify gaps and situate my work with respect to existing research from different fields. To achieve this goal, I look at different conceptual and theoretical perspectives on participation that stem from the fields of IT and HCI design, as well as from the field of urban planning. I augment traditional understandings of participation in these fields with a series of concepts and issues raised in recent discussions, including the concepts of design-in-use (Dittrich et al., 2002) and self-organization (Boonstra & Boelens, 2011). This broader framework provides a conceptual grounding for approaching the realities and challenges of the current digital age.

First, I will look at different approaches to participation in the design of digital technology as outlined in the fields of IT/HCI design. Some approaches address participation as *staged activities* set up by designers to inform the design of technology, its use, or even its context of use. Other approaches understand participation as *design-in-use*, where technology is open for further design by users, through use.

Second, I will address the context of urban planning and briefly review traditional approaches to participation in this field, specifically consultation and collaborative planning, which rely on *staged activities* initiated by officials or planners. I complement these approaches

with the concept of *self-organization*, which has recently been introduced into urban planning discourse. The concept of self-organization offers a way of addressing participation that happens from “the outside in”, meaning it is initiated by citizens and not officials and planners operating from within governmental structures.

Third, I will summarize the different types of participation in both the design of digital technology and in urban planning and describe their characteristics. This section also introduces the matrix of multiple participations, where the different types of participation are combined and folded into one another. The matrix of multiple participations lays the ground for examining possible relationships between participation in the design of digital technology and participation in urban planning.

Finally, using the matrix, I will analyse a series of examples from the urban/e-planning and IT/HCI literature that deal with participation, urban planning, and the design of digital technology. The outcome of the analysis shows that types of participation in digital technology design and urban planning are currently combined in several different ways. The combinations vary according to the field of research with which they are associated. However, the analysis also highlights the role of concepts such as design-in-use and self-organization as providing stepping-stones for creating a shared vocabulary across fields. Furthermore, these concepts exemplify the need for a more holistic understanding of participation in the digital age.

2.1 Participation in the design of digital technology

The ways in which participation has been incorporated in the design of digital technology reflect developments from the time when the first computers were introduced into the workplace up to the current ‘digital age’ of ubiquitous computing. The object of design itself has also changed. What one might consider the ‘modelling clay’ of information technology has – for a long time – been limited to software code, whilst programming and development have been done by computer engineers and enthusiasts who master this language. However, activities related to information technology would soon include the design of user interfaces and interaction, as well as the design of the

whole experience of interacting with technology.

The view within mainstream commercial information technology development has been that technology is designed by programmers and developers; in other words by experts. Newly designed technology, in this view, is then introduced into the site of use as a 'ready-to-use' package, or at least this is the intention. There is thus a clear separation between development and use, both in terms of where these two activities happen and who the actors involved in each stage are. The success of the personal computer (PC), and its evolution into a commodity and mass-market technology in the 1980s, encouraged this division. Shrink-wrapped software and the subsequent need for an easy-to-grasp graphical user interface (GUI) that hid the complexity of the code, strengthened the division even further. By interacting with computers through a visual interface and not via the code itself, interaction became easier, but casual users became further and further estranged from the way computers work. This reduced these users' control over the technology they were using.

However, there have always been movements that have explicitly voiced the need for more user participation. COBOL (Common Business-Oriented Language), first specified in 1959, was designed with a syntax resembling that of ordinary English so as to permit non-specialists to program computers (Shneiderman, 1985). This vision was finally realized with the emergence of spreadsheets, starting from VisiCalc on the Apple II twenty years later, through Lotus 1-2-3 to today's ubiquitous Microsoft Excel. The 1970s and 1980s also witnessed some interest in end-user programming and gave rise to the view that users could further adapt information technology if they had access to easier programming languages (Martin, 1982). It is also important to mention the free and open source software (F/OSS) movement, which emerged from the hacker culture of the 1970s. Richard Stallman's GNU manifesto from 1985 is a case in point, where Stallman envisioned a world where the division between users and programmers disappeared as users modified the code they were using and gave it back to the community. Consequently, he believed in a moral imperative to make software code free⁷ and accessible (Stallman, 1993). However, in practice, neither Stallman nor the F/OSS movement have succeeded in addressing users who are not

7. Stallman (1993) makes the distinction between free in the sense of freedom, and free in the sense of price. According to him, "Free software is software that users have the freedom to distribute and change".

technically adept. The F/OSS movement remains 'geek' territory.

Alongside these developments, research on participation in the design of digital technology has also been carried out. And, as with participation in urban planning, explorations into participation in technology design have focused on activities *staged* by designers during the early design stages. Alternatively research has also addressed participation that takes place during and within the context of use, as is the case with the participation as *design-in-use* approach.

2.1.1 Staged participation

Going back to the 1970s, developments in the fields of IT and Information Systems (IS) design in Scandinavia involved ways of trying to bring future users into the early design and specification phases of projects. Their goal was political and democratic. IS projects in Norway, later Sweden and Denmark, were embedded within processes of change related to industrial workplace democracy and the introduction of new technologies (for detailed historical overviews see Ehn & Kyng, 1987; Sundblad, 2009). These projects were collaborations between academics and trade unions. The Collective Resource (CR) approach that emerged was aimed at strengthening the resources of trade unions for understanding and operating information systems, as contrasted with the pursuit of the management-friendly approaches to technology that dominated at the time (Ehn & Kyng, 1987; Bjerknes & Bratteteig, 1995). The CR approach first gave birth to the Cooperative Design approach (Greenbaum & Kyng, 1991). Later, as it moved beyond Scandinavia, it became the more pragmatic Participatory Design (PD; Schuler & Namioka; 1993).

A range of methods has since been devised as part of the key PD activities, to engage future users of a technology in its design. There has been a strong emphasis on enabling cooperation between designers and non-designers, with various artefacts or props being used for that purpose. Case-based prototypes, cardboard mock-ups, future workshops and scenario development are some of the methods and tools of *staging* participatory activities (Sanders et al. 2010; Bødker et al., 1991). In the early days of PD, the aim of the tools and methods of staged participation went beyond informing the design of the

technology. The aim was also to open up possibilities for participants to discuss organizational issues in the workplace (Ehn & Kyng, 1987), with participants now defined as “those whose (working) lives will change as a consequence of the introduction of a computer application” (Törpel et al., 2009, p. 14). Thus, the original goal of PD was primarily socio-political, calling as it did for the development of greater workplace democracy by involving workers in the design of their future IT systems (Ehn, 1988; Greenbaum & Kyng, 1991; Bjerknes & Bratteteig, 1995). Participation, in that sense, informs development, use, and eventual change in the context of use of technology.

Whereas PD’s original concern was the context of the workplace, the locus of computing has subsequently broadened. PD pioneer Susan Bødker (2006) refers to the emergence of the “third wave” in HCI,⁸ where the context of use as well as the types of applications designed and used are broadened, thus shifting the focus of HCI – and indeed PD – from the users and their work settings (the second wave) to a more holistic understanding of contemporary life and the variety of contexts where computing happens. This, in turn, opens up new challenges for PD (Kyng, 2010; Karasti, 2010). Also, even though some of the original socio-political goals of PD have since been lost, given that the complexity at stake has remained unaddressed (Kraft and Bansler, 1994), discussion about the need to revive these goals has re-emerged (Beck, 2002). Furthermore, discussion on the meaning of participation has re-emerged in the process of PD opening up to socio-political domains beyond the workplace, such as community activities (Karasti & Syrjänen, 2004; DiSalvo et al., 2013), governance (Dittrich et al., 2003) and urban planning (Nuoja et al., 2008; Nuoja et al., 2010; Botero & Saad-Sulonen, 2010; Article 1).

More recent participatory approaches, such as the User Centered Design (UCD) approach, do not necessarily share such a broad understanding of participation (Botero, 2013). Whereas this latter approach draws on the same participation tools and methods as PD and does so mostly before any development activities *per se* take place, the aim of engaging users in participatory activities here is limited to informing the production of better, more efficient, or even more enjoyable systems, interfaces, interactions, and experiences (e.g. Norman & Draper, 1986; Beyer & Holtzblatt, 1997; Moggridge, 2007;

8.

The first wave of HCI refers to research that emphasized consideration for ‘human factors’ (e.g. ergonomic considerations translated into sets of specifications), but ignored users as active participants in relationship to a technology. The second wave highlights a more central focus on human actors in the context of the workplace and in relation to the technology introduced there, in the way that, for example, the early PD did. (Bannon, 1991; Bødker, 2006)

Schedroff, 2001). The influence of usability studies is also strong in UCD. Usability studies answered the needs of industry that emerged after the move from one-off systems tailored for single organizations, to products suitable for the ‘off-the-shelf’ mass-market (as was brought on with the success of the PC) (Löwgren & Stolterman, 2007; Kuutti, 2009). Later, around the mid 1990s, HCI’s ‘turn to design’ meant that the participation of users was extended from usability testing to engaging them in the design process itself (Kuutti, 2009; Löwgren & Stolterman, 2007). This involved various user-centred approaches including contextual design – inspired by ethnography (Beyer & Holtzblatt, 1997) – as well as PD (Muller, 2002). The role of participation in UCD has extended so that it informs product design and development in a way that relates to user needs and preferences. UCD in general is ‘non-political’ in contrast to the original Scandinavian PD approach. It has been particularly successful in adopting and adapting a range of participatory tools and methods to fit the needs of industry (Kommonen & Botero, 2013). The ISO 9241 (usability of systems) and ISO13407 (user-centred design of systems) standards are a testimony to this success.

2.1.2 Participation as design-in-use

Approaches such as PD and UCD have been criticized, among other things, for limiting participation to the initial stages of design and focussing too much on the role of the designer, while ignoring the whole system’s lifecycle and the appropriations and development work that take place through use (Hartswood et al., 2000; Dittrich et al., 2002; Botero, 2013). However, already in the 1990s, there were voices within PD that addressed the question of what kind of design users engage in after an artefact reaches them, and how the initial design activities should support further adaptation through use (Henderson & Kyng, 1991). Henderson & Kyng’s concept of “design in use” effectively expands design into the realm of situated use. It later became central to the discussion and reflection on design that happens *during* use and on what implication this has on understanding participation beyond narrow conceptions of technology design projects (Dittrich et al., 2002).

Participation through design-in-use is also the foundation of the end-user development (EUD) approach to system design. In fact, the end-user programming ideas of the 1970s and 1980s resurfaced as EUD during the first decade of the 2000s (Syrjänen & Kuutti, 2011). The aim of EUD is to “empower[...] end users to develop and adapt systems themselves”, thus moving the focus from making systems “easy to use” to making them “easy to develop” (Lieberman et al., 2006, pp. 1–2). With that goal in mind, EUD reintroduced the old idea of designing information technology that could be further developed by users with no background in programming. Much of the effort in EUD has so far been focussed on making programming more accessible, for example through visual programming, programming in natural languages or programming by example (Lieberman et al., 2006).

One criticism of EUD specifically and HCI in general, has been that they focus on a single piece of software (Syrjänen & Kuutti, 2011; Jung et al., 2008). This focus limits the understanding of use and design-in-use to the relationship between one or multiple users and one single technology. And yet, the contemporary technological landscape consists of a multitude of digital devices, systems, and applications, which are often connected to one another via the actions of the user (Jung et al., 2008). This applies to single persons (Jung et al., 2008; Botero et al., 2008), organizations (Suchman, 1994), communities (Wenger et al., 2009), and indeed to the everyday environment in general (Greenfield, 2006). Technology is no longer a ‘single’ technology that is thought of as ‘the’ solution or ‘killer app’, rather it turns into “hybrid systems composed of heterogeneous devices” (Suchman, 1994, p. 34), which come together in the form of information ecologies, where they are connected to people, practices, and values (Nardi and O’Day, 2000). Rigid and highly structured infrastructures rarely support the formation of these ecologies. It is through local tailoring and adjustments by in-situ actors that truly supportive infrastructures develop over time (Star & Ruhleder, 1996; Karasti & Syrjänen, 2004). In sum, the concept of design-in-use expands further to mean various activities related to handling the multitude of tools normally at hand: configurations, customizations, adaptations, maintenance, reuse, even sometimes redesign through “artful integrations” and bricolage-type⁹ activities (Ciborra, 1992; Suchman, 1994; Büscher et

9.

The term bricolage, a French word that means tinkering, is associated in IS with the work of Claudio Ciborra. According to Ciborra (1992), IS design should not be a top-down process, but rather, to reach innovation, it is important to tap into the grassroots hacking and tinkering activities of end users. In its more general academic use, the term bricolage is strongly associated with French structuralist anthropologist Claude Levi-Strauss. In his book, *The Savage Mind* (1966), Levi-Strauss examines the knowledge of the everyday through the role of the bricoleur who engages in casual tinkering (vs. scientific knowledge and the roles of the scientist or engineer).

al., 2001; Karasti & Syrjänen, 2004; Botero et al.; 2010, Botero, 2013).

With recent developments in new media, that is, where information technology, networked communication, and media converge (Flew, 2008; Leinonen, 2010, p. 73), design-in-use now resurfaces in the context of casual users' everyday lives (Hagen & Robertson, 2009), as well as in community activism (Wenger et al., 2009) and education (Kalliala & Toikkanen, 2009). A growing array of Web 2.0 tools is available online and accessible from within 'the cloud',¹⁰ where it is possible to choose, configure, adapt, and connect different digital tools. As a reflection of the on-going convergence of digital technology and digital media, many of these second-generation design-in-use activities take place through media sharing and technical compatibility (Jung et al., 2008). RSS (Really Simple Syndication) feeds are a good example of current tools that make connecting through media sharing easier. Artful integrations and bricolage, now facilitated with the availability of open APIs, software development kits (SDK), and peer-to-peer file exchange, become part of the digital culture, where we "click, publish, and link our way online" (Deuze, 2006, p. 70). Mashups are an example of the outcomes of such bricolage activities¹¹ (Floyd et al., 2007).

These rapid changes in operating with digital media and technology call for new concepts that help research on participation in the design of digital technology address questions regarding the emergent cultures of participation (Fischer, 2011; Jenkins, 2006). Fischer (2011) and Fischer and Giaccardi (2006) look in particular at EUD, which they now place in the context of the emerging cultures of participation. Instead of focusing on making programming languages easier as a means to support design-in-use, they propose to operate at the level of meta design, where "defining and creating social and technical infrastructures" enable new forms of collaborative design to take place (Fischer and Giaccardi, 2006, p. 428). They also ask what is the role of the professional designer in addressing the question of how to prepare the ground for design-in-use. Furthermore, concepts from the fields of media and new media, such as those related to new ways of producing and consuming media, can inform the dynamics of the development and use of both digital media content and technology (Fischer, 2011). Neologisms such as prosumers (Tapscott &

10.

In brief, clouds refer to "a large pool of easily usable and accessible virtualized resources (such as hardware, development platforms and/or services)" (Vaquero et al., 2009). The cluster of networked computers that power the multitude of online services currently available (from Google's various services to YouTube) is referred to as 'the cloud'.

11.

It is worth reminding here that the possibilities for bricolage on mobile devices are still challenging, and mobile apps for example remain independent standalone solutions. There are, however, some attempts at opening up possibilities for bricolage with platforms such as Google's AppInventor (see e.g. Cuccurullo et al., 2011).

Williams, 2006), producers (Bruns, 2006), and pro-ams (Leadbeater & Miller, 2004) refer to a finer grained variation between experts and casual users/consumers of digital media and technology as well as to the narrowing of the gap between them.

Finally, from early concerns about end-user programming, to today's web-based cultures of participations, empowerment has always been a key issue. Those with programming skills, such as hackers and free software activists, have stood up for free software code and the right to tinker with it. Other communities are aiming at empowering those without programming skills. The Community Informatics (CI) approach, for example, addresses the concerns of those on the other side of the digital divide, both at the global level and within local communities¹² (Gurstein, 2007). CI is driven by a democratic vision of technology for community development and it aims at technologies that can be controlled by the communities who use them (Day, 2010; Gurstein, 2009). These issues have surfaced again in relation to the commercial aspects of the current landscape of Web 2.0 and social media, and with the uncertainties associated with controlling shared digital media (Gurumurthy, 2012).

2.2 Participation in urban planning

In general, planning means "tracing an orderly sequence of events which will achieve a predetermined goal" (Hall & Tewdwr-Jones, 2011, p. 2). Urban planning¹³ adds a spatial and geographical component to planning, so that it refers to planning activities that target a physical area, though not necessarily its physical dimension. Urban planning activities take place in a context where official governing bodies, such as municipalities and local governments, operate, but it is also linked to the activities of urban developers (Ferencuhova, 2009). Urban planning includes a strong representational component in the form of its most obvious output: the plan. Another focus of urban planning since the 1960s has been the process of planning itself and the temporal sequences involved (Hall & Tewdwr-Jones, 2011), especially in formal and institutional contexts, a focus that has been to the detriment of what ought to be the final goal of urban planning: a better living environment for all.

12.

CI has traditionally addressed rural and remote communities, but has lately opened up to explorations situated in urban contexts as well (Gurstein, 2007; 2010), and triggered the development of new fields of practice and study, such as Urban Informatics (Foth et al, 2012).

13.

There are other terms that also refer to urban planning, such as city planning and town planning. These are used interchangeably in varying contexts. Spatial planning, sectoral planning, regional planning and strategic planning are different and not used interchangeably.

Currently, participation in urban planning is a complex arena of practice and research, very much influenced by its political, economic, and administrative context (Horelli, 2002) and, to a certain degree, by democratic and urban planning theories (Bäcklund & Mäntysalo, 2010). On the more practical side, one can identify various practices of *staged participation* in urban planning. These include consultation, which is especially undertaken in the context of institutionalized urban planning, and participatory planning activities, which are organized by participatory urban planners as a way to initiate dialogue or address existing conflicts. Whereas staged participation involves activities initiated by planners or officials, Boonstra & Boelens (2011) have argued that *self-organization* activities initiated by citizens from outside the formal processes of urban planning should also be recognized in urban planning.

2.2.1 Staged participation

Among the urban theories that have developed over time, collaborative planning theory (also referred to as communicative planning) is the one that places most emphasis on an increased role for citizens in the planning process (Healey, 1997). Collaborative urban planning theory was inspired by Habermas' theory of communicative action and rationality, itself a critique of the instrumental and scientific rationalism of modernism. According to Habermas, there is a need to move away from the dominance of scientific objectivism and rather build objective knowledge and rationality based on agreement between individuals through free and open discourse (Allmendinger, 2009; p. 200). The collaborative approach sees urban planning as a communicative process, in which different opinions are brought forward so that deliberation and attempts at mutual understanding can take place (Healey, 1992). Thus, involvement in urban planning becomes available to a variety of stakeholders whose goal is to reach decisions through consensus building.

Despite its limitations, collaborative planning theory has guided various practical applications, with some planners attempting to put the theory behind communicative planning into practice. Horelli (2002) has compiled a list of tools and methods developed and used

by participatory planners for *staging* and *facilitating* participatory activities that bring stakeholders together in a communicative exchange orchestrated by the planner. These tools and methods are very similar to those used in PD.¹⁴ They include observation, paper and pencil tests, walking tours, role playing and drama, games, workshops, panels (Horelli, 2002), and more recently, wiki design.¹⁵ Similarly, the International Association for Public Participation has also compiled a Public Participation Toolbox (IAP2, 2006), which showcases tools and methods for both consultation and more collaborative types of participation.¹⁶ These types of staged participatory activities address the shift generated by the communicative turn in urban planning: the need to bring together different points of views and opinions, which are then crystallized in the form of the plan¹⁷ to reflect a common understanding and shared resolution of disagreements (Healey, 1997). The processes involved in reaching this goal of effective participation engage all concerned stakeholders in dialogue and network creation (Innes & Booher, 2004). The communication and collaboration activities that constitute this type of participatory planning are carried out as debate, argumentation, and consensus building facilitated by the planner. Bringing stakeholders together and using language as the collaborative tool of choice becomes a major concern for the planners.

It has also been argued that collaborative planning has influenced, to some degree, institutional urban planning. For example, Puustinen (2006) has reported that the communicative theories of urban planning have influenced the adoption of the Land Use and Building Act of 2000 in Finland. This law enables citizens and other stakeholders to voice their opinions about urban planning proposals in the areas where they live, work, or own land. In practice, this has meant that planners have presented their proposals to the public for comments in meetings where citizens and planners can meet. Despite the introduction of such citizen participation processes to urban planning, this type of staged participation is in fact limited to consultation: citizens are asked to provide feedback on particular issues, either during public hearings or online. The feedback is then taken into consideration – or not – by officials and planners. Thus, in practice, any communicative rationality remains limited to the aims of the instrumental

14. Participatory approaches to urban planning have influenced PD. For example, Kensing and Halsov Madsen (1991) adapted the Future Workshop technique in their PD work on information system design. This technique was originally developed for citizen participation in urban planning.

15. Wiki design is inspired by Wikipedia. Instead of co-writing articles, the participants can propose design and planning ideas by using different objects and symbols, such as Lego blocks, candies, magazine pictures, cardboard and paper, which are placed on a scaled model of the area in question. The planner or architect facilitates the process (Tattersall, 2009).

16. Lately, there have been proposals by Urban Informatics researchers in Australia to update the IAP2 toolbox with entries such as social media, Web 2.0 and mobile technologies (Fredericks & Foth, 2013), and mobile and public screen based feedback systems (Schroeter & Houghton, 2011).

17. Whereas the plan is the representation of various discourses, Healey criticizes the lack of attention given to explaining how the choices are made (Allmendinger, 2009, p. 218).

rationalist structures into which it is integrated (Allmendinger, 2009, p. 218). The separation between planning and decision-making also persists. At least in western representational democracies, decision-making remains in the hands of elected representatives or officials with the planners carrying a mediating role between citizens and decision-makers (Howe, 1992).

In fact a wide variety of factors, such as laws, regulations, and different political and planning systems shape the way formal participation in urban planning is practiced (Nadin & Stead, 2008; Hall & Tewdwr-Jones, 2011; Mäntysalo et al., 2011). Participation in urban planning varies between countries and cities, even in Western democracies, where citizen participation is a common goal. Moreover, reporting on the practices of citizen participation in urban planning in five major Finnish cities, Bäcklund and Mäntysalo (2010) indicate that participation is also shaped by a mix of influences from a variety of co-existing urban planning and democracy theories. In Helsinki, for example, the institutional urban planning system is still very much embedded in a rational comprehensive approach – the very approach that the communicative turn in urban planning has opposed. Broadly, rational comprehensive planning is a planner-centred approach, where the emphasis is placed on the value-free and neutral knowledge of the planner-as-expert (Allmendinger, 2009). The expert knowledge of the planner is deemed apolitical and understood as objectively and justly feeding the decision-making process. There is no room for genuine citizen participation as citizens' opinions are no match to the knowledge of the expert (Staffans, 2004). Nevertheless, as Bäcklund and Mäntysalo report on Helsinki, in addition to the system's rational comprehensive core, it now also contains influences and elements of other planning theories, including collaborative planning.¹⁸ This situation is the same at least in four other Finnish cities (although with different local nuances) thus making it possible to speak of institutional ambiguity when it comes to participation in planning (Bäcklund & Mäntysalo, 2010).

Finally, as with the design of digital technology, all types of staged participation activities in urban planning, whether based in consultation or collaboration, are often limited to the early stages of design or planning, which means that the nascent collaboration that may arise

18. Bäcklund and Mäntysalo (2010) have identified four urban planning theories that represent paradigm shifts in planning practice and influence participation in Finnish cities. These are the rational comprehensive, incrementalist, collaborative, and agonistic theories. These urban planning theories are also associated with more general theories of democracy, such as aggregative, deliberative, and agonistic conceptualizations. Whereas in my work I focus in on the rational comprehensive and collaborative approaches, because they are evident in Helsinki, and have been particularly prominent as my empirical cases have unfolded, other theories might be more relevant in studying participation in other cities.

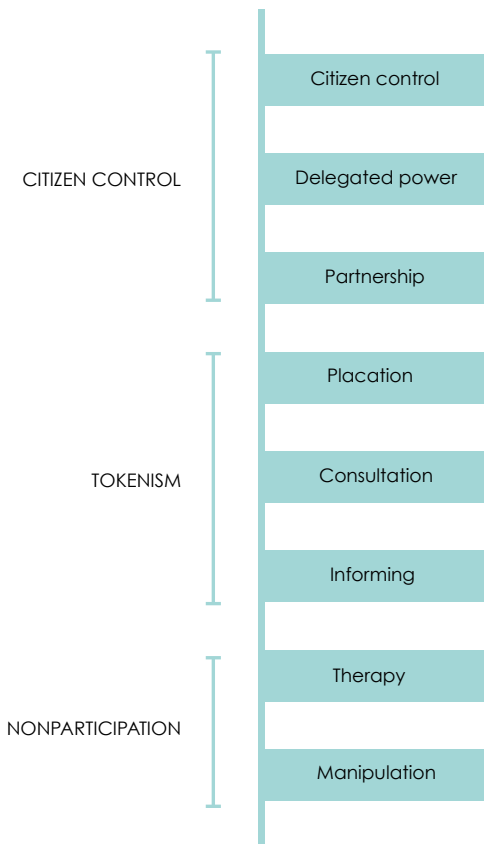
between planners and other stakeholders is not necessarily sustained throughout the formal processes. More sustainable approaches have been proposed, such as Horelli's Learning based Network Approach (LENA; 2002), which provides a framework for action over longer periods of time, from initiation to planning and design, implementation, evaluation, and maintenance. LENA is influenced by action research and expands the understanding of urban planning to include community development and local governance (Wallin & Horelli, 2010), thus going beyond the idea of planning as solely concerned with the production of plans. The LENA approach has been successfully applied in several cases in Finland (e.g. Horelli, 2006; Horelli, 2013). (See Article 3 for an explanatory diagram of LENA).

2.2.2 Participation as self-organization

Whether based in consultation or collaboration, staged participation in urban planning remains something that is initiated by authorities or planners. When embedded in formal processes guided by governmental institutions, participation operates from the 'inside out', meaning that it is initiated by officials and planners working inside governmental institutions (Boonstra & Boelens, 2011). The problem with such an understanding of participation is that it does not acknowledge or try to respond to initiatives from 'the outside in', ones originating in civil society. Boonstra & Boelens introduce the concept of self-organization in urban planning in an effort to move beyond staged participation and to acknowledge citizen initiatives that are not, at least to start with, associated with formal urban planning. They borrow the concept from complexity theory where self-organization is seen as an emergent property of complex adaptive systems. They adapt it to urban planning in the following manner: self-organization refers to "initiatives that originate in civil society from autonomous community-based networks of citizens, who are part of the urban system but independent of government procedures" (Boonstra & Boelens, 2011, p. 113). In that sense, self-organization complements existing types of participation such as consultation and partnerships.

If we go back to Arnstein's infamous "Ladder of Participation"

Figure 1:
Arnstein's ladder of participation
(Arnstein, 1969)



(1969; see Figure 1), it is possible to define participation in terms of her proposed typology. When participation is integrated in the instrumental rational structures that are in place in many municipal governments, it often remains limited to consultation – a mere “window-dressing ritual”, as Arnstein puts it. In the best cases, applications of collaborative planning that are closer to the ideals of communicative rationality (e.g. Innes & Booher, 2010) can match Arnstein’s partnership level.

The top rung in Arnstein’s ladder is that of citizen control. The terminology reflects the socio-political situation of 1969, and focuses on the issue of power and the struggle of citizens to reclaim it from the elite. However, Boonstra and Boelens’ proposition for acknowledging citizen self-organization in urban planning can be understood as a contemporary take on Arnstein’s citizen control. Self-organization, similar to Arnstein’s citizen control, addresses grassroots activities that aim to influence issues traditionally addressed by urban planning. Considering self-organization as a type of participation makes it possible to think of participation as something that

also happens outside formal or planner-initiated contexts, and thus exists in forms other than staged participation.

The concept of self-organization also helps address new realities on the ground regarding the kind of emerging citizen activism currently amplified by social networking technologies. The Internet and Web 2.0 in particular, seem to facilitate citizen-driven initiatives by making it easier for networks of citizens to organize themselves around issues of interest, spreading the word and challenging the institutional status quo (Botero et al., 2012; Horelli et al., 2013). The concept of self-organization also finds an echo in recent approaches to co-governance, such as Leadbeater's (2004) "personalization through participation" and Pestoff's (2012) New Public Governance (NPG), where public sector agents (the traditional service providers) and citizens (as self-organized groups) cooperate in the provision or enhancement of services. Proponents of public-private-people partnership (4 P) models also recognize the role of the private sector in such cooperation, though, despite their emphasis on the people's 'P', do not necessarily address the need to recognize self-organized citizen initiatives in the way that the concept of self-organization does (Majamaa, 2008; Staffan & Väyrynen, 2009; Kuronen, 2011).

Acknowledging participation as self-organization in urban planning affects the way urban planning and the role of the urban planner are understood. For example, Wallin & Horelli (2010) make the connection between community-driven self-organization and institutional planning. Consequently, their definition of urban planning starts to include community development and local governance. Also, according to Bonstra & Boelens (2011), with self-organization comes the imperative for planners to integrate and take part in the self-organizing processes of communities, and thus abandon their neutral observer position. Finally, by acknowledging self-organization as a type of participation in urban planning, it is possible to step beyond the current focus in the e-planning literature on the use of official and professional tools, such as online questionnaires and polls, or Web GIS. Instead, the mundane, everyday technology that is at the reach of individuals and communities would be recognized as consequential (Saad-Sulonen & Horelli, 2010; Wallin, forthcoming).

2.3 The matrix of multiple participations

Having reviewed the main approaches to participation in the fields of IT/HCI and urban planning, I will now summarize my findings in terms of types of participation in the design of digital technology and in urban planning. I will then combine these different types of participation in the form of a matrix.

An overview of participation in the design of digital technology makes it possible to identify *four different types of participation in the design of digital technology*. (See Table 2). Each type mediates a different kind of relationship between the *design/development* of technology and its *use*. In the first, mainstream view of information technology design, no place is given for participation, and design and development are separate from use. In the second type, that is, in the case of staged participation as a setting for testing and giving feedback, designers set up activities in which users are invited to participate. The aim of these staged participation activities is to inform the design and development of products so that they best fit the users' needs and preferences. In the third type, staged participation is a form of collaboration that informs future use and potential changes in the context of use, in addition to informing design and development as such. The Scandinavian Participatory Design approach, especially in its initial 1970s flavour, offers a good example of the creation and use of participatory methods and techniques that were aimed at engaging future users (originally skilled workers) in the design of new workplace technology, while at the same time addressing issues of democracy at work. The fourth type, participation as design-in-use, involves engagement in the design of the technology at the time of and in the context of its use, and it thus blurs the boundaries between design and use. Recently the end-user development paradigm in IT and HCI design has brought back many of the aspirations of the end-user programming movements of the 1970s and 1980s. These include the search for adaptable technology that could be designed to act as a toolkit for users rather than simply a commodity. However, the current technological landscape also allows for other ways of understanding design-in-use, which go beyond the focus on an isolated piece of software and acknowledge the reality of operating within an

ecology of mundane artefacts and tools. Thus, design-in-use includes bricolage-type activities where choosing, configuring, and adapting different technologies becomes important. The emerging convergence of digital technology and digital media is also further blurring the definition of what is the object of design and of participation in design.

Four different types of participation are also apparent in the context of urban planning. (See Table 3). They bear a striking resemblance to the types of participation in the design of digital technology listed above. Non-participation in urban planning reflects the so-called rational view, which reserves the exercise of urban planning to professionals in the field: citizens are not invited to take part in any planning-related activities, rather the planner acts on behalf of citizens as a mediating and neutral professional. Then, as with participation in the design of digital technology, participation in urban planning can also be staged. The staged activities can aim at a lower level of participation (consultation), or a higher one (collaboration and partnership). In both cases, the staged activities are set up by the planner. In what is conventionally thought of as planning consultation,

Table 2:
The types of participation in the design of digital technology and their characteristics

	NON-PARTICIPATION	STAGED PARTICIPATION: TESTING AND FEEDBACK	STAGED PARTICIPATION: COLLABORATION	PARTICIPATION AS DESIGN-IN-USE
Characteristics:				
Relationship: Participation /Design/Use	No participation, design ≠ use	Participation informs design	Participation informs design, use and context of use	Participation = design during use, in the context of use
Roles	Expert activity only	Experts (designers) invite users to test, give feedback, give ideas for product development	Experts and users collaborate at the specifications level	Users design (program, develop, choose, configure, connect) / Experts meta-design
Theoretical or Practical Reference	Mainstream view of technology design	Usability, UCD	Scandinavian PD	EUD, current digital practices

participation informs planners on issues deemed to be of interest in formal planning. Participation thus resembles giving feedback. In the case of collaborative activities and partnerships, participation aims to resolve conflicts and bring divergent voices together to seek consensus and agreement, a process that will be reflected in the plans later drafted by the planner. In this case, the role of the planner is that of a facilitator (Forester, 1999). Finally, whereas staged participation is initiated by planners or officials, the last type of participation, self-organization, recognizes activities that come from the 'outside in', meaning that they are initiated by networked communities of citizens operating outside official structures, as forms of participation.

Having summarized the main types of participation in the design of digital technology and urban planning, I will now introduce the matrix of multiple participations (Figure 2). The matrix brings together into one analytical tool the main types of participation in the design of digital technology (on the horizontal axis) and in urban planning (on the vertical axis).

Table 3:
The types of participation in urban planning and their characteristics

The matrix of multiple participations summarizes and offers an overview of the most common types of participation in the design

	NON-PARTICIPATION	STAGED PARTICIPATION: CONSULTATION	STAGED PARTICIPATION: COLLABORATION AND PARTNERSHIP	PARTICIPATION AS SELF-ORGANIZATION
Characteristics:				
Relationship: Participation/ Urban Planning	Urban planning informs decision-making and implementation	Participation informs planners on issues determined by formal planning	Participation informs planners and drafting of plans	Participation = self-organization
Roles	Expert activity only	Experts (officials or planners) invite citizens to provide feedback	Experts (planners) facilitate collaborative activities	Networked communities of citizens initiate activities
Theoretical or Practical Reference	Rational urban planning	Traditional participation in urban planning and governance	Collaborative and participatory urban planning	The concept of self-organization in urban planning

Figure 2:
The matrix
of multiple
participations

<p>DESIGN OF DIGITAL TECHNOLOGY</p> <p>URBAN PLANNING</p>	<p>Non-participation</p> <ul style="list-style-type: none"> • Design ≠ use • Expert activity only • Mainstream view of technology design 	<p>Staged participation: testing and feedback</p> <ul style="list-style-type: none"> • Participation informs design • Experts invite users to test, give feedback, ideate for product development • Usability, user-centered design 	<p>Staged participation: collaboration</p> <ul style="list-style-type: none"> • Participation informs design, use, context of use • Experts and users collaborate at specs level • Scandinavian participatory design 	<p>Participation as design-in-use</p> <ul style="list-style-type: none"> • Participation = design during use, in context of use • Users design (program, develop, choose, configure, connect) – experts meta-design • End-user development, current digital practices
<p>Non-participation</p> <ul style="list-style-type: none"> • Urban planning informs decision-making and implementation • Expert activity only • Rational planning 				
<p>Staged participation: consultation</p> <ul style="list-style-type: none"> • Participation informs planners / dependent on planning process • Experts/officials invite citizen to provide feedbacks • Traditional participation in urban planning and governance 				
<p>Staged participation: partnership + collaboration</p> <ul style="list-style-type: none"> • Participation informs planners • Experts as facilitators of collaborative activities with citizens • Collaborative and participatory planning 				
<p>Participation as self-organization</p> <ul style="list-style-type: none"> • Participation = self-organization of citizen groups to inform change in urban environment • Citizens initiate activities • Self-organization as an emergent concept in urban planning 				

of digital technology and in urban planning. It allows for juxtaposing, comparing and combining conceptual and theoretical perspectives on participation from across the fields of IT/HCI design and urban/e-planning. There is a need for such a tool because, although they have been mutual sources of inspiration in some cases (e.g. Kensing and Halsov Madsen, 1991), and despite striking resemblances in their understandings of participation, the conceptualization of participation in the design of digital technology has remained quite separate from analogous conceptualizations in planning research. Furthermore, thinking about participation has remained strongly associated with the object of design or planning proper to each field.

However, in operating at the intersection of participation, digital technology, and urban planning, it has become apparent that there is a need for exploring participation as such across academic fields. This brings with it the need for a shared conceptual vocabulary to discuss participation. The matrix of multiple participation aims to be one step in the direction of shaping such a shared vocabulary.

2.4 Using the matrix of multiple participations to map examples from research literature

With the help of the matrix of multiple participations, I will now map a series of examples from the research literature in the areas of urban/e-planning and IT/HCI design research.¹⁹ The examples are chosen because to some extent they all deal with participation, digital technology, and either urban planning or community activism in an urban context. The examples from e-planning cover GIS and e-participation. Those from IT/HCI design cover participatory design and end-user development, as well as research on the theme of communities and technology, including examples of community participatory design, urban computing, and community and urban informatics. This list of chosen examples is, of course, non-exhaustive. As a starting point, I took examples from the *Handbook of Research on E-planning* (Silva, 2010a) and the *Handbook of Research on Urban Informatics* (Foth, 2009). I then added examples of research undertaken in Finland and reported in the compilation of digital tools in participatory planning edited by Wallin et al. (2010). I have also selected individual examples

¹⁹. An initial version of this mapping was published in Saad-Sulonen (2013).

reported in PD, EUD, CI and urban planning publications, as well as from my own research.

By situating each example within the matrix it is possible to identify existing different combinations of how participation in the design of technology is brought together with participation in urban planning (see Figures 3, 4, 5, 6). It also makes it possible to position the existing research in e-planning and IT/HCI dealing with participation, digital technology, and urban planning, in relationship to one another, and to identify gaps and bridges.

2.4.1 E-planning literature: an apparent neglect of participation in the design of digital technology – and some exceptions

By mapping examples from e-planning literature, it is possible to see that many are confined to the column of 'non participation' in the design of digital technology and spread across the two rows of staged participation in urban planning (Figure 3). These examples – from the *Handbook of Research on E-planning* (e.g. Kubicek, 2010; Repetti & Bolay, 2010; Conroy & Evans-Cowley, 2010; Bourdakis & Deffner, 2010; Granberg & Åström, 2010²⁰) as well as published cases of the use of WebGIS and PPGIS (e.g. Yigitcanlar, 2010; Kahila & Kyttä, 2009) – represent the kind of e-planning research that takes the urban planning discourse on participation as reference. Such research quite naturally neglects the issue of participation in the design of digital technology because the wider issue of digital technology as something that is actively designed has not so far been an issue of concern in urban planning.

Some other examples show a different approach. For example, Wessels et al. (2012) identify collaborative urban planning as a context where the participatory design of technology and e-services could take place. Further, in Article 5 (Saad-Sulonen, 2012), I examine participation in the design of digital technology in conjunction with participation in urban planning. I claim that the activities around participatory planning also imply participation in the production and sharing of digital media. These two examples were published in the *International Journal of E-planning Research*, and thus address an

20. All these examples are found in the 'Citizen participation in e-planning' section of the *Handbook of Research on E-planning* (Silva, 2010a, 168-339)

e-planning and urban planning audience. However, the authors do not come from an urban planning background, their experience being in fields related to digital and media technology. By introducing the notion of participation in the design of digital technology to an urban/e-planning audience, these two examples act as bridge builders between the fields of urban/e-planning and IT/HCI.

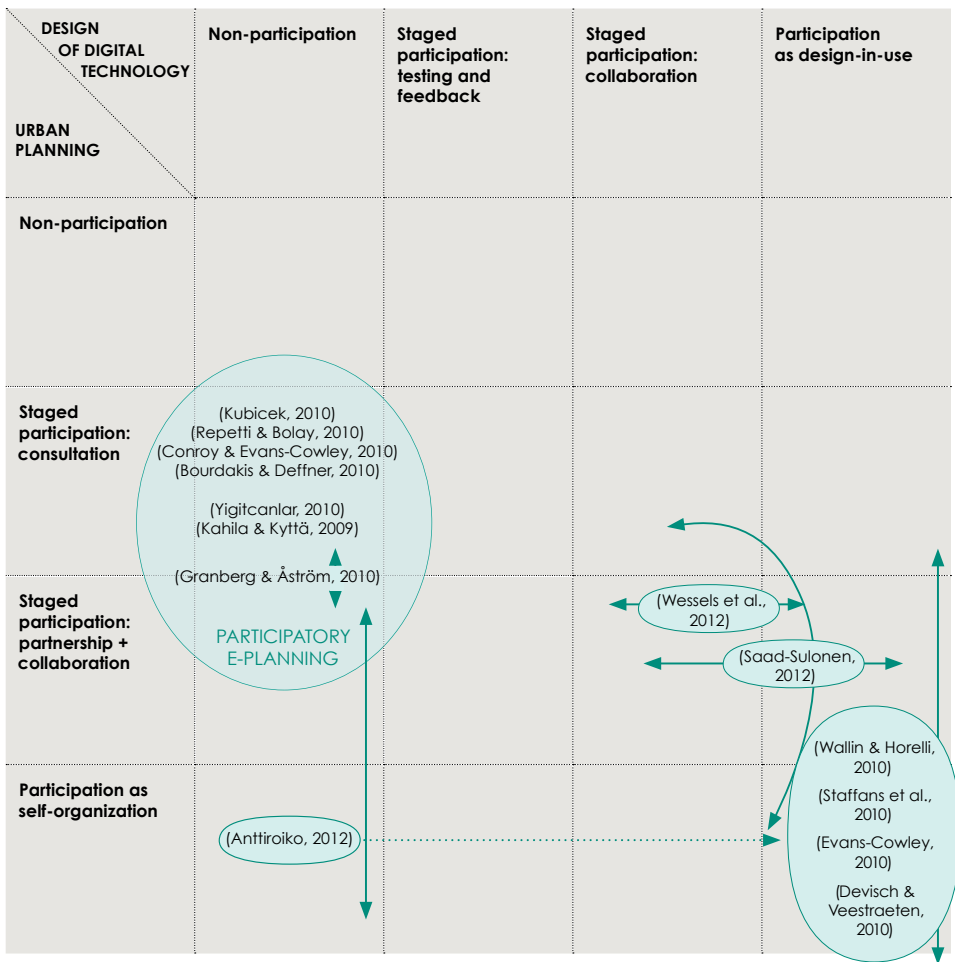
There are also other examples of e-planning literature that have acknowledged, although not always explicitly, participation as design-in-use, as well as participation as self-organization. For example, Wallin & Horelli (2010) link their experiences of local community development in Helsinki to the wider discourse on participation in urban planning. They also recognize the need for community tools that can be configured and connected to one another as well as to other sources of urban data. Similarly, Staffans et al. (2010) explore the possibility of linking institutional urban planning with participation as self-organization. They also recognize the need for what I interpret as design-in-use activities, that is, operating with a variety of official and non-official digital tools and creating connections between them. Elsewhere, Devisch and Veestraeten (2010) call for urban planning to recognize citizen science-type activities as a form of participation.²¹

21.

It is important to note here that Devisch and Veestraeten (2010) are among the few who link digitally supported citizen science activities to urban planning. Foth et al. (2009) have done so also but, unlike Devisch and Veestraeten, they have not addressed an urban planning audience. Some connections between citizen science and urban planning have been made via literature from the field of geography on citizen science, especially the kind that focuses on generated locative data (e.g. in Staffans et al., 2010). "Volunteered geography" (Goodchild, 2007) and "neogeography" (Hudson-Smith and Crook, 2008; Hudson-Smith et al., 2009; Goodchild, 2009) are two terms that have been used to refer to this phenomenon.

By citizen science they mean the collection and interpretation of environmental data, using for example mobile phones and sensors of all kinds. Their proposition can thus be situated at the intersection of participation as self-organization and participation as design-in-use, with links to the urban planning discourse. Evans-Cowley (2010) further pinpoints the potentials of using mundane technologies, such as social media and Web 2.0, for participation in urban planning. In one example, where Facebook is used to engage young people in urban planning, she emphasises the need to make at least one of the young people involved administrator of the Facebook page. Even though Evans-Cowley does not explicitly refer to participation in the design of digital technology, nor does she use the concept of design-in-use, it should be noted that a Facebook page administrator's role covers aspects of participation in the design of technology, such as the configuration of access rights, the choice of textual descriptions and graphics, but also the manipulation of social and media practices afforded by the features and functionalities of Facebook (Horelli et al.,

Figure 3:
Selected literature from the field of e-planning positioned on the matrix of multiple participations



2013). These four examples (Wallin et al, 2010; Staffans et al., 2010; Devisch & Veestraeten, 2010; Evans-Cowley, 2010) thus contain hints of participation as design-in-use. If the concept of design-in-use were to be explicitly used, it would contribute to creating a more direct connection between the fields of urban/e-planning and those of IT/HCI research.

Finally, Anttiroiko (2010) also reflects on the role of social media and Web 2.0 tools in changing the way urban planning operates. He does not, however, address participation in the design of digital technology, or view the technologies he lists as having features that enable such participation. Nevertheless, in this case too, the concept of participation as design-in-use could be easily used to push his focus on the use of social media and Web 2.0 tools a step further. This would be to embrace one of their most important characteristics: the provision of building blocks for operating with the digital.

2.4.2 IT/HCI literature: a diversity of approaches with interests in the urban

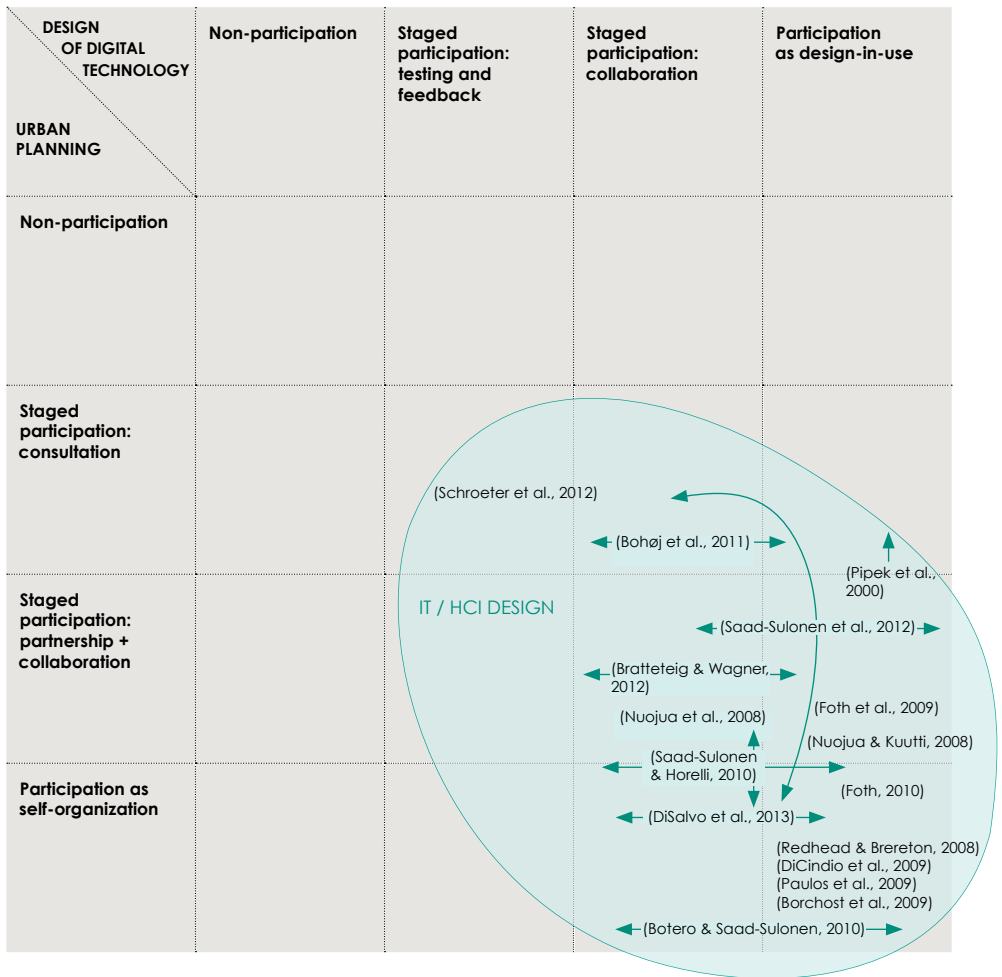
The mapping exercise using examples chosen from the IT/HCI research literature shows that when it comes to the design of digital technology, the examples spread across staged participation and participation as design-in-use, and that, for urban planning they are located within staged participation and participation as self-organization (see Figure 4). It is also possible to divide these examples into two main groups: those that explicitly make connections to urban planning, and those that do not, but where the area of interest includes IT and HCI in the urban context.

In Figure 5, I identify examples of IT/HCI literature where the design of digital technologies aims to enhance citizen participation in urban planning, whether as consultation or collaborative planning. Within this group of examples, there are those for whom participation in the design of digital technology remains at the level of user testing and evaluation via user feedback,²² but contain elements of design-in-use, though not explicitly (Schroeter et al., 2012). Other examples take a participatory design approach to technology, either as staged participation or as design-in-use (e.g. Pipek et al., 2000;

22.

Staffans et al. (2010, p.90, p.98) also hint at the importance of usability in the context of urban/e-planning. Also, research that addresses usability issues in the context of e-government exists but makes no specific connections to urban planning (e.g. Ericksson et al., 2008; Scapin, 2009).

Figure 4:
Selected literature from the fields of IT/HCI positioned on the matrix of multiple participations



Nuojua et al., 2008; Nuojua & Kuutti, 2008; Foth et al., 2009; Bohøj et al., 2011; Bratteteig & Wagner, 2012; Saad-Sulonen & Horelli, 2010; Saad-Sulonen et al., 2012).

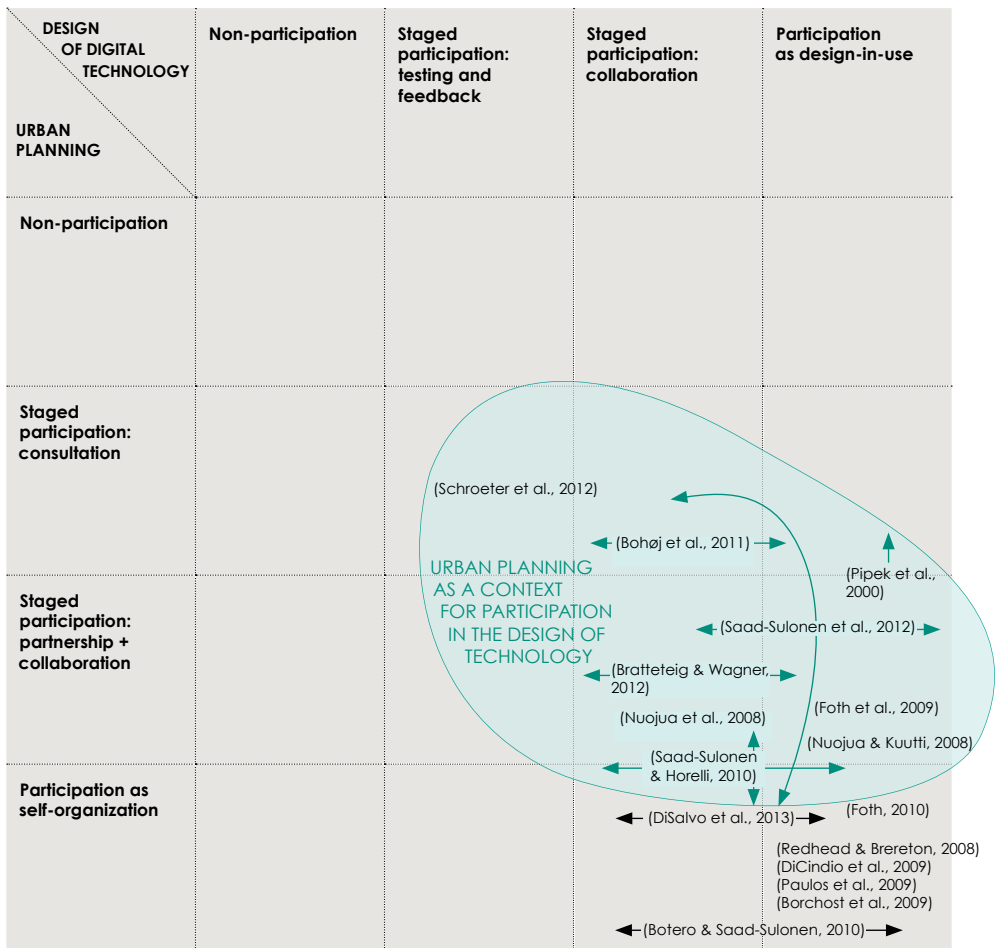
All these examples are good cases of bridge building between HCI and urban planning. They all explicitly refer to urban planning in publications targeted at IT/HCI audiences. Whereas in most of these examples the authors come from the field of IT design or HCI, there are examples where the publication is a joint collaboration between IT/HCI and urban planning researchers, and the case studies reported in them have involved cooperation between IT/HCI and urban planning research (Nuojua et al., 2008).

By looking at other publications associated with some of the studies in the IT/HCI literature one can see that in some cases the same authors have also published articles from the same studies in urban planning journals – often in collaboration with colleagues from urban planning. For example, the study involving the use of public screens and a related mobile-based feedback-giving system reported in Schroeter et al. (2012) for an HCI audience has also been reported in an urban planning journal as Schroeter & Houghton (2011), with the HCI findings ‘translated’ accordingly. In another case, a study involving the use of mixed reality (MR) technologies in participatory urban planning written for an HCI audience by Bratteteig & Wagner (2012) has also been published by the study’s urban planning collaborators for an urban planning audience (Basile et al., 2009).

Whereas all the IT/HCI examples cited so far frame participation in urban planning as consultation (Schroeter et al., 2012; Bohøj et al., 2011) or as collaborative planning (Pipek et al., 2000; Nuojua et al., 2008; Nuojua & Kuutti, 2008; Foth et al., 2009; Bratteteig & Wagner, 2012; Saad-Sulonen & Horelli, 2010), the work I report with my co-authors in Article 6 (Saad-Sulonen et al., 2012) is an exception. We position PD and EUD activities in the context of three different types of participation in urban planning, namely consultation, partnership, and self-organization. This article shows that it is possible to examine the long-term effects of participation in the design of digital technology across different types of participation in urban planning.

Finally, Figure 6 shows examples from the IT/HCI literature, which examine the relationship between communities and technology

Figure 5:
The cluster of examples from the IT/HCI literature that considers urban planning to be a context for participation in the design of digital technology



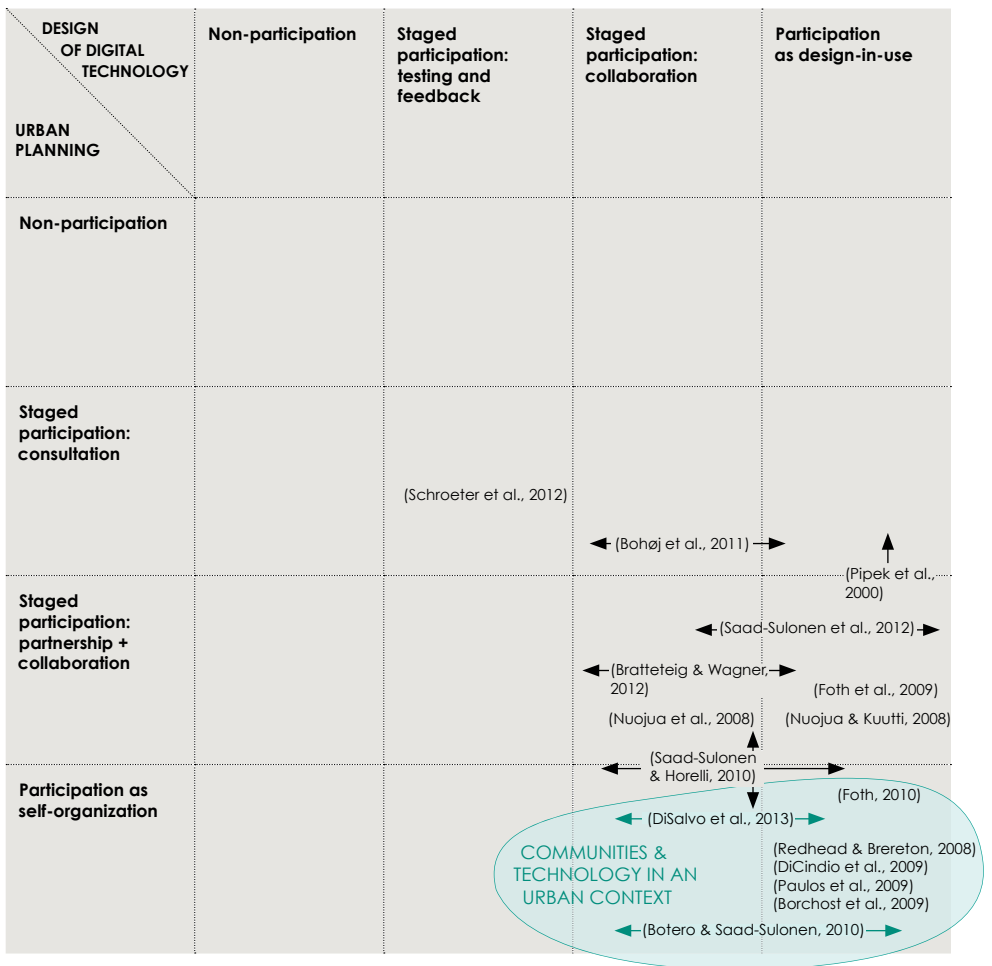
in the context of everyday urban life (Redhead & Brereton, 2008; Borchorst et al., 2009; DiCindio et al., 2009; Paulos et al., 2009; Botero & Saad-Sulonen, 2010; Foth, 2010; Saad-Sulonen & Horelli, 2010; DiSalvo et al., 2013). These examples focus on the design and use of mundane technologies (e.g. urban screens, mobile technologies, community portals, social networking platforms) and the way they support community action in an urban context. Many of the issues dealt with in this type of research, such as the use and management of shared public space, litter in urban space, time planning, or air quality and pollution, are either urban planning issues in themselves or they inform urban planning. However, no connections have yet been explicitly made with urban planning. To make it possible for the matrix to accommodate such research, and thus generate a link to the discussion on participation in urban planning, something like Boonstra & Boelens' (2011) concept of self-organization is needed. A shared conceptual vocabulary that would include the concept of self-organization could provide good grounds for bringing research on communities and technologies into conversation with research on e-planning and even urban planning more broadly. However, acknowledging the relevance of the concept of self-organization in urban planning requires a paradigm shift (Anttiroiko, 2012). Above all, it requires an extended conceptualization of urban planning so that it would include community development and local governance (Wallin & Horelli, 2010; Horelli, 2013).

2.4.3 Trans-disciplinary efforts: gate opening and bridge building

The results of the analysis of the e-planning and IT/HCI literature described above can be condensed as follows:

- The e-planning literature has so far largely neglected participation in the design of digital technology. Some notable exceptions do exist that act as gate openers and bridge builders between the disciplines of urban/e-planning and IT/HCI.
- The IT/HCI literature shows that there is a growing body of research in IT/HCI that positions the design of digital technology

Figure 6:
The cluster of examples from the IT/HCI literature that examines communities and technologies in an urban context



in the context of urban planning. Such research also acts as a gate opener and bridge builder between the disciplines of urban/e-planning and IT/HCI.

- Emerging trans-disciplinary endeavours are apparent in urban/e-planning and IT/HCI publications. There are examples of IT/HCI researchers publishing in e-planning and urban planning journals, or trans-disciplinary teams publishing in both urban/e-planning and IT/HCI journals and venues
- The concept of participation as design-in-use, especially if used in combination with that of participation as self-organization, can open up the scope of e-planning research beyond the focus on individual technologies (whether official, professional, or mundane ones). The concept of participation as design-in-use opens up a possible shift in perspective and offers the opportunity to consider digital technology in general, and new mundane technologies in particular, as tools for design rather than merely for use. Participation as design-in-use is a concept that can further reinforce exchange and dialogue between the different fields.
- The concept of participation as self-organization can bridge the gap currently existing between urban/e-planning research on the one hand and IT/HCI research on communities and technology in urban contexts on the other. So far, the emphasis in both the urban/e-planning and the IT/HCI fields has been on staged participation in urban planning, with little consideration being given to participation as self-organization. However, by acknowledging self-organization as a type of participation in urban planning, and by sharing this concept across research communities, new doors for trans-disciplinary discussions around participation can be opened.

These results of the mapping highlight the emerging trans-disciplinarity of research concerned with participation, digital technology, and urban planning. By widening the understanding of participation to both design-in-use and self-organization, increased trans-

disciplinary exchange and collaboration can be achieved between the fields of IT/HCI and urban/e-planning.

2.5 Addressing a gap

In this chapter so far, I have identified common types of participation in the design of digital technology and in urban planning, and summarized their characteristics. I have presented the matrix of multiple participations, a novel analytical tool that combines the different types of participation I have identified. It provides means to compare existing research fields that deal with participation, digital technology, and urban planning with one another in relation to how they understand participation.

I have used the matrix of multiple participations to map examples from research literature from the fields of IT/HCI and urban/e-planning. The mapping has shown that, despite disciplinary niches, there are nonetheless trans-disciplinary examples where participation in the design of technology and in urban planning are brought together and even addressed concurrently. However, there is still a need for a shared vocabulary and conceptual framework that can bring together the two main areas of research concerned with participation, urban planning and digital technology, especially when it comes to operating in the context of the digital age and its emerging cultures of participation (Fischer, 2011). For example, further exchange and discussion across disciplinary boundaries can be possible if concepts such as participation as design-in-use and participation as self-organization will be used. The matrix presented here is one step towards building a shared vocabulary and conceptual framework that includes both established types of participations in IT/HCI and urban/e-planning as well as emerging ones.

In the following chapters I will report the empirical part of my research. Chapter 3 presents the methods and data. In Chapter 4, I will use the matrix of multiple participation to explore, through three case studies, specific combinations of participations that expand the current locus of participatory e-planning.



3. METHODS AND DATA

3. Methods And Data

If participation is the core focus of this thesis, I have also aimed for a participatory research methodology: to practice what I preach. I have chosen research approaches that engage both the researcher and those being researched, and that acknowledge that we are trying to understand and shape participatory e-planning together.

My position as a designer of digital technology, and the fact that this thesis is undertaken at the Aalto University School of Arts, Design and Architecture, has determined the choice of design research as a first approach. Within design research, I have chosen to combine the constructive and participatory design research approaches. Constructive design research (Koskinen et al., 2011) places emphasis on the construction of a design artefact – in other words, on making something concrete that can be shared with or appropriated by others. Here, the constructed artefact becomes a means to construct knowledge. Constructive design research is not in itself participatory whereas, participatory design research, which similarly emphasizes design constructions, additionally calls for inviting others to the design process.

As my research progressed it became more embedded in the context of participation in urban planning, and hence the focus of enquiry expanded beyond the artefact and its participatory design. It began to address change in the way participatory e-planning could be carried out. Such inquiry is very similar to the kind undertaken in action research (AR) projects (McNiff et al., 2003). At around the same time, the possibility arose for me to be part of a research project where long-term AR had already been applied. I therefore decided to

combine AR with the constructive and participatory design research approach I had followed until then.

In the following, I will describe the research approach and the research design in its three phases. I will also outline the methods chosen for data gathering and analysis in each phase.

3.1 The research approach

Constructive design research relies on the production (construction) of an artefact (e.g. a product, system, space, or media) as the means of constructing knowledge (Koskinen et al., 2011). Constructive design research has roots in industrial and interaction design (Koskinen et al., 2011) and is increasingly recognized in the field of HCI (Zimmerman et al., 2006). The constructive design researcher is heavily involved in concrete design activities that go hand in hand with academic reflection. Constructive design research ‘in the field’ further positions the design/research activities in the context of everyday life, in opposition to ‘the lab’ or ‘the showroom’ (Koskinen et al., 2011).

Participatory Design (PD), as introduced in the previous chapter as a movement that emerged in the 1970s in Scandinavia, can also be defined as a research approach or methodology (Spinuzzi, 2005). Like the constructive design research approach, PD research is characterized by “design-by-doing” (Ehn & Kyng, 1987). Additionally, it brings the future users of the technology into the design and research process. Finally, PD research, at least in its original goals, also aims at change in the socio-political context where the designed technology is to be embedded (Spinuzzi, 2005).

Action research (AR) is a participatory research strategy that seeks to combine scientific enquiry and practical action. This happens through engaging in change experiments on real problems in existing social contexts, and it involves iterative cycles of identifying a problem, planning change to the existing situation, trying the planned change, and evaluating its consequences (Argyris et al., 1985, pp. 8–9). AR therefore has a dual imperative: the practical outcomes, which most often target the improvement of organizational settings, and the creation of new knowledge (McKay & Marshall, 2007). AR is also participatory and takes place with, for, and by people in their

everyday lives (Reason & Bradbury, 2006, p. 2).

An AR approach has often been argued for in the context of design practice and research (Swann, 2002). AR has been embedded in service design (Koskinen et al., pp. 83–84), information system design (McKay & Marshall, 2007), and new media and ICT design (Hearn & Foth, 2005). Moreover, PD research has been influenced by AR historically (Spinuzzi, 2005). PD and AR research have also been viewed as complementary: there are AR studies that include a design component and PD studies that revert to AR to address issues beyond the traditional focus of design (Foth & Axup, 2006).

The many similarities of PD research and AR are worth spelling out. They both include a strong political and democratic drive. While the socio-political change that is sought in PD research revolves around the production of an artefact, in applying AR, change is expected to happen from within the organization itself, without the necessary mediation of a designed artefact. PD and AR also both emphasize the interventionist and active role of the researcher in a real-world context, and invite those being researched to take active part in the research. The two approaches both have dual imperatives in that the practical aim of bringing about positive change in the context of research is linked to the aim of generating new knowledge (McKay & Marshall, 2007), thus resulting in “knowledge by doing” (Spinuzzi, 2005). PD research and AR also operate outside the conventional arenas where scientific knowledge is traditionally produced (Argyris et al., 1985; Spinuzzi, 2005). This automatically raises questions of validation, since conventional ways of ensuring the authority of new knowledge, such as testing and measuring, are not applicable. These questions have been addressed somewhat more thoroughly by the AR and the qualitative research community (McNiff et al., 1996; Kvale, 1989) than by PD research. AR has emphasized its departure from the “modernist notion of true knowledge as a mirror of reality” and embraced a rather “postmodern understanding of knowledge as social construction” (Kvale, 1989, p. 19). Such a stance understands validity as socially constructed rather than as the simple outcome of a quest for absolute truth. This shift implies a change in the type of questions one should ask regarding validity. For example, instead of asking “whether the method measures what it is intended to measure”,

the question becomes “does the method investigate what it intended to investigate?” (Kvale, 1989, p. 74).

3.2 The research design

My research design combines constructive and PD research with AR. The research unfolded over a period of six years (see Appendix 1), comprising three iterative phases (see Figure 7). Phase 1 is design-centred and fosters the collaborative production of the Urban Mediator (UM), an online map-based tool for gathering and sharing location-based information (Article 1). Phase 2 takes the UM into the context of use and design-in-use (Articles 2, 3, 5) through three case studies. Finally, Phase 3 consists of reflections that aim to consolidate the initial empirical research results of Phases 1 and 2.

3.3 Phase 1: The collaborative design of the Urban Mediator

The aim of Phase 1 was to explore, together with citizens and city officials, design ideas for digital technology for citizen participation in urban planning. The guiding question during that phase was the following: How can we design a platform for locative digital media production that is inspired by emergent digital media practices such as map-mashups and is open for both citizens and officials to use (Article 1, Botero & Saad-Sulonen, 2010)? A constructive and participatory design approach was used. It enabled the first steps in the collaborative design of the UM.

Phase 1 was undertaken as part of the Arki research group’s activities²³ in the EU-funded research project ICING (Innovative Cities for the Next Generation, 2006–2008). During this phase, I worked in close collaboration with colleagues including social scientists, software and interface designers, as well as other design researchers.²⁴ The research methods used during this phase were taken from PD methodology (Spinuzzi, 2005). They included initial contextual enquiries such as interviews. Later they also included PD workshops organized by the designers/researchers, where scenarios and collaborative prototypes were built and discussed. The prototypes

23.

The Arki research group operates inside the Department of Media at Aalto University School of Arts, Design and Architecture. Arki means everyday life in Finnish. The focus of the group is to understand the co-evolution of digital technology and the practices of everyday life from a design perspective (Arki, n.d.).

24.

The activities and data collected during Phase 1, as well as in Case Study 1 in Phase 2 have also been used by my colleague Andrea Botero as material for her doctoral thesis on design spaces for communal endeavours (see Botero, 2013).

were both paper-based and digital (Figure 10). They evolved through various iterations, which eventually led to the alpha version of the UM, then the 2.0 one, which was used in the three case studies reported here. The different iterations of the UM contained features that had emerged out of the several staged participatory design activities (Article 1; Appendix 1). They also had embedded in them the set of hypotheses that the designers/researchers had brought in (Leinonen et al., 2008), such as the idea of the UM being an “in-between infrastructure” (Botero & Saad-Sulonen, 2010) that crosses over the existing division between professional/official and mundane tools.

Data gathering methods during Phase 1 included taking notes

Figure 7:
The research design

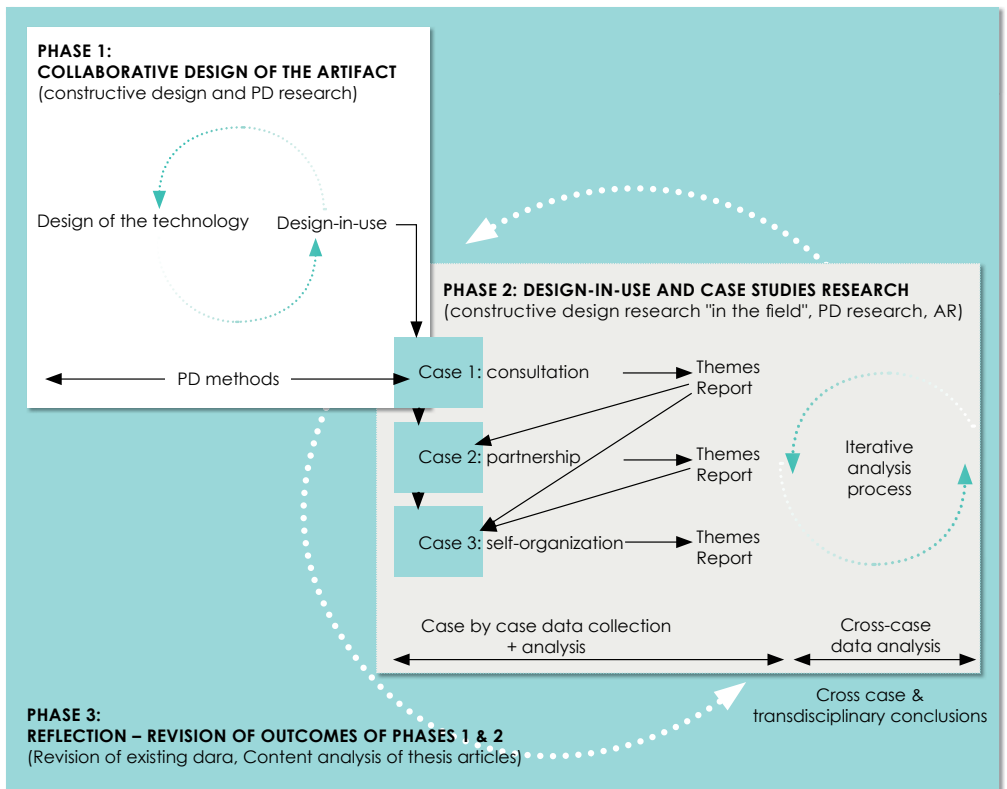


Figure 8:
The front page of the UM Helsinki with its list of active topics, an UM topic view, and a point view



Figure 9:
The list of UM widget creation tools available for a topic administrator and UM widgets embedded in a page from the website of the City of Helsinki Planning Department



THE UM IN BRIEF

The UM is a server-based software package that gives users the possibility to create, obtain, and share locative data and media (the UM points). The UM Points are gathered according to topics of interest (the UM topics) set up and maintained by registered users (citizens as well as city administrations and planners).

The UM uses a map-portrayal service as means for representing location-based information and complements this with a set of UM tools to help process, share, and organize the information. Free form tagging makes categorization possible. UM feeds (e.g. RSS, Atom/GeoRSS, KML) provide ways of exporting data from the UM into other systems, and of importing other sources of data into the UM. UM widgets allow some of the functionality

of UM and the data it contains to be embedded into other webpages.

The UM software is available under an open source license (<http://um.uiah.fi>). Currently there are two active UM instances on our university servers: the UM Helsinki (uses map data provided by the City of Helsinki), and the UM Helsinki Open (uses a freely available map data from the OpenStreetMaps project). The user interface is available for PC and mobile browsers, and a small experimental mobile application was also developed. The UM server side is powered by Web.py, a Python web framework (2.4) that uses MySQL database. Additional code comes from Elementtree, PIL and Pyproject (geodesic calculations and cartographic transformations).

during and after the PD activities. The notes taken by the different members of the research group were shared via a Wiki that was compiled by everyone together, which provided a means to check accuracy. Moreover, the PD workshops were also video recorded and the videos used to cross-check the notes. I also have photographed the paper and pen prototypes produced during the PD activities. These were also used for archival purposes, so that the group members could refer back to them.

I analysed the collected data after each activity, usually in collaboration with my colleagues. These initial analyses provided input for the design sessions of the research group and for the PD sessions with the external participants. The data was also further analysed so that it could be used to inform the various reports submitted as part of the ICING project review process, and it also provided the basis of the first academic articles addressing the design of the UM (Article 1, Saad-Sulonen & Susi, 2007). I later revisited the material gathered during Phase 1 for writing Article 6 (see Phase 3). A detailed overview of the PD and data gathering activities undertaken in Phase 1 is available in Appendix 1.

2006: INITIAL PROTOTYPES

Figure 10:
A collection of UM prototypes and versions²⁵

25.

Many working prototypes were developed for a mobile version of the UM as part of the ICING project activities. These prototypes were not robust enough to be used in the three case studies reported in this thesis.



2007: TOWARDS UM ALPHA



2008: UM V2.0



3.4 Phase 2: Design-in-use and multiple case studies research

Phase 2 concerned the use and further design-in-use of the UM in a real life context. The start of this phase was not clearly defined, as the first examples of design-in-use were situated in the transition between phases 1 and 2. Design-in-use activities only started to take shape when the UM reached a level of maturity that made it possible to use in relatively large-scale participatory urban planning projects.

At first, the research design did not include a strategy for a multiple case study approach, rather, the rationale for this emerged little by little (Yin, 2009). Whereas there were several instances of using the UM publicly – the first one involved using it for reporting sightings of rabbits in Helsinki (see Article 1) – I was still not sure at that time how to progress my own research. The opportunity to embed the design-in-use of the UM in a case of participation in urban planning in the neighbourhood of Malminkartano led me eventually to focus my efforts on participation in urban planning as a context for the design-in-use of the UM, rather than addressing citizen participation in general. The Malminkartano case, which I refer to as Case Study 1, led me to ask the following questions: Does participation in the design of digital technology affect participation in urban planning and how? (See Saad-Sulonen & Botero, 2010; Article 6.)

The review of the outcomes of the Malminkartano case pointed to the limitations of a strict design approach for inducing change into participation in urban planning (Saad-Sulonen & Botero, 2010, Article 6). A better understanding of the mechanisms and dynamics of urban planning was necessary. My exchange visit to the Centre of Urban and Regional Studies of the Helsinki University of Technology²⁶ in 2009 made it possible for me to explore urban planning-related issues in more detail, and review the outcomes of Case Study 1 accordingly (Articles 5 and 6).

At that time, I was collaborating with the Palco research group at the Centre of Urban and Regional Studies, and had the opportunity to become involved in another case study of participation in urban planning, which I will refer to as Case Study 2 (Articles 2, 3,

26. The Helsinki University of Technology, the Helsinki School of Economics, and the University of Arts and Design merged in 2010 to become the Aalto University.

and 5). Whereas Case Study 1 was about participation as consultation, Case Study 2 was about participation as partnership and collaboration. This meant that I now had two cases where the design-in-use of the Urban Mediator was embedded in two different types of participation in urban planning, thus providing the rationale for a multiple case study approach (Yin, 2009). I later added a third case to the multiple case studies, Case Study 3, where the context of design-in-use was participation as self-organization. The three case studies enabled me to explore similarities and differences related to the role of participation in the design of digital technology in three contexts where the type of participation in relation to urban planning was different.²⁷ The comparative study was possible because all cases shared some common elements. They were all embedded in the formal context of participation in Helsinki, which in turn is shaped by the requirements set up in the Land Use and Building Act of 2000 and the democratic structure in place in Finland's welfare state (Article 4). Moreover, all three cases included the design-in-use of the Urban Mediator to some degree. At the same time, an initial comparative study of Case Studies 1 and 2 also made it possible to see that there was a multitude of other tools that had an important role to play, and that the UM was but one of the tools that made up the ecology of participatory e-planning in each case (Article 2). This led me to question my initial understanding of participation in the design of digital technology, which had, so far, been limited to the question of participation related to the design of one digital artefact only. A new research question emerged: What counts as participation in the design of digital technology? Case Study 3 confirmed the results of the first comparison, between Case Studies 1 and 2, and allowed me to more deeply explore other types of participation in the design of digital technology, as well as investigate their relationship to the different types of participation in urban planning (Articles 5 and 6). During Phase 2, design-led action 'in the field' was combined with AR as the emphasis moved towards the need to understand and act upon the context of design-in-use – specifically participation in urban/e-planning (Article 4) – and not only the technology.

27. The public use of the UM in the case of the rabbit sightings, as well as cases reported elsewhere (see e.g. Salgado et al., 2010; Botero & Saad-Sulonen, 2010; Botero, 2013) is not included in the multiple case study approach I chose for Phase 2 because it either does not address urban planning issues per se, or was not sustained because of organizational or funding-related reasons.

3.4.1 Case Study 1 – Consultation: traffic safety planning in Malminkartano (2008–2009)

This case study was undertaken as part of the ICING project activities and was initiated by the ICING City of Helsinki-partner in collaboration with the City of Helsinki Planning Department (CPD) and the Arki research group. The city planners wanted to ask the residents of Malminkartano, a residential neighbourhood in north-western Helsinki, about how they felt about traffic issues in the area, as a part of drawing up new transport plans, a task they were scheduled to start in the near future. It was decided in a joint meeting that the UM would be used for the purpose. A new UM topic was thus created and opened for the residents of Malminkartano to use during May and June 2008. My own engagement spans the period from when the idea was first presented in January 2008 to the public presentation of the final plans in September 2009 before they were accepted by the City Council. I was involved in setting up the project. I also organized the participatory design activities with the planners, in other words I helped create the UM topic and adapt the UM to their needs. I assisted the CPD webmaster in creating the UM widgets and placing them on the CPD website, and I produced instruction documents for operating the UM. I followed up the input of residents to the UM and stood ready, along with my colleagues, to respond to any technical problems. I later also followed up the process of preparing the plans and was a participant observer at the presentations given by the planners to the residents. Finally, I carried out semi-structured interviews with the key actors from the CPD in this project, and I set up an online questionnaire to reach out the residents and ask their opinion on the project.

Detailed descriptions of Case Study 1 can be found in Articles 2, 5, and 6. The full list of activities and data gathered in this case study are available in Appendix 1.

3.4.2 Case Study 2 – Partnership and collaboration: the collaborative design of a neighbourhood yard in Roihuvuori (2009–2010)

This case was initiated by the local Youth Centre in Roihuvuori, a

residential neighbourhood in eastern Helsinki, in collaboration with local stakeholders and Helsinki University of Technology's Palco research group²⁸. The Youth Centre wanted to transform its unused yard into a shared community garden. With project money granted by the City of Helsinki, an architect specializing in participatory planning was hired to draw up a plan proposal through participatory activities with different age groups. To the degree that it was possible, these activities followed the LENA approach developed by members of the Palco research group (Article 3). The UM as well as other community and social media were used to support and expand the face-to-face participatory activities. My own engagement spans the period from the initiation of the project in December 2008 to the early phases of construction planning in Autumn 2010. I took part, along with my colleagues, in the preparatory meetings and contributed to planning the activities and the schedule the project. I planned, together with the youth instructors, several activities targeted at engaging a group of young people in the participatory planning effort. I took part in all the participatory planning activities by helping the architect in charge. I also assisted the architect and the young people in transferring the results of the face-to-face participatory workshops into the UM. I organized a working session with the volunteer webmaster of the neighbourhood website to plan the use of the UM and the other online tools. I later also organized a communication strategy workshop with the representative of the neighbourhood association, the volunteer webmaster of neighborhood website and two youth instructors. I produced, along with a colleague, sets of instructions for using the selected online tools, which we shared with them. Finally, I carried out semi-structured interviews with three main stakeholders (the director of the youth centre, the representative of the neighbourhood association, and the volunteer webmaster). The official opening of the yard took place later in September 2011.

Detailed descriptions of Case Study 2 can be found in Articles 2, 3, 5, and 6. The general list of activities and data gathered in this case is available in Appendix 1. The activities undertaken with the group of young people are listed in Article 3.

28.

The Palco research group has been involved in long-term action research in the area of Herttoniemi, to which Roihuvuori belongs (see e.g. Horelli, 2013). I joined the group during my period as visiting researcher at the Helsinki University of Technology in 2009.

3.4.3 Case Study 3 – Self-organization: a citizen-driven inquiry into traffic safety in Arabianranta (2010–2012)

This case is different than the previous two in that it was initiated by a group of active citizens in Arabianranta, a residential neighbourhood in south-eastern Helsinki, in collaboration with the Helka ry NGO.²⁹ Instead of the planners or the researcher engaging people in participatory activities, it was the people who engaged the planners and researchers in their project. This group of citizens wanted to prompt city authorities to act on traffic safety issues in their neighbourhood. The UM was used, at the suggestion of the Helka representative, to gather information on traffic safety issues from the residents of the area. My own engagement started when I heard of the activities through word of mouth in summer 2008. Later I was invited by the group of active citizens to join their meetings. I described the process that had been followed in Case Study 1 to the active residents, and I showed them how the CPD had categorized the information collected via the UM. I also showed them the different online tools that had been used in Case Study 2 and collaborated with the NGO representative in facilitating their use and adaptation. I also took part in the meetings between the active residents, the NGO representative and the CPD planners. My engagement lasted until autumn 2011, at which point the residents met with the planner for a second time to decide on future plans. I interviewed the planners and one group representative shortly after. Later in 2012, I had an e-mail exchange with the planners to follow up on the situation. They were interested in pursuing collaboration with the active residents.

Detailed descriptions of Case Study 3 are available in Articles 5 and 6. The general list of activities and data gathered in this case is available in Appendix 1.

3.4.4 Data gathering and analysis in the three cases

The data gathered in each case consisted of field notes taken during participant observation, official minutes of meetings (if these were taken), and screenshots of the online platforms used (the UM, CPD website, community and social media). I have also relied on the

²⁹ Helka ry provides a free platform on which many of the local neighbourhood websites in Helsinki run. The activities are partly funded by the City of Helsinki.

collection of e-mail exchanges in each case to cross-check my field notes. I also reviewed, complemented and expanded my field notes by listening to the audio or video recordings of the meetings and interviews. I conducted semi-structured interviews (see Appendix 2) with two to three key actors in each case, keeping a balance between officials/planners and citizen representatives. In Case Study 1, I used an open online questionnaire to reach citizens who had contributed to the UM topic, since contributing to the UM took place anonymously, it was not possible to track them individually (see Appendix 3).

I have followed and gone through all the UM contributions in each case (the points on the topic maps) but have not analysed the texts attached to each point in a mechanical fashion. I justify this choice by the fact that my research does not seek to study an urban phenomenon through the locative responses of informants, nor to prescribe proposals for doing urban planning in response to citizen feedback. It focuses, rather, on examining the relationship between the processes of participation in the design of digital technology on the one hand and in urban planning on the other hand, with a view to generating a better understanding what participatory e-planning is and how it could and should be practiced and researched. I have, however, followed the way the planners (Case Studies 1 and 3), an architect (Case Study 2), and active citizens (Case Study 3) have handled the gathered material and attempted to make sense of it. It was thus necessary for me to go through the contributions gathered via the UM and generate a working idea of what issues they handled. This process also enabled me to follow up whether these propositions had or had not been taken into consideration by the planners.

I first analysed the chosen data on a case-by-case basis, then through a comparative analysis of the first two cases (Article 2), and later, of all three cases (Articles 5 and 6). The analyses followed Miles & Huberman's (1994; pp. 11–12) model of concurrent flows of activities: data reduction, data display, and conclusion drawing/verification. I coded the data according to themes that were first associated with the evaluation of the UM, and general design considerations. I then started to include other themes such as bricolage, digital media production and sharing, support activities, urban planning processes, actors and their roles, and the constellation of the available

tools. Data reduction was made possible by focusing on the recurring themes in the three cases, which were then also used in the next analytical iterations in Phase 3.

Following in the traditions of AR and PD research, my own role as a researcher has been one where I am actively involved in the cases studied, even intervening to various degrees in setting them up (Case Studies 1 and 2). I also facilitated activities and acted as a participant observer. However, my role and the influence I have had on the unfolding of the study in general has always been balanced by the fact that many of the activities I have undertaken have been in collaboration with others. In Case Studies 1 and 2, I collaborated with fellow researchers and designers. Moreover, in all three cases, the external participants were always more than informants; they were involved in design, decision-making, and the evaluation of discussions and activities. I have generally done my best to be transparent about my role as a researcher and about the fact that whatever data generated and collected in the different cases might end up as part of my doctoral research. I always asked permission to take pictures, produce audio recordings of meetings or interviews, and to take notes. The results of the different phases of analysis have also been shared with peers and presented to various communities, including representatives of the City of Helsinki, residents, and local political figures, as well as to the national and wider research communities.

In sum, throughout the study I have aimed at validity through all the different means available to researchers engaged in participatory endeavours (Horelli & Vepsä, 1995). I have aimed, to the best of my capacities and within the time constraints imposed by the requirements of actually developing the UM, at *systematic data collection and analysis*. I have also used different sources of information (*triangulation*). I have engaged in peer and public briefings and presentations as a means to share results (*communicative validation*). I have also engaged in *critical reflection*, alone and with peers, especially in the process of translating research findings into published articles.

As means of ensuring validity, I have also aimed at long-term engagement. However, this has proved to be challenging. The limited timeframe of the various funding schemes for undertaking the different phases of the study, as well as the need to dedicate time to writing

the actual doctoral thesis during the funding periods, forced me to eventually cut ties with the people involved in the different cases I was following. This has led me to reflect on my own accountability towards the other people who were involved in the cases for reasons related to making their own everyday life better. To limit the effect of my tight timeframe on the cases themselves, I have aimed above all at transparency and have informed the other stakeholders of my situation. To ensure the validity of the research even after I had more or less detached myself from the cases, I occasionally followed up their situations, especially in Case Studies 2 and 3. I have checked the Roihuvuori local website for any information about the community yard until the year 2012 (Case Study 2). I also contacted, in 2012, the traffic planners involved in Case Study 3 to enquire about the latest developments. Finally, in the last phase of the empirical study, Phase 3, I also ensured the validity of the whole study by taking the opportunity to thoroughly reflect and review the outcomes of Phases 1 and 2.

3.5 Phase 3: Reflection and revision of outcomes of Phases 1 and 2

Whereas Phases 1 and 2 involved production, action and observation, Phase 3 is about reflection. Here, I return to the outcomes of Phase 1 and the question of technology design in light of the results of Phase 2. I address the relationship between the design of technology, in particular the EPD approach articulated in Article 6, and the processes of participation in urban planning.

After these first reflections, I review the whole research process and the data. I also conduct a content analysis of the six articles included in the thesis. I had started coding my articles with the code developed in Phase 2, but adjusted it through several iterations while re-articulating the research questions. The questions that guide the final phase are: How is participation in the design of digital technology apparent in the three cases? How does it relate to and affect the processes of participation in urban planning? What does the relationship between participation in the design of digital technology and participation in urban planning imply for participatory e-planning? The answers to these questions are reported in Chapter 4 of this thesis.



4. COMBINING PARTICIPATIONS

4. Combining Participations

The goal of my research has been to investigate the need for a shift in the understanding of participatory e-planning, so that it better fits the realities of the current digital age. So far, participatory e-planning – and indeed e-planning in general – has approached information technology in a conventional manner. This conventional approach views information technology as a tool for professionally trained experts, to be used in work situations. Moreover, information technology is also viewed as ready-made solutions that are brought, as they are, into the context of use. In this view, no room is left for users to participate in the design of the technology. However, as I stated in the introduction, information technology has evolved, become mundane, and open for casual use. In Chapter 2, I introduced the concept of participation as design-in-use as a tool for analysing current realities in digital production and use from a participation perspective. In the current context, Web 2.0 and social media technologies offer a certain amount of flexibility – albeit often far from enough – for users to adapt them to their own needs and to create connections between them. The design of technology thus happens, to some degree, through casual design through use, or design-in-use. The recognition of design-in-use has also lately been visible in IT design, as the latest International Symposium for End User Development (IS-EUD) conference series has shown (e.g. Dittrich et al., 2013).

The concept of participation as self-organization – which has only recently begun to be introduced to the discourse of urban planning (Boonstra & Boelens, 2011) – is also important for understanding

the realities of digital life and citizen participation in the digital age. There have, of course, always been advocates of citizen action targeted at making everyday living environments better, often bypassing the formal participation and urban planning processes that were in place (Jacobs, 1993; Hernberg, 2012). In the present context, such activities are greatly facilitated by the new mundane technologies available and indeed, by their potential for design-in-use (Horelli et al., 2013).

The changes in information technology and their repercussions on the way people relate to their everyday environment and seek to make it better suggest that participatory e-planning could be shifting towards a new reality. A potential new locus for participatory e-planning is situated at the intersection of participation as design-in-use and participation as self-organization (Figure 11). Elsewhere, the combined efforts in design-in-use and self-organization have already played an important role, such as in phenomena like the Ushahidi crowdsourcing efforts or the Arab Spring.

The matrix of multiple participations described in Chapter 2 makes it possible to explore various combinations of different types of participation that expand the locus of participatory e-planning and move it away from its current position (Figure 11). The three case studies I have chosen in my research together provide an example of a series of combinations of different types of participation, where the participatory design and design-in-use of the UM is embedded in three successive cases of consultation, partnership, and self-organization in Helsinki.

In the following, I will report the main outcomes of the empirical study, which I have reviewed by addressing these questions:

- How is participation in the design of digital technology apparent in the three cases?
- How does it relate to and affect the processes of participation in urban planning?
- What does the relationship between participation in the design of digital technology and participation in urban planning imply for participatory e-planning?

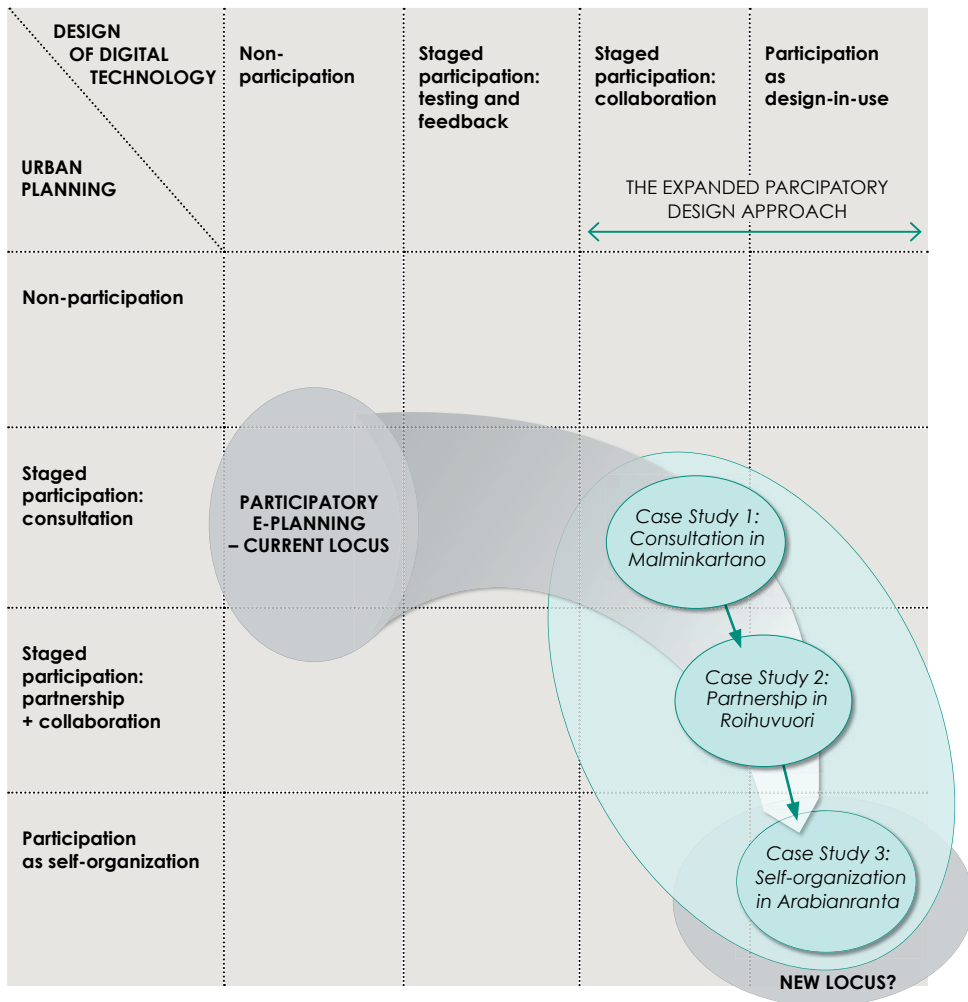
I will start by opening up the concept of design-in-use and reviewing the EPD approach³⁰ that I propose for designing for participatory e-planning. I will then analyse the impact of the EPD approach on the three different types of participation in urban planning that were apparent in the three empirical cases. I will finish with the implications that the relationship between participation in urban planning and my proposed approach for participation in the design of digital technology has on participatory e-planning in general.

30. The first version of the EPD approach is described in Article 6.

4.1 The Expanded Participatory Design (EPD) approach

The first design activities that I initiated, and in which I took part, focused on developing the UM. One of the aims of developing the UM was to explore the potential of making use of user-generated locative digital media in the context of citizen participation in general, and urban planning in particular. We took inspiration from the various map mashups that were emerging at the time (Saad-Sulonen, 2008). The hypothesis embedded in the design of the UM was that it is an “in-between infrastructure”, which is equally available to both citizens and officials for them to share locative media (Botero & Saad-Sulonen, 2010; Article 1). As such systems did not yet exist, we had to construct one. We started with staged PD activities, such as workshops and prototypes, as a way to initiate design but also lay the ground for future design-in-use activities (Article 1, Botero & Saad-Sulonen, 2010). The UM was conceived to be adaptable through use. The design-in-use activities started taking place as soon as the alpha version was up and running (Article 1) and continued through the three case studies reported in this thesis. We named the strategy we used for designing the UM the Expanded Participatory Design approach (EPD, Article 6), as it expands the original PD approach beyond the early design phases and into design-in-use (Dittrich et al., 2002). EPD can be extended over a long period of time and take place in different cases where the design-in-use of a chosen technology can be further pursued (Article 6). The first set of design-in-use activities associated with the UM included the co-design of features (Case Study 1) as well as configuration and adaptation activities (Case Studies 2 and 3). They enabled the designers/researchers and the other stakeholders

Figure 11:
The current and potential new loci of participatory e-planning, as well as the area of operations of the empirical study



The locative media analysis activities in Case Study 2 (partnership) were mainly limited to the work done by the participatory planner in charge of the face-to-face activities. He translated the ideas of the different age groups involved in the workshops into a hand-drawn sketch plan for the neighbourhood yard, in the traditional participatory planning fashion. The locative media analysis activities in the consultation example (Case Study 1) and the self-organizing one (Case Study 3) were surprisingly similar. In both cases the planners did not wait for the UM media to be transferred to their department's GIS or archive system but examined it as soon as they received it, either directly from the UM or by using Excel and Google Maps. The possibility to get acquainted with the 'raw material' as it was generated by citizens helped the traffic planner in Case Study 1 to directly test some of the received feedback and ideas by including them in the plan. In Case Study 3, even though the location of some of the comments on the UM was not exact, they gave the planners a general understanding of the issues at hand. Moreover, the group of active citizens in Case Study 3 had decided to analyse the gathered media themselves and asked for help from the Helka ry representative and myself (Articles 5 & 6). I showed them the way the GIS specialist and participation coordinators in Case Study 1 had categorized the media gathered on the UM. They then decided to take inspiration from these categorizations and use similar ones in their own case. The experiences with locative media analysis in the two cases show that, complementary to scientific and professional analysis of locative data, such as the work of Kahila and Kytä (2006), which is based on a thorough analysis of data collected using WebGIS, both raw data and quick analyses (that circumvent the challenges associated with more thorough quantitative and qualitative locative data analysis) also help planners and citizens alike to address the issues they are interested in (see also Rantanen & Nummi, 2009, p. 64). Acknowledging the relevance of other ways of handling raw data, as well as lower-threshold types of analyses, opens the door for citizen science-like activities to be recognized as potentially useful for urban planning (Devisch & Veestraeten, 2010). This, however, does not mean that more detailed analyses, whether quantitative or qualitative, are not needed, but it highlights the possibility for different types of use of the data,

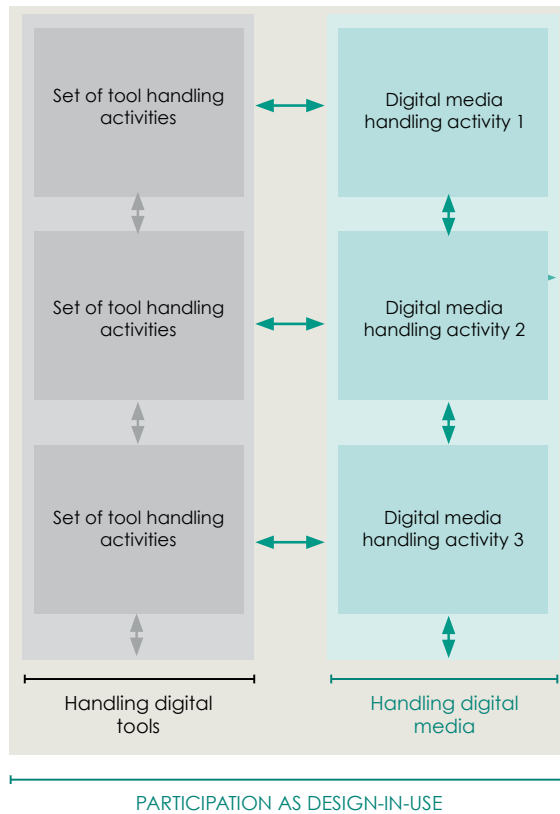
especially when the locative data gathered is not excessively big.

The information dissemination activities included advertising the possibility to participate in urban planning and keeping others informed of the participation and planning process through textual reports or audiovisual documentation. These activities were roughly similar in all cases and a variety of tools were used (Table 4). Similar activities have also been reported elsewhere, for example by Evans-Cowley (2010) in cases in the UK and the US related to networking and mass self-communication in urban planning, as well as by Staffans et al. (2010) in Espoo, Finland. It is interesting to note here that despite some recognition of the importance of information dissemination activities on a practical level (Horelli, 2002), it has not been widely discussed in collaborative planning. Even collaborative and communicative planning pioneer Judith Innes does not mention information dissemination in relation to any of the five types of information necessary in that type of planning (Innes, 1998). The focus seems to have so far remained on communication during staged participation activities and on the role of information in the deliberation process.

Each of the media handling activities mentioned previously necessitated one or several design-in-use activities. In Articles 5 and 6, I have identified the following design-in-use activities: *choosing* one or several tools to support the activity, *configuring* the tools and *adapting* them to the needs of the situation, and finally, *creating connections* between the different tools that support either similar or different media handling activities. Such design-in-use activities have been identified elsewhere, in contexts as varied as small companies (Robertson, 1998), communal endeavours (Botero, 2013) and audiovisual creative reuse (Botero et al., 2010). They are in fact activities relating to handling digital tools. The activity of creating connections between the different tools is particularly interesting, as it resembles that of bricolage through information sharing identified by Jung et al. (2008) in the context of the personal ecologies of digital devices. In the three empirical cases, bricolage supports the consolidation of a shared ecology of tools, bringing official and unofficial, as well as professional and amateur, tools together³¹ (Articles 4 & 5) through the use of micro-level building blocks – such as text, images, HTML

31. It is important to remember, however, that non-digital tools are also important. In all the three cases flyers were used for information dissemination, in particular to advertise the possibility of participation in the concerned neighbourhoods (Articles 4 & 5).

Figure 13:
Operating with the digital means being engaged in the interconnected activities of handling digital media and handling digital tools



links, iframe code, CSV (comma-separated values) formats and RSS feeds (Article 2).

In sum, each case called for a series of digital media handling activities, which, in turn, required digital tool handling activities to support them (Figure 13). The two types of activities, digital tool handling and digital media handling, are closely related. Together, they constitute a way of operating with everything digital, (whether code, public interfaces, digital media content, apps or devices) thus expanding further the understanding of participation in the design of digital technology. However, whereas the three cases reported here focused in particular on only three types of digital media handling

activities,³² it is important to keep in mind that other media handling activities might take precedence in other cases, such as online deliberation³³ (e.g. De Cindio et al., 2010) or visualization (Foth et al., 2009).

4.1.2 Support from the outside and inside

Even though the three cases highlighted a series of activities associated with operating with the digital, challenges did remain. For example, several of the key stakeholders in each of the three cases – citizens as well as planners – experienced difficulties in producing informative texts to be published online as a way to disseminate information about the participatory processes taking place (Article 5). Furthermore, handling new tools such as the UM, popular online map platforms, online video broadcasting platforms and even social media was not straightforward for all (Articles 3, 5, 6). Finally, tinkering with technological building blocks, such as HTML, RSS and CSV, remained the domain of the webmasters active in each case (Article 2) and even they (especially the volunteer webmaster of the neighbourhood website in Case Study 2) needed help with that. Therefore, I want to introduce next the importance of media and technology support in participatory e-planning.

In the three cases, the difficulties encountered in operating with the digital were attended to by support activities such as *facilitation* provided by actors external to the communities of practice³⁴ active in each case (Articles 1, 3, 6) and *stewardship* provided by members of the communities of practice (Article 6).

Facilitation was undertaken by external helpers, such as the researchers and designers engaged in participatory activities all through the three cases, and the Helka ry representative who worked with the group of active citizens in Case Study 3 (Articles 5, 6). The role of the researchers and designers was governed by the choice of methodology for the development of the UM (see Chapter 3). Whereas participatory design tools and techniques supported staged participation activities (Articles 1, 6), action research (Articles 3, 6) required an ‘on the spot’ facilitation role. The researchers and members of the UM design team offered technology support for adapting the UM (Article 6) as well as choosing, configuring, adapting and connecting other

32.

A conscious decision was taken during the development of the UM to explore the potential of locative media gathering and sharing, inspired by the map mashups that had just started to appear at that time. For example, we did not invest effort in developing it in the direction of an online forum.

33.

Case Study 2 witnessed some moments of online deliberation, when the neighbourhood yard case was discussed on the neighbourhood website (Article 5). I did not include these in the above analysis because they were marginal activities compared to the others reported. Moreover, they did not clearly appear in the other cases.

34.

I choose here to use the term ‘communities of practice’ because I focus on the learning that happens within such groups as the CPD employees involved in Case Studies 1 and 3, the working group in Case Study 2 and the group of active residents in Case Study 3 (Wenger et al., 2009). The different communities of practice can also form one community of interest. This was evident in Case Study 3, with the interests of the CPD planners, the active residents and the external facilitators converging through collaborative work. I will return to this in section 4.3.

tools, such as Google Maps, online video broadcasting platforms and audio recording tools (Articles 3, 5).

Similar to the role of the participatory researchers and designers was the facilitation provided by members of the NGO Helka ry in Case Study 3. At that time Helka ry was involved in a project where they explored the concept of the 'Caddie'³⁵, a metaphor taken from golf (Tulikukka, 2012). They saw their own role as that of a caddie who supports local, active citizens but does not "play the game for them". In Case Study 3, the Helka Caddie helped the group of active citizens to choose the UM, set up a topic on it, advertise the possibility to share information regarding traffic safety on the UM, analyse the media and data gathered, and organize the meetings with the planners. The Helka ry IT support person also provided additional help (Articles 5, 6).

In addition to external support provided in the form of facilitation, support was also provided in Case Studies 1 and 2 by members of the diverse communities of practice engaged in participatory e-planning. I borrow the term "technology stewardship" from Wenger et al. (2009) to refer to this type of support activity that happens from the inside.³⁶

"Technology stewards are people with enough experience of the workings of a community to understand its technology needs, and enough experience with technology to take leadership in addressing those needs. Stewardship typically includes selecting and configuring technology, as well as supporting its use in the practice of the community." (Wenger et al., 2009, p. 25).

In Case Study 1, one community of practice consisted of the CPD employees engaged in the participatory project. The CPD webmaster helped the traffic planner and the participation coordinators go through the UM media and data. She showed them how to export the data as CSV and view it as an Excel table on their own desktops, using the software set up by the City of Helsinki for its employees. She also handled the UM widget's iframe code and embedded it to the project's page on the CPD website. In Case Study 2, one community of practice consisted of the Roihuvuori residents interested in the fate

35. "Caddies" was the name of the EU project in which the Helka ry NGO was involved. It took the analogy from golf, where 'caddies' are people who carry the clubs of the golf-players – and maybe even find the best clubs for them – but who never play the game for them. The playing should always be left to the players themselves (Tulikukka, 2012; p. 81).

36. Nardi and O'Day (1999) have also identified a similar role in the organizational context and refer to it as the "gardener" role.

of the neighbourhood yard. There, the volunteer webmaster of the neighbourhood website acted as a the technology steward. He created (with help from the designers/researchers and the Helka ry IT support person) an archive page on the local neighbourhood website, provided the links to all the UM topics of the different age groups, embedded the online video broadcast widget code and coordinated information dissemination as the Roihuvuori Facebook page administrator (Articles 2, 5). In Case Study 3, none of the active citizens had enough media or technological know-how, and technology support came only as facilitation from outsiders.

The facilitation and stewardship activities, which were witnessed in the three cases, enabled social learning (Williams et al., 2005) by empowering the engaged stakeholders to concretely work with media and technology, and to develop an understanding of what acting with them entails. Media and technology facilitation and support complemented facilitation and support provided in urban planning, for example by the participation coordinators of the CPD, or participatory urban planners. One outcome was the acquisition of wider digital citizenship skills related to media, technology, and urban planning (Article 3).

Whereas staged participation has conventionally seen the role of the expert designer (or indeed planner) as that of facilitator and orchestrator, the three cases have blurred this view in two ways. First, the expert designer's role is no longer limited to the staged participation activities but extends to facilitation that is provided during design-in-use. The boundaries between staged participation and facilitation in design-in-use get blurred (Figure 14). Second, facilitation

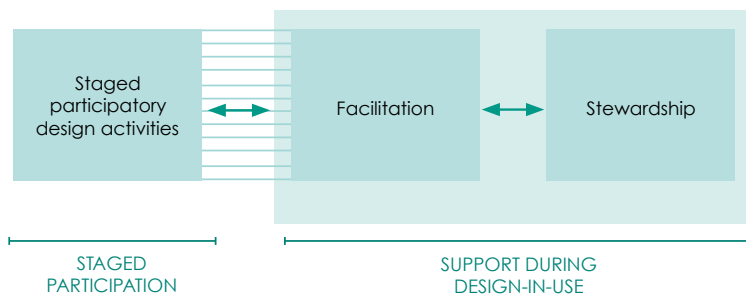


Figure 14: Facilitation and stewardship activities are interconnected and connect to staged participation activities

Figure 15:
The revised EPD approach takes into consideration the series of design-in-use as well as staged participation activities

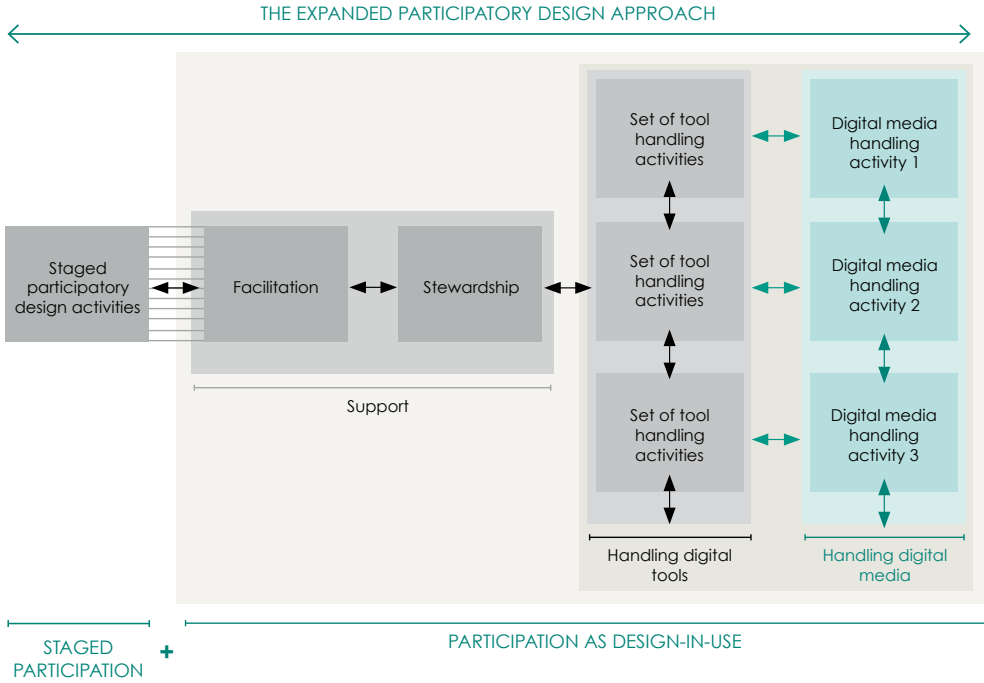
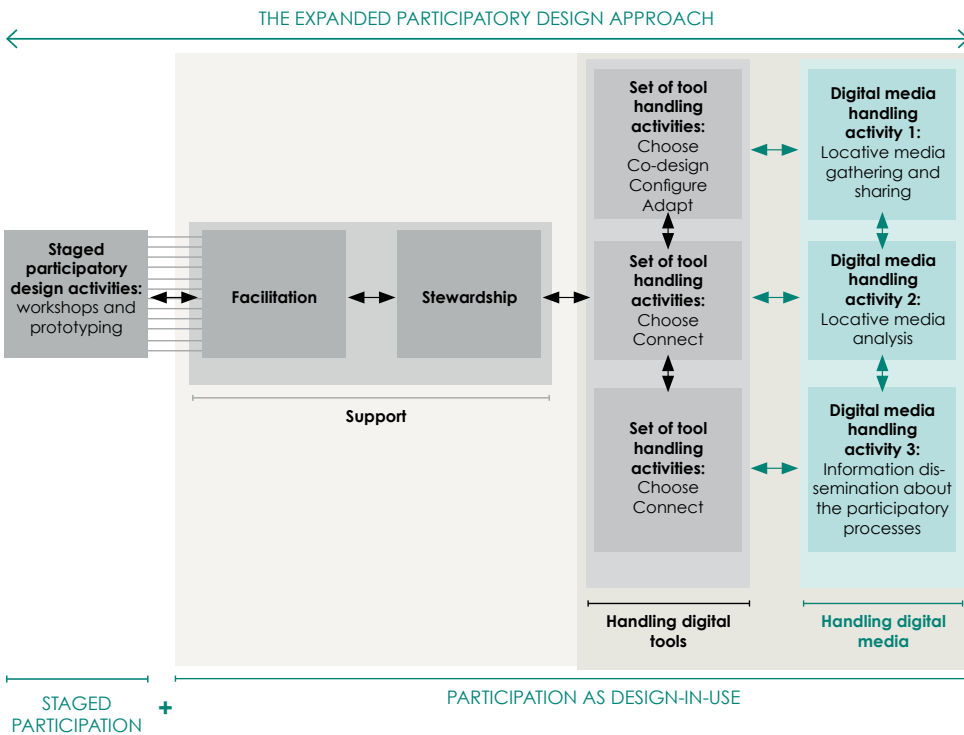


Figure 16:
The EPD activities in Case Study 1 (consultation)



is no longer restricted to experts but becomes stewardship by members of the communities of practices involved, who already possess some media and technology skills.

Much has been written about the rise of those who are comfortable operating with the digital. They have been labelled “digital natives” (Prensky, 2001; Staffans et al., 2010), “pro-ams” (Leadbeater & Miller, 2004), or “expert amateurs” (Paulos et al., 2011). Indeed there is a younger generation of active citizens who are mastering “mass self-communication” (Castells, 2007) through social media and who, through these skills, are challenging the way issues traditionally handled by urban planning are being approached (see e.g. Seppälä, 2012 and Tulikukka, 2012, for recent examples of this phenomenon in Helsinki). Also, Open Data and do it yourself (DIY) digital culture are growing, with various technology enthusiasts suddenly being at the forefront of activities that intimately relate to wide societal issues (Poikola et al., 2010). However, as the empirical cases have shown, the digital culture of the pro-ams and digital DIY is still unevenly spread. There is a ‘digital divide’ of sorts in place, even in a technology-savvy society such as Finland’s. The discrepancies in digital skills that exist across the population can nevertheless be addressed through activities of support provided by both external professionals and members of the communities. The role of facilitators and stewards is thus important as it provides learning opportunities for those with less skill and also for ‘lurkers’. It is also important that those with better skills, including technology enthusiasts, should recognize that they could act as stewards instead of retaining the ivory tower position of “high-tech scribes” (Fischer, 2011, p. 53). However, effort is needed to find ways of transferring knowledge, either directly or through a support type of mediation.

4.1.3 Design-in-use and the EPD approach revisited

Extending design-in-use to include the variety of activities for handling digital media and tools, as well as support activities, implies a review of the EPD approach. The reviewed EPD approach thus consists of a series of interconnected staged and design-in-use activities (Figure 15).

Figure 17:
*The EPD activities
 in Case Study 2
 (partnership)*

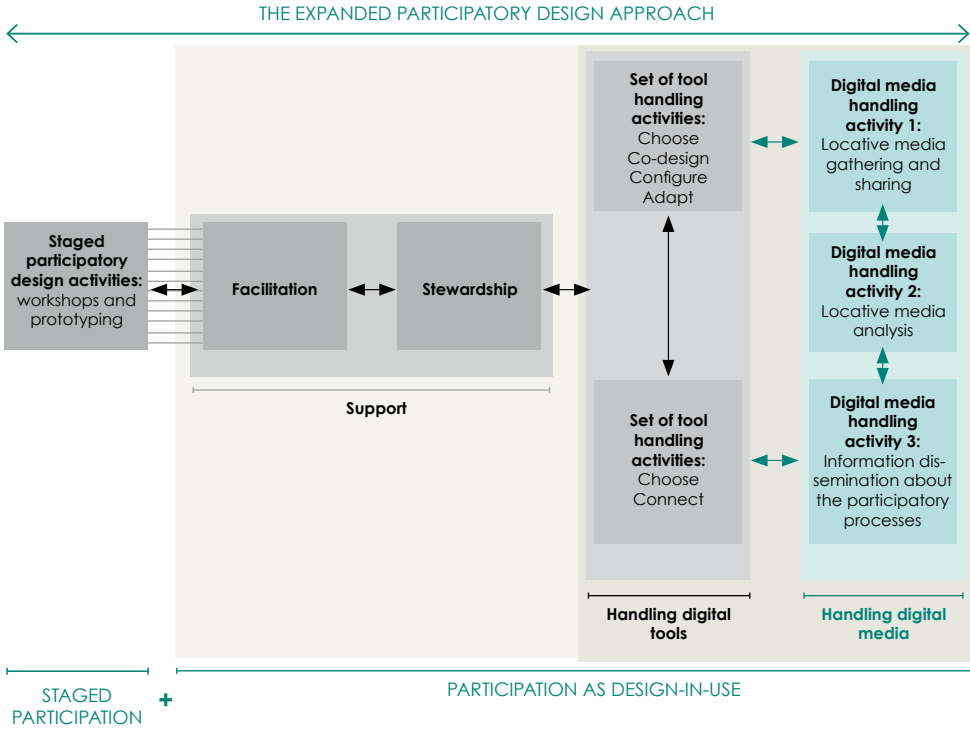
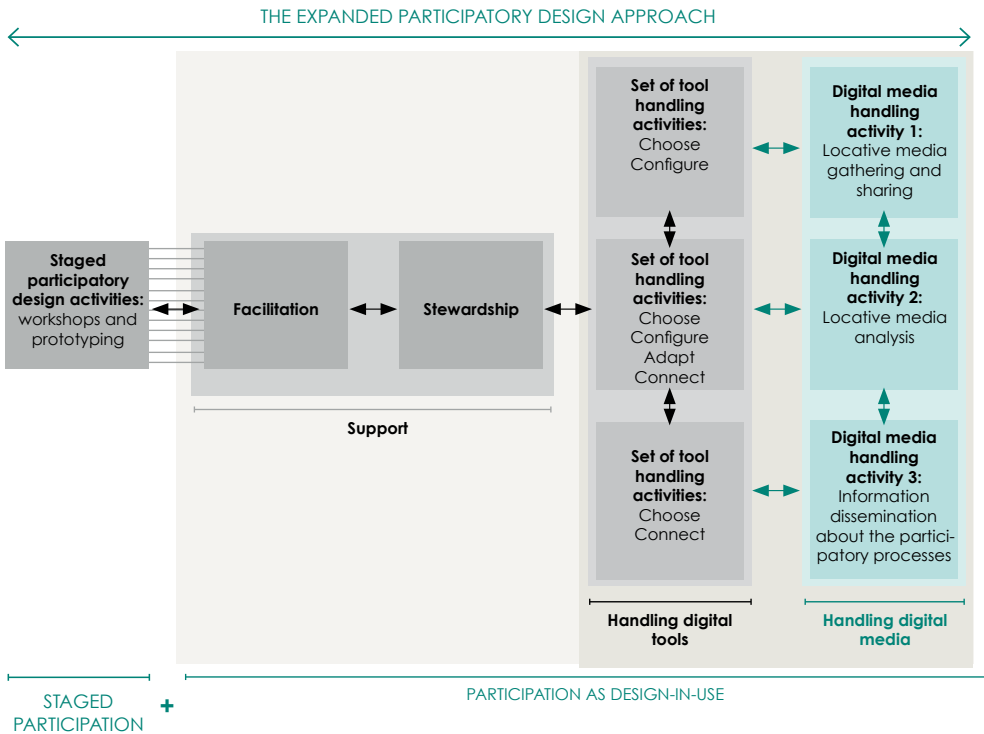


Figure 18:
*The EPD activities
 in Case Study 3
 (self-organization)*



Staged and design-in-use activities no longer target a singular technology that is seen as being a solution to participation in urban planning in itself. Rather, these activities support the formation of an ecology of interconnected tools that answers the needs of digital media handling. The first elements of a socio-technical infrastructure of participatory e-planning are thus put in place, with a variety of actors and tools coming together around co-produced and shared digital media (Articles 2, 5 & 6; Table 4).

Finally, by looking in detail at the activities of staged participation and design-in-use of the technology in each of the three case studies, it is possible to see that these activities were very similar (Figures 16, 17 and 18). Minor differences are apparent in the sets of tool handling activities associated to each media handling activity (e.g. there were no digital tool handling activities associated with locative media analysis in Case 2, see Figure 17). Moreover the tools used and some of the challenges encountered (e.g. the difficulty of producing an explanatory text) are also similar in the three cases (Article 6). This similarity hints at a new type of symmetry in participatory e-planning between planners and citizens. Planners and citizens are not only equally positioned as users of particular locative technologies (Kahila, 2013), but share a wide palette of digital tools and engage in similar and complementary media handling activities.

4.2 The impact of EPD on participation in urban planning

In the previous section I have described the different facets of design-in-use as they appeared in the three empirical cases. Consequently, and in light of the empirical results, I have reviewed the EPD approach. In this section, I will analyse the way the reviewed EPD approach affects participation in urban planning, first on a case-by-case basis and then across the three case studies. However, before reporting the results of the analysis, I will first return to the context of Helsinki in which the three cases were located. Each case was either directly embedded in or was in some kind of relationship with the context of formal participation and decision-making (Case Studies 1 and 2, and Case Study 3 respectively) in place in this city (Article 4, Figure 19). At the time Case Study 1 was undertaken, citizen participation in

Table 4:
The actors involved in participation in the design of digital technology in the three cases

TYPE OF PARTICIPATION	ACTIVITIES	ACTORS	TOOLS
Handling digital media	Locative media gathering and sharing	<ul style="list-style-type: none"> - Citizens - Planners - Participation coordinators - Media and technology facilitators (designers) - Technology developers 	<ul style="list-style-type: none"> - The UM
	Locative media analysis	<ul style="list-style-type: none"> - Planners - Citizens - Participation coordinators - Geographic information systems (GIS) professionals - Officials who handle citizen feedback (Registry office employees) - Media and technology facilitators (designers, NGO representative) and stewards (webmasters) 	<ul style="list-style-type: none"> - The UM - Google Maps - MapInfo (GIS) - Excel - Prints of the UM and Google Maps - Registry Office archive
	Information dissemination	<ul style="list-style-type: none"> - Citizens - Planners - Participation coordinators - Media and technology facilitators (designers, NGO representative) and stewards (webmasters, Facebook page administrators) 	<ul style="list-style-type: none"> - The CPD website - “Plans on the map” portal - IRC-galleria - Facebook - Local neighbourhood websites - Picasa - Video broadcast platforms
Handling digital tools	<ul style="list-style-type: none"> - Choosing - Co-design - Configuring and adapting - Connecting 	<ul style="list-style-type: none"> - Technology developers - Media and technology facilitators (designers, NGO representative) - Stewards (webmasters, Facebook page administrators) - Citizens - Planners 	<ul style="list-style-type: none"> - UM admin features - UM toolbox - CSV - RSS - HTML
Support	Digital media and technology support	<ul style="list-style-type: none"> - Media and technology facilitators (designers, NGO representatives) - Media and tech savvy community members as ‘technology stewards’ 	<ul style="list-style-type: none"> - How To instructions - Face to face, phone, e-mail exchange
Staged participation	Workshops, prototypes	<ul style="list-style-type: none"> - Media and technology facilitators (designers) - Citizens - Participation coordinators - Planners - Other stakeholders 	<ul style="list-style-type: none"> - Post-it notes - Prints of UM interface - Scissors - Markers

Helsinki was possible either during the stage of public presentation of the plans – meaning after the plans had already been drafted – or by sending feedback, at any time, via the Registry Office, which then forwarded it to the planners concerned (Article 4). Later, in 2010, the ‘Plans on the map’ online map-based consultation tool was opened but remained, until the time of writing this thesis, solely a tool for officials and planners to initiate discussion on issues of their choice.

Case Study 1 was very much a textbook example of the formal participation process as it is practiced in Helsinki. However, as was reported in Article 6, opening up participation in the design of digital technology also opened up the possibility to experiment with changes to the formal process of participation. In Case Study 1, the timing of participation differed from that in the formal process: for the first time participation was possible at the same time that the plans were being drafted by the traffic planner (see Figure 20).

The rapidity of setting up the UM, circumventing the bureaucratic processes in place and the rigidity of working with official technology, as well as the possibilities for quickly co-designing new features or adapting existing ones, made it possible to open up participation through locative media gathering and sharing during the phase of preparation of the plans. The PD workshop organized for the planners at the beginning of the case helped them understand the potential of using such an adaptable technology. The traffic planner was also, for the first time, able to follow the incoming contributions in real time and could integrate them into her plans. Additionally, by creating connections through information sharing (Jung et al., 2008) between the UM and the analytical tools in use at the CPD, it was possible to also ensure that the gathered locative media would be

Figure 19:
A schematic representation of the formal process of participation in Helsinki³⁷

37.
It is also possible for citizens to directly contact planners or file initiatives anytime. Moreover, citizens can also engage in citizen activism outside the formal process (petitions, media pressure, lobbying).

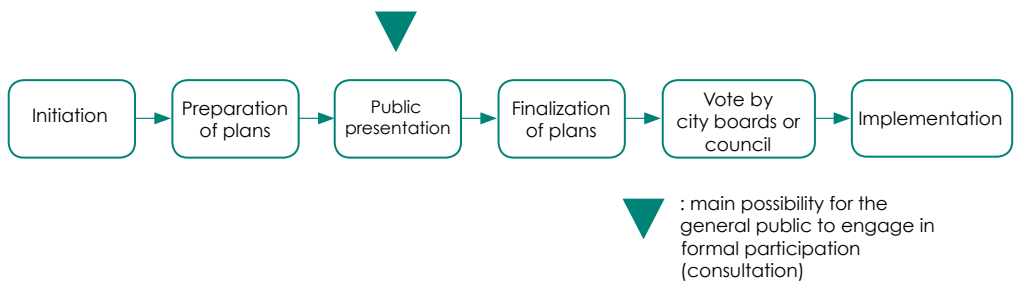
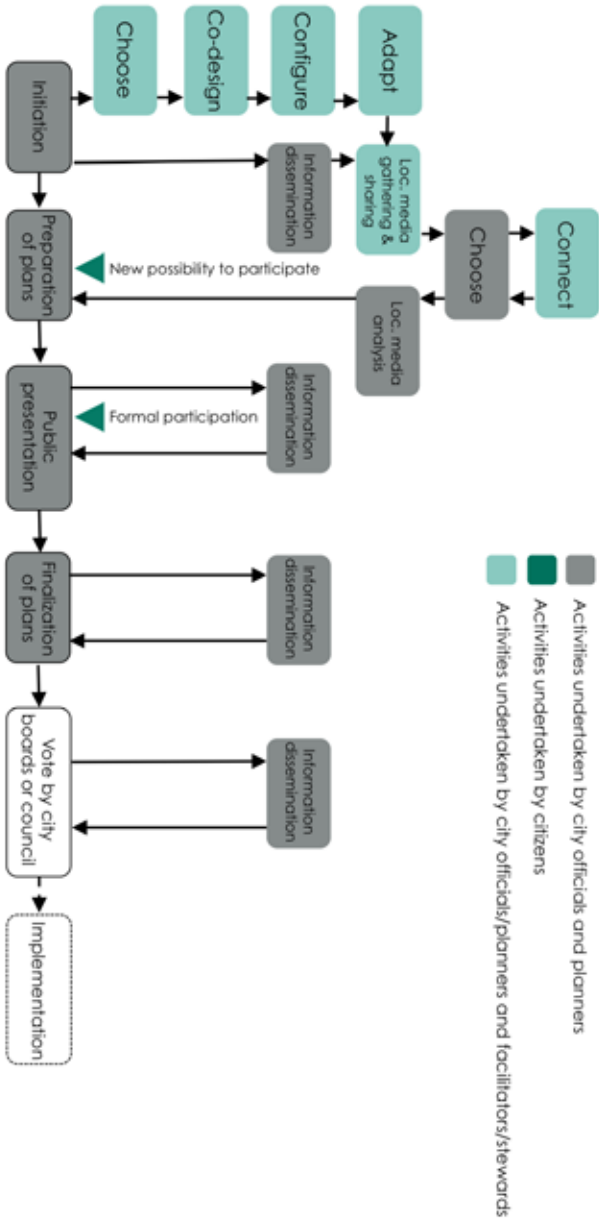


Figure 20:
*Digital media
 and tool handling
 activities
 in Case Study 1
 (consultation)*



available for further analysis and later use by the CPD.³⁸

Finally, the possibilities left open for design-in-use enabled the webmaster of the CPD to customize features of the UM as the public participation project was being put in place (Articles 2, 6). In Case Study 1 the EPD approach thus *opened up possibilities to rethink traditional consultation in terms of the timing of participation* (Articles 5, 6). These results are in line with those of Pipek et al. (2000) and Nuojua et al. (2008), who have also examined the effects of a participatory approach to the design of digital technology on participation in urban planning.

In Case Study 2, the change incurred in the formal processes of participation was more the result of the approach taken to urban planning – partnership and collaboration – than that of the approach to participation in the design of digital technology (Article 3; Figure 21).

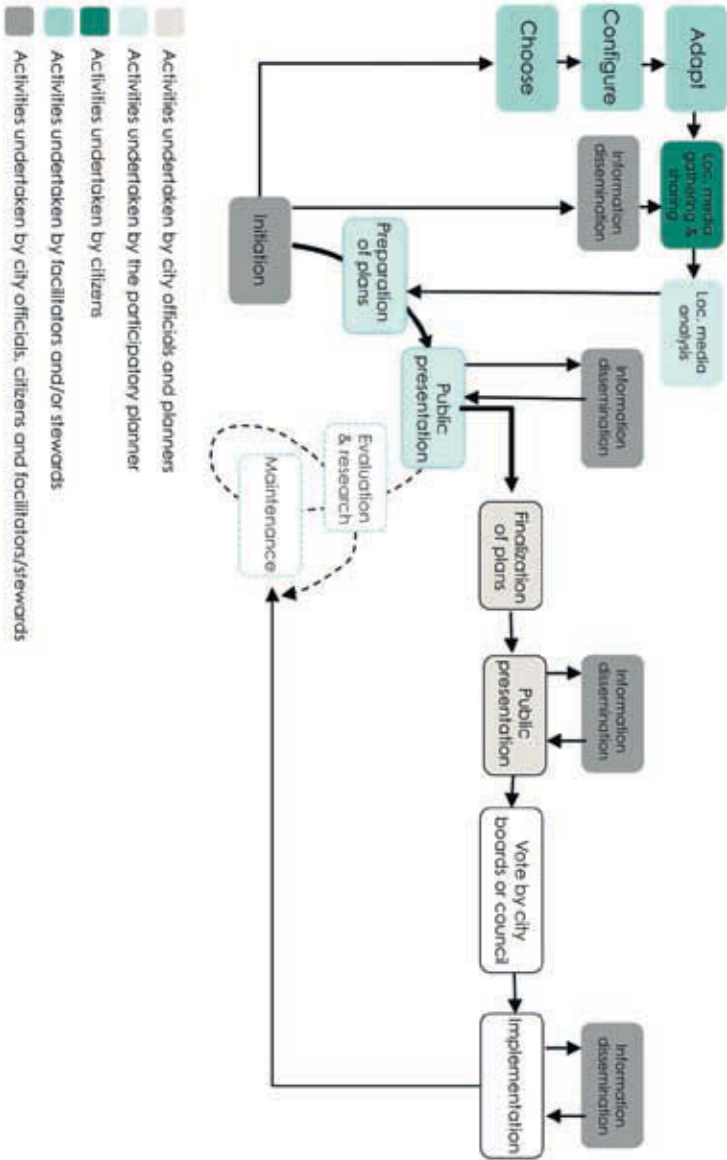
The EPD approach did nonetheless affect the partnership approach to urban planning. It *expanded and complemented the traditional face-to-face participatory planning activities* that had been staged by the participatory urban planner engaged in the project to target different age groups (Article 3). The formed ecology of tools made it possible to invite those who could not take part in the face-to-face workshops to comment on the proposals and provide their own contributions. It also made it possible to publish the results of the workshops, and their documentation, as well as the whole process of participation activities, thus creating a connection with different communities. As the process of the redesign of the yard moved to the phase of the preparation of the final plans, the funding bodies in the City of Helsinki decided to revert to the formal processes of planning and they engaged a landscape design company to finalize the design of the yard. Thereafter possibilities for participation reverted to the official public presentation of the plans, decision-making and, finally, implementation. Some level of information dissemination continued but remained minimal. Participation in the production and design of digital media and technology decreased as the level of participation in urban planning also decreased. This also shows the interconnectivity of these two types of participation.

In Case Study 3, the participation processes happened outside any formal process, without any assurance that their outcome would be

38.

In this case it was the UM's 'Export as CSV' feature, which was developed during the rabbit case (Article 1), that made it possible to export the media collected on the UM as a CSV file. The planners then used the CSV file to analyse the material on Excel spreadsheets and on their MapInfo GIS system (Articles 2, 5, 6).

Figure 21:
 Digital media and tool
 handling activities in
 Case Study 2
 (partnership and
 collaboration)

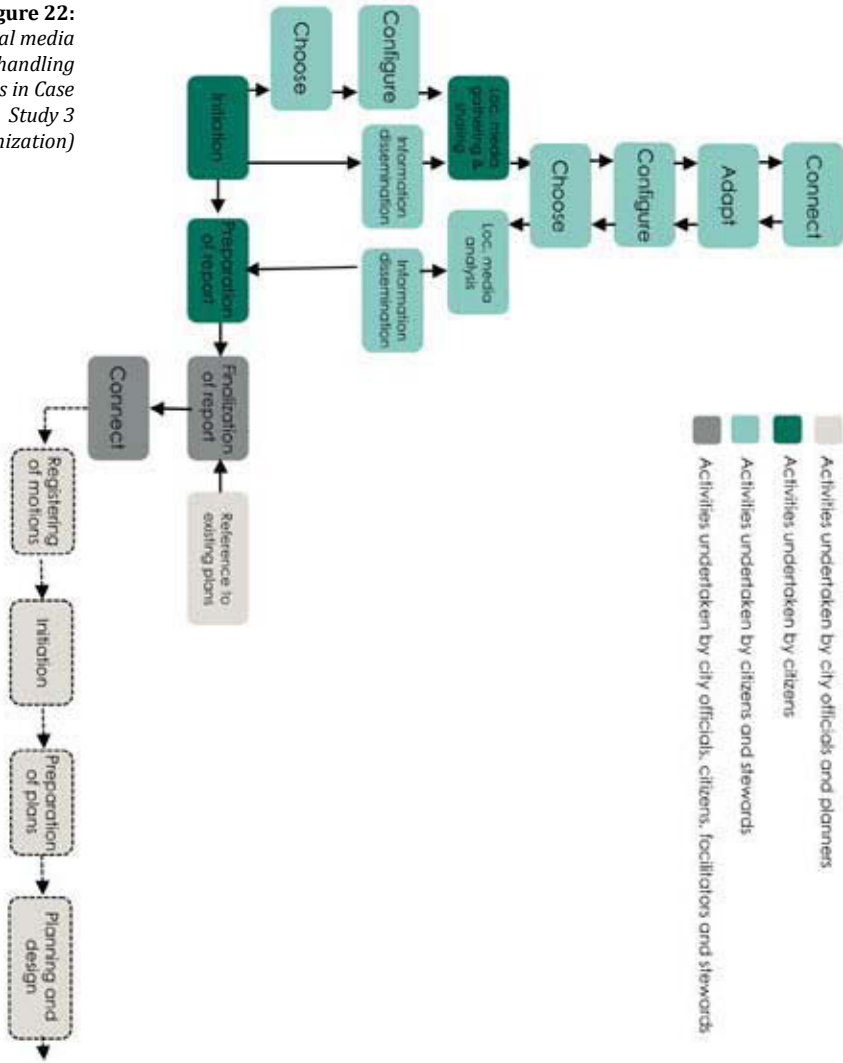


taken into consideration through the formal urban planning processes. Nonetheless, in Case Study 3, the EPD approach *supported the self-organized activities and contributed to linking them to the formal urban planning processes.*

First, the traffic planners chose to follow the activities of the group of citizens, after they had been contacted by the citizens. The planners met with the group but also contributed to information dissemination by providing facts about the plans for the area. Their contribution was integrated into the final report prepared by the citizens and the Helka ry representative, which was then published on the neighbourhood website (Article 5). Second, the media and data gathered and analysed by the citizen group was transferred to one of the archival systems of the CPD (Figure 22). In fact, it was the UM export features that made this possible. This material that was generated and analysed by citizens is now available to all the CPD planners as archival material that can be used in future work. Third, the active residents in Case Study 3 learned from the categorizations used by the CPD planners in Case Study 1 how to categorize their own media and data so that it would make more sense to the planners. This resulted in a shared format or way to categorize media and data. Thus, the media gathered and analysed by the citizen group was useful to the urban planners and the CPD in general, and it fostered collaboration between the citizen group, the NGO representative and the planners, even though they at first operated outside the established processes (Article 6).

In sum, the different activities of participation in the design of digital technology were similar across the cases but they affected the processes of consultation, partnership, and self-organization in different ways (Figure 23). The EPD approach enabled the following: 1) to rethink traditional consultation in terms of the timing of participation, 2) to expand and complement the traditional face-to-face collaborative planning activities with digital media handling ones and, finally, 3) to support the self-organized activities and link them to the formal urban planning processes. It is thus important to identify the type of participation in urban planning in which one plans to embed activities of participation in the design of digital technology. Both participations – participation in urban planning

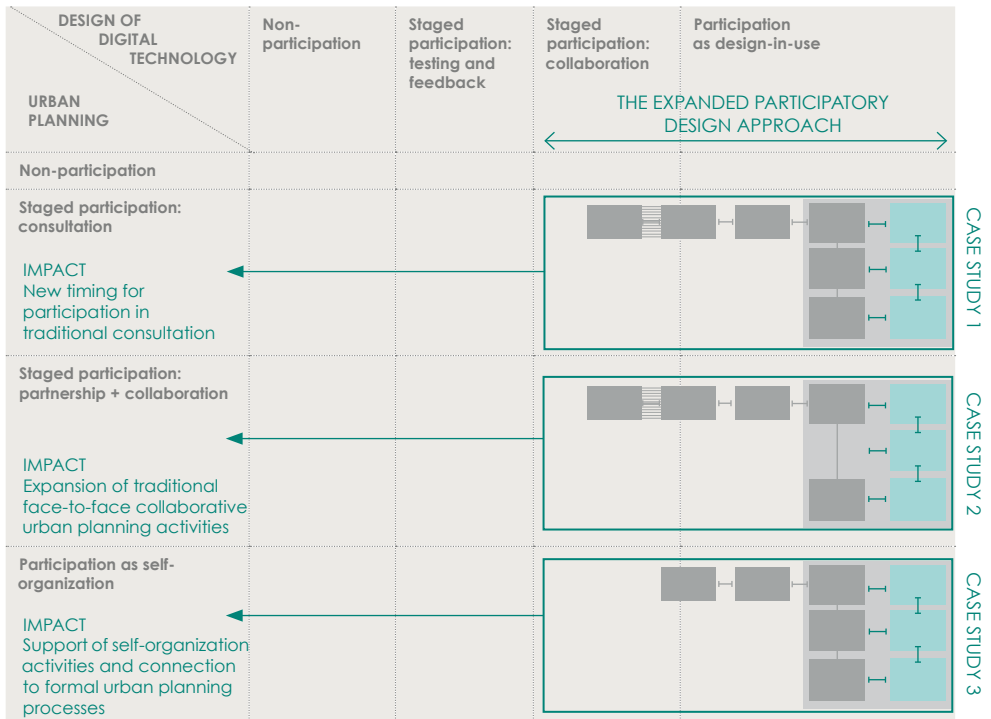
Figure 22:
 Digital media
 and tool handling
 activities in Case
 Study 3
 (self-organization)



and in the design of digital technology – need to be addressed concurrently.

In addition to the case-by-case impact, the EPD approach can also be evaluated across the three cases as these can be seen as a continuum of activities that have taken place chronologically. Each case has informed the one that followed it: lessons were learned regarding the choice of tools for the different activities, the need for configurations and adaptations, and the usefulness of connecting through information sharing. One challenge, however, has been the transfer of knowledge across the cases. As part of my action research engagement, I have been active in transferring the generated knowledge across the three cases. Also, the fact that the UM was public, and that some effort was put into documenting the processes and outcomes of participation (especially in Case Studies 2 and 3), helped in transferring

Figure 23: The impact of EPD on participation in urban planning on a case-by-case basis. The detailed diagrams of the EPD activities in each case are available as Figures 16, 17 and 18.



the knowledge gained. However, more effort is clearly needed in developing practices for transferring and sharing knowledge across a heterogeneous group of people.³⁹

39. This is of course a challenge in its own right; see e.g. Schuler (2008a; 2008b).

One of the clearest examples of the learning process that took place across the cases is reported in Article 6. There, I describe how the lessons learned from Case Study 1 were applied in Case Study 3 to ensure that the outcomes of the self-organized activities are addressed by the planners and the formal urban planning processes. This was possible because: 1) the group of citizens in Case Study 3 mimicked the use of the UM in Case Study 1 by asking fellow citizens to report traffic safety related issues and 2) as inspiration they took the categorization of the gathered media and data undertaken by the CPD in Case Study 1 and analysed it according to these categorizations (Article 6). Additionally, the lessons learned from Case Study 3 were also applied back to the formal urban planning process. In fact, the planners involved in Case Study 3 advertised the outcome of that case to the residents of the neighbourhood of Pohjois-Haaga who had contacted them regarding traffic safety issues. The residents of Pohjois-Haaga later contacted the group of active residents from Arabianranta to ask them for tips and guidance on how to plan citizen action regarding traffic safety in their neighbourhood (Article 6).

The three cases, which covered almost six years when including the Pohjois-Haaga episode, show that the processes of urban planning and participation in place, especially the formal ones, can evolve, but that this evolution takes time. Whereas the gap between the current locus of participatory e-planning and the potential new one – where practices such as citizen science and map mashups are developing – seems wide, the EPD approach shows that different types of participation in urban planning and the design of digital technology can co-exist and feed one another. They make it possible for participatory e-planning to bridge the gap between the two loci in order for it to reinvent itself.

4.3 Towards collaborative work

The three cases have shown that different combinations of different types of participation in the design of digital technology and in urban

planning are possible. A learning process takes place in individual cases built around a particular type of participation in urban planning as well as across different cases. The results of the consultation activities in Case Study 1 helped the citizens' self-organization activities in Case Study 3, which, in turn, provided insight for the planners. The learning process has affected both planners – who had so far followed a consultation approach – and citizens, who are proponents of self-organization. It has enabled interaction and exchange between them. The empirical results have thus shown that consultation and self-organization need not be antagonistic views but can feed and inform one another. Thus, the gap between the current locus of participatory e-planning, where participation in the design of digital technology is ignored and the focus is placed on staged participation in urban planning, and the potential new locus, which lies at the intersection of self-organization and design-in-use, can be bridged by taking the EPD approach (Figure 11).

One important dimension to participatory e-planning that EPD brings forward is the centrality of handling digital media. Handling digital media lies at the heart of the relationship between participation in the design of digital technology and participation in urban planning. First, contributing to a shared project with the help of locative media, such as adding a point on the UM map, is a low-threshold approach to participation. Second, by co-producing, sharing and analysing locative media, a new form of collaboration takes shape between different actors, such as planners, GIS specialists, citizens, technology developers, facilitators, and stewards (Table 4). Such collaboration can also extend to information dissemination activities as well as activities of choosing, co-designing, configuring, adapting, and connecting the tools needed for digital media handling activities. In this way, heterogeneous constellations of actors share, for at least a certain period of time, a concern or interest that revolves around the digital media produced and the tools used for it. New communities of interests thus emerge around digital media and technology.

Collaboration, especially as it was witnessed in Case Study 3 between planners, citizens, and media and technology facilitators, resembles collaborative work, where each of the actors contributes their own part to produce a shared outcome. This collaboration is

different than that envisioned and practiced by proponents of collaborative urban planning in two ways. First, it is no longer solely initiated or orchestrated by the planners. Second, it is no longer solely centred on the sketched plan, neither as an initiator of discussion nor as an outcome of it (see e.g. Allmendinger, 2009). The focus is now rather on the 'raw' material that would eventually inform the drafting of the plan, i.e. the collections of digital media of all sorts that are related to the urban planning issue addressed. Because such an understanding of collaboration has not been addressed in urban planning, it is necessary to look elsewhere for conceptual models that better enable an understanding of its dynamic. I have chosen two non-mutually exclusive ways of understanding this new type of collaboration in e-planning.

First, the actors involved in the type of collaborations described above can be seen through an expert/amateur division, in the way this is understood in urban planning. The urban planners, along with GIS professionals, are the experts at handling locative information and using it for generating proposals that affect a physical locality. The other actors are considered amateurs with respect to issues related to urban planning.⁴⁰ If we take this urban planning-defined expert/amateur view of the configuration of actors, the collaboration between them, which builds on the production and sharing of digital media, starts to resemble the collaboration in scientific work as described by Star and Griesemer (1989) in their seminal work on boundary objects. Star and Griesemer report the work of a diverse group of actors from different social worlds who were involved in creating the collections of the Museum of Vertebrate Zoology at the University of California during the first three decades of the 20th century. Researchers, collectors, university administrators, and trappers all came together with a shared common goal, as well as personal incentives, for building the collection of the museum. This collaborative effort was made possible by methods standardization, which ensured that all the collected material was handled in a similar way, and boundary objects, which are abstract concrete constructions that are understandable by and shareable across different social worlds. Boundary objects can be repositories, ideal types, coincident boundaries, or standardized forms.

40. Of course, there are citizens who are experts in urban planning issues but these constitute a vocal minority (Staffans, 2004).

If we look back at the three cases with Star and Gieseemer's concept in mind, the first step towards methods standardization was apparent in Case Study 3, when the group of active citizens mimicked the categorizations of gathered media that had been created by the planners in Case Study 1. Moreover, both the 'raw' media gathered and shared on the UM in all the cases, as well as the media analysed by citizens in Case Study 3, constitute examples of boundary objects as repositories. There is thus a move away from the traditional focus of participatory urban planning on the sketched plans towards the material that can eventually feed the creation of a plan that now acts as a boundary object. Repositories of digital media thus become shared boundary objects and the ingredients for further urban planning activities, such as the production of plans, deliberation, and decision-making.⁴¹ This approach to collaboration remains in line with the practices of consultation and partnership in urban planning because the expert role of the planners remains central. However, as was witnessed in Case Study 3, it also provides avenues for self-organization activities to link to the formal processes of urban planning. By creating connections between mundane and official/professional tools and agreeing on shared standardized forms for the collected digital media it becomes possible for the outcomes of self-organization activities, such as collections of locative media and data, to be used in the formal urban planning processes. The converse is also true and is witnessed in the emergence of open public data for example (Poikola et al., 2010).

The second way to examine collaboration takes into consideration another expert/amateur division between the involved actors. This division relates to proficiency in operating with the digital, particularly handling digital media. It is through the production and exchange of digital media that new forms of collaboration, such as peer-to-peer and co-production (Bauwens, 2012), are taking place. This type of collaboration has been much discussed in the context of the creative industries (Uricchio, 2004), the economy (Benkler, 2006) and even governance (Pestoff, 2012) but not yet much discussed in the context of urban planning.

The three empirical cases hint at aspects of collaborative work built around the co-production and sharing of digital media in the

41. Kahila (2013) also uses Star & Gieseemer's boundary object concept to examine the role of SoftGIS surveys and service in a series of public participation projects. Instead of referring to the repositories of media and data as being the boundary objects, she rather sees the entire of the online GIS-based surveys as the boundary object in these projects.

context of urban planning. The gap between urban planning experts and amateurs is narrowing. There are similarities in the use of tools and in the activities of digital media handling across the planner/citizen divide. However, a digital divide of sorts, which is similar for planners and citizens alike, is identifiable. On the one hand there are those citizens or planners who are comfortable with operating with the digital and, on the other hand, those who are not. The role of actors, such as technology and media facilitators, stewards, and also technology developers, pro-amateurs/expert amateurs become important. So far, all these actors have not been acknowledged in the context of urban planning.

In sum, the empirical research has brought forward elements for re-conceptualizing participatory e-planning. The currently prevailing view, which ignores both participation in the design of digital technology and participation as self-organization, seems like a remnant of a previous age; out of tune with the current realities brought about by digitalization, the Internet and the ubiquity of mundane, everyday digital technology. The re-conceptualization of participatory e-planning entails the following:

- Participatory e-planning comprises different types of participation in the design of digital technology as well as in urban planning.
- Different combinations of types of participation are possible and can co-exist and inform one another.
- The production and sharing of digital media lies at the heart of participatory e-planning. Participatory e-planning is not only about gathering facts and opinions but the production and sharing of a variety of digital media that contributes to collaborative reflection and action on issues of concern.
- Participatory e-planning engages a variety of heterogeneous actors, including those not traditionally recognized in urban planning, such as technology developers as well as technology and media facilitators and stewards.
- The urban planner is not the sole facilitator – technology and media facilitators and stewards play an important role in participatory e-planning.

- The technical infrastructure of participatory e-planning consists of a variety of professional, mundane, official and unofficial tools, brought together to form an ecology of interconnected tools.
- Participatory e-planning evolves towards digitally supported collaborative work, where diversified actors contribute to digital media and tool handling activities. This requires a change in the perception of expert/amateur roles.



5. CONCLUSIONS AND DISCUSSION

5. Conclusions And Discussion

In order to meet the realities of the digital age, participatory e-planning has to recognize the necessity of combining different types of participation. I particularly emphasize the importance of participation in the design of digital technology and propose the EPD approach to integrate such participation into participatory e-planning. The EPD approach combines different and interconnected activities: staged participation, media and technology support, as well as digital media and tool handling activities. The EPD approach covers both the early design phases and design-in-use phases of technology.

Information technologies have changed since the time when they were solely reserved for expert users in the workplace. There is now a wide array of mundane digital technologies that accompany people in many aspects of their everyday lives. Even casual users are becoming system integrators of sorts, tinkering with the technologies at hand to form their own ecologies of tools (Jung et al., 2008). People also produce and share digital content on a daily basis: text, photos, audio, and video – some of it producing documentation of everyday living environments that matches the levels of professional production. However, despite the spread of digital media and tool handling practices, there is still a digital divide of sorts, even in technologically savvy countries such as Finland. The confident and safe handling of digital media and tools is not yet widespread. Moreover, uncertainties associated with the terms of conditions of the commercial providers

of mundane technologies raise concern (Gurumurthy, 2012). People require support as well as the possibility to try, reflect on, and understand the potentials and challenges associated with operating with the digital. The combination of participatory activities covered by the EPD approach meets the different needs associated with acting with technology in the current digital age. It emphasizes the importance of handling digital media and tools but also gives room for support activities. The latter include facilitation and stewardship provided by external facilitators or community members respectively. They also include staged participatory design activities that open the floor for experimentation.

During the empirical research phase, the EPD approach was applied in three different cases. Each case represented one type of participation in urban planning: consultation, partnership and collaboration, and self-organization. The empirical results have shown that the EPD approach has affected each type of participation in urban planning differently. It enabled the urban planners to rethink traditional consultation in terms of the timing of participation. It expanded and complemented the traditional face-to-face collaborative planning activities with digital media handling ones. Finally, it supported community-based self-organized activities and linked them to the formal urban planning processes.

The EPD approach also catalysed a learning process related to the handling of digital media and tools as well as the understanding of urban planning processes across the different types of participation. The locative media handling practices followed in the consultation case later informed the self-organization case. And the locative media gathering and analysis practices developed by the citizens in the self-organization case also informed planners of the city-planning department who had so far only approached participation from a consultation perspective. Finally, the empirical research made it possible to pinpoint examples of digitally-mediated collaborative work between citizens, planners and the supporting actors involved. The empirical research has thus shown that different combinations of different types of participation in urban planning, and in the design of digital technology, are possible, and that they can take place simultaneously and inform one another.

Participatory e-planning is no longer confined to consultation, nor even to collaborative planning. Additionally, it departs from the view of technology as only being an answer to these particular models. With this, participatory e-planning may reach a new locus, which lies at the intersection of participation as design-in-use and participation as self-organization without breaking with the more conventional approaches. And here I will argue for interaction between more conventional and newer approaches to participation in urban planning, instead of proposing a more rebellious approach that would ignore formal urban planning altogether. Despite its many limitations, formal urban planning acts as a regulatory system in the management of the urban commons, at least when it takes place in the context of representational democracy. Urban planners are responsible for the common good. Instead of positioning urban planning and the self-organized activities of citizens as two antagonistic views, the results of the thesis show that, on the contrary, they can complement one another. This complementarity, which is concretely facilitated if participation in the design of digital technology is taken seriously, supports new forms of governance that are based on co-production (Pestoff, 2012).

So far, citizens and planners have only communicated around problems and proposed solutions rather than worked together with shared raw material. When the exchange of digital media between citizens and planners is technologically possible, for example across mundane and official/professional tools, bridges are automatically created. The creation and availability of shared repositories of digital media provide new ingredients for collaborative work between the experts/planners and amateurs/citizens. The original gap between experts and amateurs narrows through collaborative work because the activities on both sides are similar: the production and sharing of locative media as well as its analysis, information dissemination, choosing, co-designing, configuring, and connecting digital tools. At the same time, another expert-amateur gap opens between citizens or planners who are comfortable with handling digital media and technology, and those who are not. The role of media and technology facilitators is key in overcoming this gap.

5.1 Re-conceptualizing participatory e-planning and designing for it

The research questions that guided my work were the following: How should we re-conceptualize participatory e-planning? What and how should we design for participatory e-planning?

Participatory e-planning has so far largely ignored participation in the design of digital technology. It has addressed digital technology through the use of single pieces of software or individual social media platforms. Such digital technology is then introduced into the formal processes of participation in urban planning. The work undertaken in this thesis shows that there is an alternative way of approaching participatory e-planning. In answer to my first research question, I provide the following definition of participatory e-planning. *Participatory e-planning comprises the different types of participation that take place in urban planning, as well as in the design of digital technology. The different types of participation can occur simultaneously in different combinations and affect one another. Some combinations, such as those based on the Expanded Participatory Design approach, provide grounds for the development of shared digitally-mediated collaborative work practices for citizens and planners.*

The EPD approach provides an answer to my second research question, which deals with designing for participatory e-planning. The EPD approach emphasizes a shift from the design of single solutions that only answer specific needs to the meta-design of socio technical environments in which other people can be creative and can pursue design-in-use (Fischer, 2011). This means that the design and development of media and technology are no longer the monopoly of expert designers and developers. Users also act as system integrators and consolidators of the ecology of tools of participatory e-planning. However, as Fischer points out, a solely “do-it-yourself” approach misses out on the experience of professionals. This is why it is important for professional designers and developers, but also technology enthusiasts of all kinds, to embrace a supporting role in addition to a creative one. The challenge is to find sustainable ways to collaborate across the digital divide(s).

At the practical level, design activities also need to include the

design of connecting interfaces to bridge the different systems and devices that come to form the ecology of tools for participatory e-planning. The ecology of tools, which contains official, non-official, professional and mundane tools, becomes part of the supporting and shared technical infrastructure of participatory e-planning. The latter is open for a heterogeneous group of actors to tap into. Micro-level technical building blocks are nonetheless necessary, such as import and export features, as well as open APIs⁴² (Article 2). Additionally, design activities should include the creation of toolkits and sets of instructions⁴³ to ensure the distribution of knowledge (Article 6).

5.2 Further research and a new meeting ground

I have, through this thesis, answered the overarching research questions I had set for myself: How should we re-conceptualize participatory e-planning? What and how should we design for participatory e-planning? There are of course new questions that have emerged, either related to the current limitations of the thesis, or triggered by the reflections that the thesis has prompted.

One limitation of this research is the nature of the empirical case studies, which have not made it possible to explore participation beyond the interaction between planners and citizens. The fact that the cases consisted of two traffic safety planning cases and one community yard design meant that the number of stakeholders involved remained relatively limited. The situation would have been very different if one of the cases had involved land-use planning. The role of important actors, such as property developers, is completely ignored, as are the economic incentives associated with urban development. Nevertheless, contemporary research in Finland on Public-Private-People-Partnerships (4P) in urban development (e.g. Majamaa, 2006; Kuronen, 2011) can provide a good counterpoint for validating my own results, and vice versa. Additionally, further research could examine a case study of urban development by using the matrix of multiple participations and the EPD approach developed in this thesis. Some questions to explore could be: Does participatory e-planning as digitally mediated collaborative work scale up when the number of stakeholders grows and representatives of the private sector are

42. The City of Helsinki has recently been involved in an innovative EU-funded project, where ideas related to software and service development toolkits for cities are being developed ("City SDK", n.d.). Additionally, the first API for accessing data related to decision-making in the City of Helsinki has been put in place, and the API documentation is freely available on the GitHub online code repository (GitHub, n.d.).

43. One spinoff from our work on the UM, and the action research in Herttoniemi by my colleagues from the Palco group, has been the development of an online toolkit for citizens where available digital tools for citizen science and participation in urban planning are listed ("Kansalaisen työkalupakki", n.d.). Another interesting toolkit, with more emphasis on citizen-driven participation methods, is Heika ry's one ("Caddies", n.d.).

included? What are the challenges?

Another limitation is the fact that all the empirical research was carried out in Helsinki alone. The comparative research reported in Article 4 was a reminder that the urban planning systems and participation processes in place are very different in the different cities of the world. E-planning is also understood differently in different locations and there is a need for comparative studies (Silva, 2012). My empirical results reflect the situation in a technologically savvy, politically stable Nordic welfare state, where participation in urban planning – even though only at the level of consultation – is required by law. More generalizable results would require a thorough comparative research in at least two other cities that have different urban planning systems and socio-political contexts but similar levels of technology proficiency and Internet penetration. Such a comparative study would be particularly interesting as many of the same mundane tools are used globally and the way the practices associated with their use in diversified local contexts are also similar. Inquiry into the position and role of participatory e-planning in the ‘glocal’ context therefore becomes necessary (Horelli et al., 2012).

In this thesis I have approached the possibility of shaping the urban environment by taking the institutionalized forms of participation in urban planning as a starting point. I have also brought forward the proposition of considering citizen self-organization as a form of participation. However, it is important to also remember other approaches, such as urban design in general and everyday urbanism in particular, which have challenged urban planning by emphasizing the need to work directly with the components of urban space rather than projections into the future (Cuthbert, 2006; Chase et al., 1999). Further reflection on what the object (or objects) of design/planning in participatory e-planning is (or are) will need to be addressed, especially as so-called ‘smart’ technologies are finding their way in urban public space.

As it is, this thesis is a message to both urban/e-planners and IT/HCI designers. It calls for collaboration across disciplinary boundaries, which is crucial in the current digital age where digital technologies are sites at which political, social, cultural, economic, and historical contexts are developing (Dourish, 2010). It is with the

combined knowledge of how to design digital technology and how to understand the context in which the technology is used and further designed, that the potentials and challenges of the digital age can best be approached. On the one hand, urban planners and e-planners must acknowledge the shift that new digital technologies cause to the traditional expert-based professions. On the other hand, IT and HCI designers have to acknowledge that the design of digital technology has stepped outside the lab, the workplace, and the home and is embracing the context of everyday urban life as a field where design action takes place (Bødker, 2006). There are other and older players in these contexts that need to be considered. In the case of urban life and urban space, the older players are associated with the discipline of urban planning. So far, disciplines such as urban computing and urban informatics have not yet fully confronted the established processes that have been put in place by urban planning for managing issues related to the urban environment and urban life. More generally, IT and HCI designers also have to acknowledge that by designing digital technologies, they are also contributing to the “design of politics” (Dourish, 2010). The 1970s reflections on computers and democracy in the workplace are still valid but need to be adapted to new technological landscapes and contexts (Kyng, 2010; Karasti, 2010). The political arenas where digital technology unravels are no longer those where the Scandinavian participatory designers fought their battles but rather they include a variety of other politically laden contexts, such as cultural heritage (Diaz-Kommonen, 2002; Salgado, 2009; Muurimäki, 2013), education (Leinonen, 2010), and urban planning and governance, where other disciplines and practices are already embedded. Whereas IT and HCI designers need to acknowledge these changes, other ‘technologically bound’ actors, such as Open Source, Open Data and DIY technology enthusiasts, also have to take up new responsibilities associated with their technology expert position, which becomes inextricable from societal and political impact. They no longer stand at the margins and should not remain unattainable. They, as much as commercial actors, also have to be recognized by participatory IT design and urban planning.

I will end this thesis by coming back to cities. In a recent op-ed

for *Domus* magazine, sociologist Saskia Sassen (2011) called for an open source urbanism that would take the incompleteness inherent in cities as its strength and would view open urban technologies as enabling interaction and understanding between citizens and their cities. Her call challenges both urban planning and the design and development of digital technologies. There is no doubt that cities and digital technologies are, and will always be, intricately connected. Who then will be the shapers of cities in the future? How can we ensure democratic and sustainable possibilities for taking part in the shaping of cities? What mechanisms need to be put in place to support the design-in-use of both digital technologies and cities – and any future hybrid of both? These questions can be approached from many angles, and I am looking forward to touching upon some of them by continuing work on the matrix of multiple participations and the Expanded Participatory Design approach introduced in this thesis.

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Appendix 1: Collected data trail

PHASE 1

The research activities in Phase 1

ACTIVITY	YEAR	METHOD	PARTICIPANTS	DATA
Interview	2006	Semi-structured theme interview	Arabianranta residents	Field notes, photos
Workshop	2006	Paper and pen prototypes	Arabianranta parents associations	Field notes, photos
Workshop for mapping practices related to locative media	2006	Sketches and paper and pen prototypes	e-moderators in Arabianranta	Field notes, photos
Experimental trials	2006	Technical quick prototypes	e-moderators in Arabianranta	Field notes
Experimental trials	2007	Technical quick prototypes	10 teen-age schoolchildren + 1 teacher	Field notes
Workshop	2007	Paper prototypes with scenarios of use	3 local development agency employees	Field notes, photos
Workshop	2007	Paper prototypes with scenarios of use	2 active residents lobbying for a community house	Field notes, photos
Workshop	2007	Scenarios	2 city officials from the planning department and 1 from the city's research unit	Field notes
Work meeting (rabbit case)	2007	Participant observation	2 officials from the City of Helsinki Public Works Department, ICING partner (City of Helsinki)	Field notes
Workshop	2008	Paper and pen prototypes	2 employees at the local contemporary art museum Kiasma	Field notes, photos

PHASE 2

The research activities in Case Study1

ACTIVITY	YEAR	METHOD	PARTICIPANTS	DATA
Meeting	28.01.2008	Participant observation	Participation coordinator at City of Helsinki Planning Department (CPD), traffic planner (CPD), ICING project coordinator (City of Helsinki), researcher	Field notes
Meeting	29.02.2008	Participant observation	Software developer (Arki research group), participation coordinator (CPD), ICING project coordinator (City of Helsinki), City Survey Division experts (Real Estate Department), researcher	Field notes
PD workshop	17.03.2008	Paper and pen prototypes	2 participation coordinators (CPD), traffic planner (CPD), ICING project coordinator (City of Helsinki), researchers	Field notes, video recording, photos of paper and pen prototype
Preparation of UM and city website	09.05.2008	e-mail exchange	Participation coordinator (CPD), traffic planner (CPD), Webmaster (CPD), researcher	E-mails
Residents evening	13.05.2008	Participant observation	Mayor of Helsinki, officials and planners from the City of Helsinki (incl. the traffic planner involved in this case), residents	Video recording, field notes
Data gathering using UM	13.05 – 16.06.2008	Follow up of UM topic	Open to all	Screenshots
Case wrap up meeting	16.06.2008	Participant observation	2 participation coordinators (CPD), traffic planner (CPD), ICING project coordinator (City of Helsinki), Webmaster (CPD), researcher	Field notes, audio recording

Interview	05.11.2008	Unstructured interview	2 participation coordinators (CPD), traffic planner (CPD), GIS specialist (CPD)	Field notes, audio recording
Interview	28.07.2009	Semi-structured interview	ICING project coordinator (City of Helsinki)	Field notes, audio
Interview	07.08.2009	Semi-structured interview	IT division project manager (City of Helsinki)	Field notes, audio
Interview	26.08.2009	Semi-structured interview	1 participation coordinator (CPD), traffic planner (CPD)	Field notes, audio recording
Residents evening	01.09.2009	Participant observation, unstructured interview	1 participation coordinator (CPD), traffic planner (CPD), residents	Audio recording, field notes
Online questionnaire	Sept.-Oct. 2009	Follow up and analysis of questionnaire responses	16 responses	Questionnaire responses
Interview	19.07.2010	Semi-structured interview	3 representatives of the City Survey Division of the City of Helsinki (ICING project partners)	Field notes, audio

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The activities with the young people are reported separately in the Appendix of Article 3.

The research activities in Case Study 2 ⁴⁴

ACTIVITY	YEAR	METHOD	PARTICIPANTS	DATA
Kick off meeting	16.12.2009	Participant observation	Representatives from various active projects in Roihuvuori, 2 representatives of the local kindergarten, director of the youth centre, researchers	Field notes
Meeting	30.01.2009	Participant observation	Representatives from various active projects in Roihuvuori, representative of the local kindergarten, director of the youth centre, youth instructor, researchers	Field notes + official minutes of meeting

Meeting	09.03.2009	Participant observation	Representatives from various active projects in Roihuvuori, representative of the neighbourhood association, youth instructor, researchers	Field notes + official minutes of meeting + proposed project timeline table
Meeting	27.03.2009	Participant observation	Representatives from various active projects in Roihuvuori, the local kindergarten, Dodo ry, the neighbourhood association, the local senior house, youth instructor, researchers	Field notes + official minutes of meeting + map of the area
Working session	31.3.2009	Paper and pen prototype	Neighbourhood website volunteer Webmaster, researcher	Field notes, pictures from the prototypes
Participatory planning workshop	31.3.2009	Participant observation and facilitation	Adult group, architect, researcher	Video recording + field notes + Questionnaire
Participatory planning workshop	23.04.2009	Participant observation and facilitation	Children group I, architect, researcher	Field notes
Participatory planning workshop	24.3.2009	Participant observation and facilitation	Young people group, architect, researcher	Field notes
Participatory planning workshop	27.4.2009	Participant observation and facilitation	Children group II, architect, researcher	Field notes
Participatory planning workshop	06.05.2009	Participant observation and facilitation	Seniors group, architect, researcher	Field notes
Wiki design	06.05.2009	Participant observation and facilitation	17 participants of various ages, wiki designer, architect, researchers	Field notes, 3 questionnaire answers, video recording
Residents meeting / presentation of the architect's proposal	16.05.2009	Participant observation	Around 25 participants	Field notes – video recording

Presentation by landscape architects	16.11.2009	Participant observation	2 landscape architects, youth centre director, representative of the kindergarten, 2 youth instructors, researchers	Field notes, official minutes of meeting – field notes
Communication strategy workshop	10.2.2010	Ideation workshop	Representative of neighbourhood association, Volunteer Webmaster of neighbourhood website, 2 youth instructors, researchers	Official minutes of meeting – field notes – audio recording – picture of collage done
Residents evening	3.3.2010	Participant observation	Around 40 people	field notes – some video footage
Interview	5.10.2010	Semi-structured interview	Representative of neighbourhood association	Audio recording, field notes, notes from recording
Interview	26.10.2010	Semi-structured interview	Volunteer Webmaster of neighbourhood website	Audio recording, field notes, notes from recording
Interview	5.11.2010	Semi-structured interview	Youth centre director	Audio recording, field notes, notes from recording

The research activities in Case Study 3

ACTIVITY	YEAR	METHOD	PARTICIPANTS	DATA
Group meeting	24.8. 2010	Participant observation	3 residents, NGO representative, researcher	Field notes, audio recording, minute of meeting
Interview	24.8.2010	Semi-structured interview	NGO representative	Field notes, audio recording
Group meeting	28.9. 2010	Participant observation and facilitation	3 residents, NGO representative, researcher	Field notes, audio recording

Group meeting	11.11.2011	Participant observation	3 residents, NGO representative, 2 traffic planners (CPD), researcher	Field notes, audio recording
Interview	31.1.2011	Semi-structured interview	2 traffic planners (CPD)	Field notes, audio recording
Meeting	20.04.2011	Participant observation and facilitation	2 residents, 1 traffic planners (CPD), researcher	Field notes, audio recording
E-mail-based interview	29.03.2011	Semi-structured interview	1 resident (initiator of the citizen group)	E-mail archive
E-mail follow up	Oct. 2012	Follow up	CPD planners	E-mail archive

Appendix 2: The semi-structured interview template

- Role of the informant in the citizen participation project and informant's understanding of the role of the other stakeholders
- Informant's understanding of the participatory project (actors, processes, goals, outcomes)
- Informant's understanding of the use of the Urban Mediator in the participatory project
- Informant's understanding of the use of other ICT tools in the participatory project
- Informants understanding of the sharing, dissemination and publishing of information regarding the participatory project

Appendix 3: The online questionnaire in Case Study 1

KYSELY MALMINKARTANON LIIKENNESUUNNITTELUSTA

Teen tutkimustyötä väitöskirjaani varten. Olen seurannut Malminkartanon liikennesuunnittelun prosessia v. 2008-2009. Tarvitsisin palautettasi, koska haluan tuoda esille myös asukkaiden näkökulman.

Kyselyyn vastaaminen kestää n. 10 minuuttia.

Jos haluat lisää tietoa tutkimuksestani tai tästä kyselystä, ota yhteyttä: joanna.saad-sulonen@taik.fi / 09 4514092

I- Taustatiedot

Olet:

- Nainen
- Mies

Ikä: _____

Olet asunut Malminkartanossa

- 0-2 vuotta
- 2-5 vuotta
- 5-10 vuotta
- >10 vuotta
- En asu Malminkartanossa

Pidätkö itseäsi aktiivisena kansalaisena?

- Kyllä
- Ei

Ovatko liikenneturvallisuusasiat tärkeitä sinulle?

- Kyllä
- Ei

Mistä yleensä saat tietoa Malminkartanoa koskevista asioista (Netti ja muut lähteet)?

Mitä kanavia (Netti ja muut) käytät jos haluat ilmaista mielipiteesi Malminkartanoon liittyvistä asioista?

II- Kysymyksiä kesän 2008 online-karttaan perustuvasta kyselystä

Kysely oli käytettävissä kaupunkisuunnitteluviraston web-sivulla touko-kesäkuussa 2008. Asukkailla oli mahdollisuus merkitä Malminkartanon kartalle seuraavat havainnot: vaaralliset paikat, pysäköintiongelmät, parannusehdotukset. Asukkaiden vastaukset löytyvät tästä: <http://tinyurl.com/karttapisteet>

Osallistuitko online-karttaan perustuvaan kyselyyn koskien liikenneasioita?

- Kyllä
- Ei

Jos vastasit ”kyllä” edelliseen kysymykseen jatkaa tästä. Jos vastasit ”Ei” mene kohtaan III-

Mitä mieltä olit online-karttatyökalusta?

Valitse yksi tai useampi vastaus - ne liittyvät online -kartan käyttöön:

- Jätin ainoastaan oman kommenttini
- Katselin muiden jättämiä kommentteja
- En jättänyt yhtään kommenttia
- Oli hyödyllistä katsoa muiden kommentteja
- En ymmärtänyt että oli mahdollista katsoa muiden kommentteja
- En osannut jättää kommentteja
- Järjestelmää oli vaikea käyttää

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Olisitko halunnut tai oletko osallistunut muulla tavalla?

esim. soittamalla liikennesuunnittelijalle? Asukastoiminnan kautta? jne.

Voit edelleen tarkastella kesän 2008 kommentteja Netissä, esim. osoitteella: <http://tinyurl.com/karttapisteet> tai <http://um.uiah.fi/topic/689>

Onko tämä mielestäsi hyödyllistä tai mielenkiintoista? Miksi?

III- Kysymyksiä Malminkartanon liikennesuunnitelmaluonnoksesta

Luonnos on nähtävillä kaupunkisuunnitteluviraston sivuilla: <http://tinyurl.com/sykyksv> (klikkaa sivulla olevaa "Lue Lisää" linkkiä ja hyväksy käyttöehdot), ja myös keskustelutilaisuuden aikana, ti 1.9. klo 18–20, Apollon yhteiskoulun auditoriossa.

Mikä on yleisvaikutelmasi tässä vaiheessa, nyt kun liikennesuunnittelijan luonnokset ovat valmiit?

Mikä niissä on mieluisinta?

Mitä puuttuu tai on vastoin näkemystäsi?

Luuletko että ne vastaavat asukkaiden toiveita?

Oletko mielestäsi vaikuttanut suunnitelman lopputulokseen? Miten?

Jos olisi mahdollista, esim. nettikartan kautta, haluaisitko verrata asukkaiden toiveita suunnittelijan ratkaisuun?

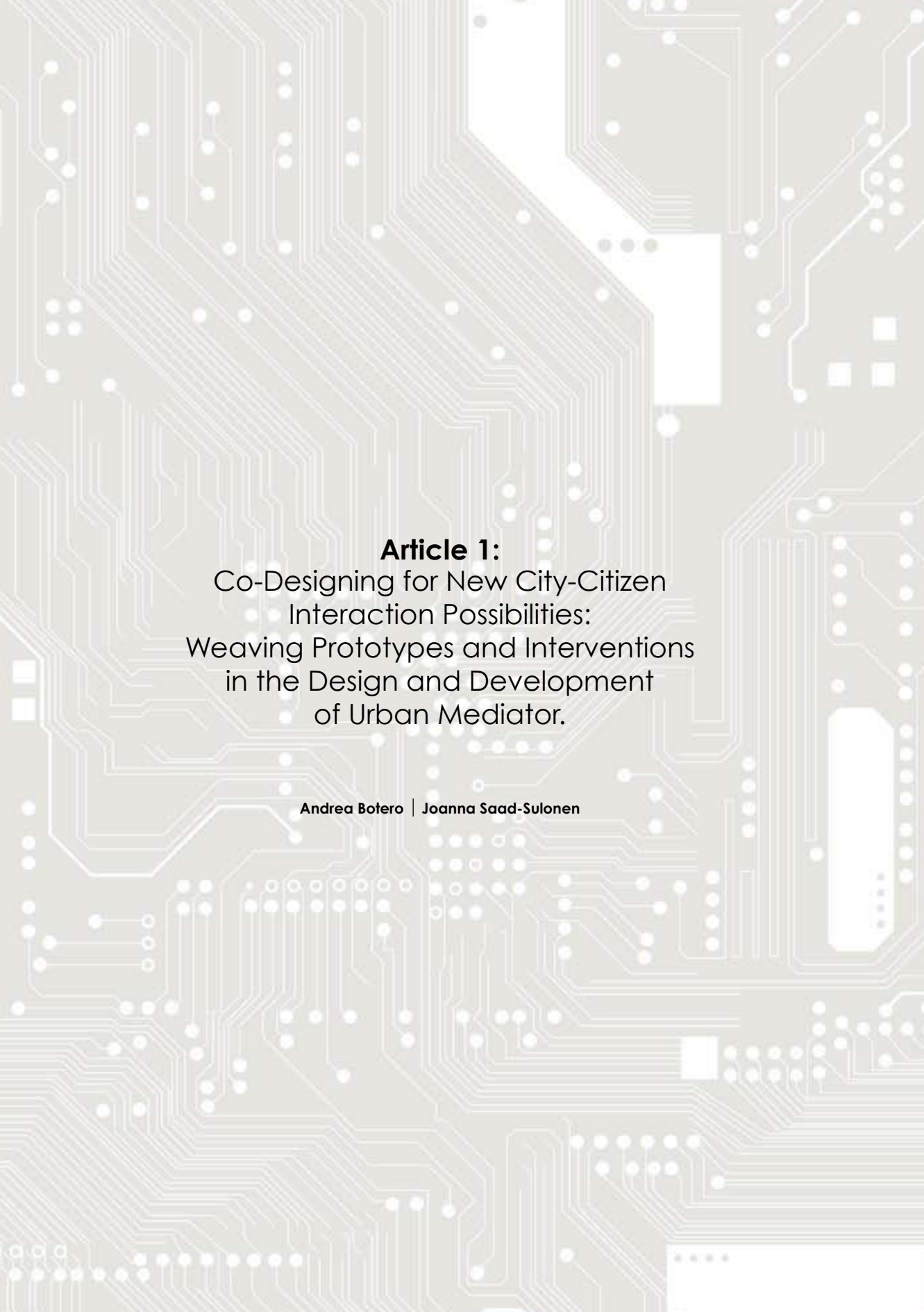
Olisitko halunnut saada enemmän informaatiota kaupunkisuunnitteluvirastolta koskien liikennesuunnittelun prosessia? Tiedätkö tällä hetkellä, miten asiat etenevät suunnittelun kanssa?

Vapaa kommentointi:

--- *Kiitos!* ---



ARTICLES



Article 1:
Co-Designing for New City-Citizen
Interaction Possibilities:
Weaving Prototypes and Interventions
in the Design and Development
of Urban Mediator.

Andrea Botero | Joanna Saad-Sulonen

ABSTRACT

This paper explores issues of participation in urban life, particularly new partnerships between city and citizens to co-design new services for their cities. We will share experiences from working on the design and development of a software infrastructure, Urban Mediator, and its related social practices. We conclude by pointing out the necessity of considering the software artifacts designed as being part of a toolkit for co-design that can enhance conversations between cities and citizens, and enable the envisioning of new practices related to city-citizen interactions.

Keywords: *co-design, social practices, e-government, citizen-driven innovations, user innovation*

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INTRODUCTION

The following work is part of the ICING project (Innovative Cities for the Next Generation) a larger initiative funded by the European Union, aimed at exploring, through a series of ICT solutions, what "innovative cities" could mean [5]. Case studies in key regeneration districts of Barcelona, Dublin and Helsinki, as well as the development of a system (Complete ICING System) are part of the strategy. The particular theme in Helsinki has been citizen-driven interactions, and our role as design and design research partners of the project has been the development of components to explore this issue; our insights and research are condensed in the concept of Urban Mediator (UM) that is the main theme of this paper.

Citizen-Driven Interactions as a Starting Point

The emergence of new Information and Communication technologies (ICTs) is said to be transforming the ways in which civil society and citizens interact with each other, and with the official systems of representation [2,3]. Today there is a vast array of government initiatives that aim to increase, often from a top-down approach, public participation and electronic government. At the same time, there is increasing interest in understanding the limits encountered by these approaches. Parallel to the official administration's initiatives, there are also subtler citizen and community-driven initiatives emerging from the widespread use of new networking and user-driven content production practices in technology-savvy circles. Some examples of this trend are to be found e.g. in popular photo-sharing sites, where a big proportion of the media shared shows urban-related themes. [8] Other examples are evident in the increasing popularity of map mashups, made possible with open access to online maps, and the use of GPS-enabled devices for attaching location data to media produced. All this has triggered the emergence of new interesting practices of documenting urban environments in general. Concrete cases of citizens' initiatives towards their cities, supported by new forms of media, range from collaborative projects to create

a body of free and publicly accessible map data (e.g. <http://www.openstreetmap.org>), to civic platforms for reporting problems to fix in a neighborhood (e.g. <http://www.fixmystreet.com/>), and to the use of social networking sites for creating and supporting civic action (e.g. Save Sloane Square group at <http://www.facebook.com>).

It seems that more people are engaging in new practices for exploring, discussing and understanding their cities, through infrastructures not necessarily provided by the city administration, nor connected to it. Is it useful to consider these examples as forms of potential innovations for new citizen-city interactions? Are they worth following, learning from and perhaps supporting in an "innovative" city? In innovation management literature, there has been much talk recently about the role of user driven innovations, most commonly carried out by users with "lead users" characteristics [10]. According to lead users theory, some users develop solutions on their own and in collaboration with other users, to address needs for which there is no solution in the market yet, much in the same vein of what those committed citizens are doing in the examples discussed previously. Our interest here lies in the discussion that ties the role of the lead-user to the dynamics of a broader process that is claimed to have implications for the democratization of innovation [10]. This seems to resonate partly with some earlier arguments in the participatory design community regarding the democratic imperative for early involvement of "skilled workers" [4] and their empowerment. While a "leading" citizen, might be difficult to identify, the trend discussed previously hints at the need for city administrations to consider citizen driven interactions seriously, rethink the role of citizen's contributions in the development of new services and perhaps provide infrastructures better suited to this type of interactions.

EXPLORING SOFTWARE TOOLS AND SOCIAL PRACTICES

In order to explain the process, it is necessary to first give a brief overview of what UM is in terms of software, today. UM is a server-based software that provides a way for communities to mediate local, location-based discussions, activities, and information. Its goal is to provide users with the possibility to create, obtain, and share location-based information that is organized according to topics set up and maintained by the users

themselves. UM uses a map-portrayal service as means for representing some of the information, and complements this with a set of tools for users to process, share and organize this information. The service is accessed through the web, using a normal PC or any browser-enabled mobile device [8]. We envision UM as a mediator environment between, on one hand the official city systems that provides, among others, help desk services or GIS services, and on the other hand citizens' systems represented by community websites, discussion forums, or blogs. Both of which can be plugged into UM using several syndication standards (RSS, GeoRSS, etc).

Beyond Testing,

When the project kicked-off in 2006, we as the UM design team, extended the first grounding phase of ethnography planned for the project (mapping of the local test bed area through interviews and meetings with representatives of citizens and city office workers) towards a more participatory and design oriented research exploration. We started the process by building prototypes using repurposed software so that we could quickly start workshops with communities. Some of the envisioned features and functionalities were then quickly turned into new prototypes [6] that helped us further engage with the stakeholders.

Seeding

By the end of 2006, a first Urban Mediator seed prototype with basic functionality was available. This gave us the opportunity to develop the concept and the ideas by planning small-scale iterative interventions involving more people. To achieve this, rather than finding random users to test the prototypes, we specifically approached actors having a clear stake in the development of the Arabianranta area (the test-bed neighborhood in Helsinki) and that were engaged in some sort of community activities. We proposed to them to collaborate in the Urban Mediator design and development process through a series of activities in which they were to use prototypes we were developing.

We first involved active citizens, and later a class of 12–13 year-old students and their teacher from the local school, asking them to mark points of interest in the neighborhood. We also held working meetings

with the personnel of the local development agency, experimenting with ways to link the information they produce, through their portal, into UM. Through these interventions we discovered obvious usability problems, – but more importantly we were able to negotiate concepts and a common vocabulary (e.g in the interface) and identified concrete practices that could be supported by the tools we presented. This was possible as participants needed to appropriate the functionalities presented by the system and relate them to their own activities. These interventions also enabled us to populate the UM database with real location-based information, gathered by a diverse set of people.

Taking into account the emergent practices that the participants devised with the limited functionalities of the prototypes, we held a more focused workshop with a group of active residents lobbying for a new community activity house in Arabianranta, and envisioned together how UM could support such citizen action. With the help of paper prototypes and quick hacks in the UM code, we sketched with our collaborators tools for helping them organize the materials that they were sharing and give explicit sense of purpose to the use of UM. We also discussed the social practices that could be associated with the use of UM. This gave us materials and insights that advanced the design and development work. Parallel to that effort and with help from our ICING partners in the City of Helsinki, we tried to organize interactions with city employees; however, this proved more challenging. As we later understood from our partner in the city, this was partly due to the fact that the concept remained too abstract for them, and it was difficult to see how it could fit with their immediate needs.

Based on the first co-design experiences, during the year 2007 we produced new iterations of UM. The second iteration of the software included more tools targeted at organizing collections of information (collecting location points into 'boards' or 'topics'). It also made the different standard mechanisms for feeding and syndicating the environment (RSS and other feeds) more visible in the user interface. Moreover, the new version of UM included several other conscious user interface strategies to encourage and facilitate links from other systems in the form of UM widgets and UM tools. In June that year, we launched a publicly available Urban Mediator demo for Helsinki [9]. By the end of that year we also made the first public release of the code [8].

Setting Up a Project

With the new features and improved interface, we were able to communicate better to all our collaborators the way in which we envisioned participatory projects to be constructed or to emerge with the help of UM. The more refined prototype was also easier to explain. This helped our colleague from the City of Helsinki to trigger the interest of one of the planners responsible for parks at the City of Helsinki Public Works Department. At that time, this person was taking part in a research project addressing the increase in numbers of non-indigenous bunny rabbits in the city as well as the damage they are doing to vegetation. The research was intended to feed a report about the matter to be used by the City's policy makers. Officials had some scientific information and data, but wanted to get first hand accounts from people about the areas where they were encountering rabbits. They had also manifested their wish to get a better grasp of the attitudes and opinions of the citizens regarding what should be done with the animals, as this was a controversial issue. After some negotiations and meetings between the planner from the Public Works Department, his colleague from their IT section, ICING partners in the City of Helsinki and us, the design team, the City team decided to 'take the risk' of using the Helsinki UM beta prototype to implement an intervention with larger public participation.

A participative research was sketched, which asked citizens to report sightings of bunny rabbits in Helsinki. As a starting point, we created a 'board' (later called 'topic') section in UM Helsinki beta for the bunny rabbit case. The board collected all contributions (points) and made them accessible to anyone online, as well as provided links to further information and discussions of the topic. We also created a generic web info page [1] for the case to stand for the official City site of the project. Due to bureaucratic difficulties, the page resided in one of our own servers but was redirected to a domain controlled by the City. The official info page featured an UM widget that enabled citizens to directly send their reports, using the UM functionalities, via this officially recognized site. Another widget gave a real time list of the newest contributions collected in UM.

The project started the 1st of October 2007, with short announcements

provided by the Public Works Department placed in different media, advertising the bunny rabbit info page (e.g in Helsingin Sanomat, the biggest newspaper in Finland, in the City of Helsinki main information portal, in the Arabianranta portal, etc). During this public trial that lasted until the 4th of March of 2008, 450 rabbits sightings were reported as points on the UM map. The information gathered included detailed accounts of the amount of rabbits seen, their eating habits and behavior, coupled with exact location information (easy to be imported to the City's own GIS systems). The fact that we had provided links to a web discussion forum on the Neighborhood Association of Helsinki, contributed partly to channel and awaken the public discussion regarding how the city should deal with the rabbit problem.

To follow the impact of the intervention, we monitored the content of the contributions and the strategies used to make them, the related conversations on the web about the rabbit consultation and the rabbit issue in general. We collected feedback about UM through a special feedback section in the service. Furthermore, we also contacted people that identified themselves to us. However, as contributions could be done anonymously or using a nickname (registrations or contact information were not mandatory), we did not interview contributors in a systematic way. The explicit feedback received has been varied. Some comments were related to usability constraints of the tool. Other, more general comments, indicated for example appreciation of the fact that the information submitted had been made publicly available, unlike what is usually the case with polls, questionnaires or other reporting tools set up so far by the city.

DISCUSSION

Up to now the results gathered have not been traditional usability evaluations of an isolated software component, nor validations of the suitability of the tool. Rather, the experiences in using the prototypes and setting up the interventions speak to all stakeholders, including ourselves, of the real practical socio-technical arrangements at play for the viability of systems such as UM and its possibilities. Through the work in the early workshops and the deployment of the first prototypes we have confirmed that active citizens often encounter problems,

concerns or interests, which cannot be dealt with through any of the available channels of the city. Our experiences seem to indicate that more citizens would be willing to be more active in engaging with their city, if they had an assurance that relevant citizen inputs would be brought forward into the development processes of the city administration. Thus, the existence of mediating environments like UM, with openness to both city and citizens initiatives, seems to be a promising direction in investigating what kinds of new interaction channels could be useful.

In demonstrating that UM functionalities can be combined with existing systems -like the City's own web portal in the case of the rabbit project- we expected to exemplify the potential of flexible and modular tools to reduce the threshold of setting up a project (both for city and the citizens) as they have a lightweight, non-critical mission role and could be deployed fast, without compromising security, while keeping visibility and accountability towards the initiators.

By experimenting with different kinds of exchange formats, both popular ones like GeoRSS feeds, increasingly used in popular map mashups, as well as those readable by the city's legacy systems (e.g. CSV format for spreadsheets), we want to support portability, compatibility and re-usability of the information gathered. These issues are important for everybody, cities and citizens alike, if innovative practices are to be encouraged.

Furthermore, there is a point to be made for practices that encourage openness of the interactions, where the exchange of the information is not only part of a unidirectional stream of information towards either the city or the citizens. In this case, the UM resides outside the city's systems and renders its content accessible to all viewers; submissions are available and transparent to anyone who either contributes or visits the site out of curiosity. This seems to have been particularly appreciated, for example, in the cases in which the city is the one asking for contributions. This practice needs to be followed more thoroughly as it could be associated with people's motivation to submit or to follow up an issue. In addition, we need to explore better if agendas different than the one set by the administration could also emerge – and inform an original project – when contributions are left available to other types of processing.

Questions about other important aspects like the ownership and accessibility of the map data, concerns about privacy issues, reliability and relevance of the information, as well as sustainability models for such participatory infrastructures have also been raised and need to be better understood.

CONCLUSIONS

There is a clear need for more experimentation and research on how new practices that enable city-citizen interaction can be facilitated. Our participatory approach of staging and producing concrete interventions (with the UM prototypes, and UM demo services) involving already active stakeholders has been effective in eliciting ideas regarding how new types of city-citizen interactions could be configured. The types of engagements that prototypes and interventions afford offer an interesting and viable path to develop not only systems themselves but also the practices that surround them, and ultimately make them viable.

We are currently in the process of planning and realizing other 'living' interventions around different topics and with a wide range of collaborators. Thanks to the visibility of the bunny rabbit case; other departments who were previously unable to relate to the system when it was still abstract seem to be more interested now. Through future activities we expect to continue designing UM itself in a participatory design way. Furthermore, we see UM as part of a toolkit that could help stakeholders in the collaborative design and development of various city-citizen and/or citizen-citizen interactions.

From the original practical questions of how to create interfaces and software components for making different forms of knowledge mutually accessible to all the stakeholders in a city, we attempt to draw attention to bigger questions: what are the processes by which multiple actors can imagine and deploy new interactions with the city? What are the new types of policies (open innovation, living labs, funding of open source and community lead initiatives), roles (lead-citizens, risk-takers inside the city administration), and engagements that these new interactions will require? Are these adequate strategies?

We are aware that the logics of production of public administration are not (and can not be) the same as the ones followed by a consumer

product company expanding its markets in the most efficient ways possible -though new pressures on the competitiveness of cities and citizens seem to be altering this balance. However, it remains a fact that one of the biggest challenges for both cities and citizens is finding ways in which information and ideas can impact and inform local governments and decision makers in more effective ways.

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Article 2:
Eparticipation as an Information
Ecology: A Micro-Scale Examination
of Two Cases in Helsinki

Joanna Saad-Sulonen

ABSTRACT

In this paper, I propose to address eParticipation as an Information Ecology (Nardi & O'Day, 1999). By examining the micro-scale level of two cases of eParticipation as Information Ecologies, I identify micro-level technological building blocks and the artful integrations performed by actors whose role is often not enough emphasized. HCI research in the area of eParticipation should acknowledge the role of these actors in order to design eParticipation with and for them.

Author Keywords: *eParticipation, urban planning, information ecologies, ICTs, participatory design, artful integrations*

ACM Classification Keywords: *H5.m. Information interfaces and presentation: Miscellaneous. H.m Information systems: Miscellaneous.*

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INTRODUCTION

According to Sanford and Rose (2007), eParticipation is "technology-mediated interaction between the civil society sphere and the formal politics sphere" (2007:408). Information and Communication Technologies (ICTs) define eParticipation and there has been so far a certain optimism associated with the potentials of ICTs for participation. Lists of e-tools, classified by genre, have been created in order to help both practitioners and academics in keeping track of what is available (e.g. Demo-net website; Sanford & Rose, 2007). Lately, the rise in popularity of social media and Web 2.0 technologies, with their driving participatory nature and bottom-up possibilities for content creation and sharing (Kolbitsch & Maurer, 2006), has triggered interest in the potentials they might bring to governance processes and public services (ipts report, 2009). This diversity of tools at hand and the rapid pace at which new tools emerge, as well as the variety of actors concerned, make it difficult to identify and understand the dynamics at play between people and technology.

I argue that it is not enough to address eParticipation tools in isolation, as autonomous technological systems, but emphasis should be placed on the connections between these tools and how and by whom these connections can be created. Dittrich et al.'s study for example underpins the centrality of working relations of technology production and use in eGovernment in general (2003). Ekelin's research on eParticipation at the ground level, of how people literally get things done (Ekelin, 2007:3) shows the intricate socio-technical mechanisms at play to make eParticipation work.

I propose to address eParticipation as an Information Ecology, using the concept articulated by Nardi and O'Day (1999). They define it as a system "of people, practices, values, and technologies in a particular local environment" (1999:49). The concept of ecology, taken from biology,

makes it possible to address the diversity of people and tools as well as their co-evolution. Moreover, an ecology can be examined at different scales, from the micro to the macro.

In this paper, I examine two cases of eParticipation in urban planning in Helsinki. In each case there is a diversity of actors and tools at play, which I identify by drawing simplified mappings (see Figure 1 and 2), inspired by the mappings of actor-networks completed by Gärtner and Wagner (1996). In each case I zoom in to the micro-scale level, by "looking in the small", as Nardi and O'Day put it, in order to examine the points of contacts and exchange between the various tools and actors, and identify the "keystone species" who are activating the interaction and exchange mechanisms. Using the two case studies, I describe, analyse and discuss the mediating role of micro-level building blocks and their artful integrations by actors who are, at a modest but very concrete level, making eParticipation in urban planning work.

My own role as an actor in each case stems from my involvement as a member of the design team of one of the tools used, the Urban Mediator (UM), and as a researcher involved in action research. The UM has been designed as an experimental boundary object and a mediating environment, which is targeted at both citizens and city planners and authorities (Botero & Saad-Sulonen, 2008). From previous findings, it has been clear that it is important to consider the relationship between the UM and the other tools being used (Saad-Sulonen & Botero, 2010; Horelli & Saad-Sulonen, 2009), thus the relevance of its 'mediator' nature.

CASE 1: TRAFFIC SAFETY PLANNING IN MALMINKARTANO

The first case was initiated during Spring 2008, by planners from the City of Helsinki Planning Department (CIPD), in collaboration with the researchers and system designers (Saad-Sulonen & Botero, 2010). Residents were asked to collect, using the UM, location-based information related to traffic safety issues in the neighborhood of Malminkartano. The traffic planner responsible for this area then used the collected information in order to create new traffic plans.

The first actors involved in this case were the designer/researcher from the University of Art and Design Helsinki, the ICING project¹ partner from the City of Helsinki Urban Facts Department, the participation

¹. ICING (Innovative Cities for the Next Generation) was a EU-funded project that was active between 2006 and 2008. Both the City of Helsinki and the University of Art and Design were official partners.

coordinator and the traffic planner from the CiPD. The ICING partner had been asking whether the CiPD would be willing to test the UM, following the success of previous first tests in another department (Botero & Saad-Sulonen, 2008). The participation planner had learned from the traffic planner responsible of the area of Malminkartano that she would be interested in asking residents about traffic safety issues before preparing the scheduled new plan for the area. As the UM was designed in such a way to be further adapted through use, we organized a participatory design workshop with those who seemed to be the main actors at the time, mainly the ICING partner, two participation coordinators and the traffic safety planner (Saad-Sulonen & Botero, 2010).

One of the functionalities of the UM, which was developed as part of the first public use of the UM in an eParticipation project, is the possibility to create web widgets (Botero & Saad-Sulonen 2008). UM web widgets can be embedded in any website and prompt users to create a point on the UM map or give a list of the newest points in a UM topic. One of the aims of the PD workshop was to let the planners experiment with how they could make use of this feature. They decided that it would be best to place these widgets on the website of the CiPD. They realized however that they could not themselves place the iframe code generated by UM for each widget, on the website, because they had limited or no rights to access it, nor any other website for that matter. Moreover, they did not know how to edit HTML code. They indicated that their in-house Webmaster should therefore be involved. The Webmaster thereon became a new key-actor in this ICT-mediated public consultation project. The information webpage she created on the department's website became the main interface for the residents to provide their information to the planners. It included two "create a point" UM widgets as well as one "list of latest points" UM widget. It was also decided that a short news item would appear on the main portal of the City of Helsinki, linking to the info webpage on the website of the CiPD. This meant that this short information text, with its links to the UM, automatically appeared on the Malminkartano community website, via the City of Helsinki portal RSS newsfeed that is available to all local community websites provided by the NGO Helka ry.

After the information was collected from the residents, the GIS specialist at the CiPD imported the CSV (comma-separated values) file generated

Figure 2.
The mapping of actors and tools in the Malminkartano case

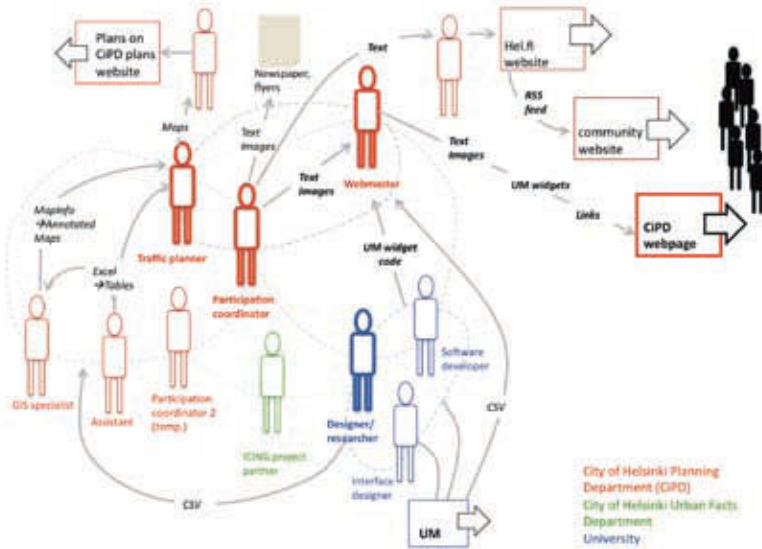
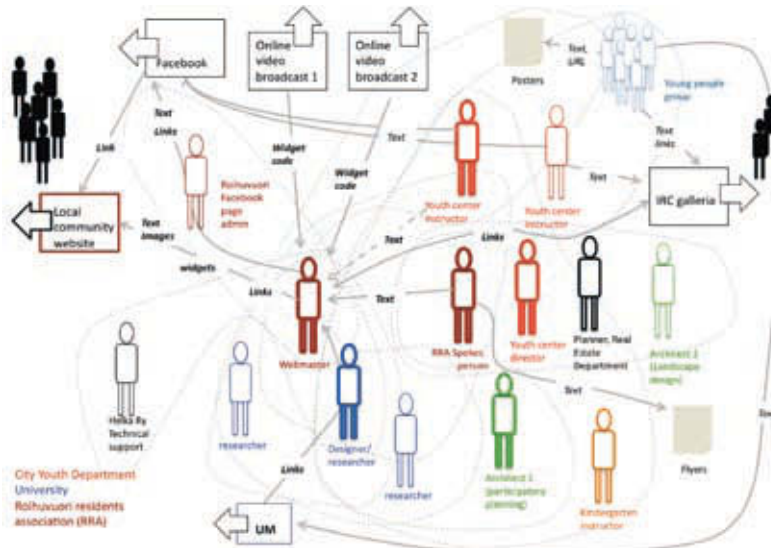


Figure 3.
The mapping of actors and tools in the Riihuvuori case



by the UM, to create a GIS map for the planner to use. Finally, after the new traffic plans were drawn, the planner asked a technical support person to upload them on the online city plans site of the CiPD, where all new plans are published. A link to the original contributions of residents on UM was also indicated there.

CASE 2: CO-DESIGN OF A SHARED NEIGHBOURHOOD YARD IN ROIHUVUORI

The second case was carried out during 2009 and 2010 by a variety of local actors in the neighbourhood of Roihuvuori. It was different from the Malminkartano case in the sense that it contained elements of community-driven action, and was not completely "top-down". The case dealt with the collaborative design of a neighbourhood park, which initially belonged to the land rented by the local Youth Activity Centre (YAC). A Community Informatics-assisted participatory urban planning approach was adopted, which augmented the traditional participatory urban planning methods with the use of ICTs (Saad-Sulonen & Horelli, 2009).

The main actors involved in this project were at first the director of the YAC, youth instructors from the YAC, representatives of the kindergarten that uses the premises of the centre in the mornings, the Roihuvuori residents association spokesperson, a representative from the Real Estate Department, representatives from various projects active in the area, and researchers who have been engaged in long term action research in the area (including myself as a designer-researcher). After the YAC received the initial funding they had asked for from the City of Helsinki to investigate the transformation of the yard into a shared neighbourhood park, they were able to employ an architect, specialized in participatory urban planning, to run co-design workshops with residents and produce an initial plan for the park. The participatory urban planning process allowed interested individuals from different age groups (teenagers, seniors, adults, and schoolchildren) to take part in the organized workshops and ideate how the new park should be.

Similarly as with the Malminkartano case, once we presented the possibilities of using UM and the possibility to create web widgets, it was decided that the webmaster of the local community website would need to be involved. The local website acted as the main

interface for the residents to take part in the participatory processes. As the project advanced, it became apparent that there were also other interfaces to take into consideration: the group of teen-agers for example wanted to communicate with other young people by using the IRC Galleria online diary platform, which is popular among teen-agers in Finland, as well as via posters they had designed and hung at their school. Their aim was to ask other young people to give them examples of nice parks in Helsinki so that they would get inspiration for the design of the Roihuvuori yard. They achieved this by asking them to use the UM or writing their piece of information on a paper. Later on, the Webmaster also indicated that the Facebook page of the neighbourhood could be used to reach out for residents. He contacted the resident acting as the page administrator to ask her to advertise on the Facebook page, one of the resident evenings where the plans for the yard were presented. In later experiments, two online video broadcasting websites were also used to broadcast the resident evenings where the design of the park was presented and discussed.

MICRO-LEVEL BUILDING BLOCKS

The fact that UM was designed as a mediating environment rather than a system that belongs to the municipality made it necessary to decide early on, what would be the gateway and first interface that would guide people into participation. The UM functionality could be available, through widgets, or via a HTML link, on that interface. In the first case it became clear, after the PD workshop with the planners, that the website of the CiPD would be the main gateway for participation. The information page about the project contained the UM widgets, and later also links to the CiPD plans website. In terms of exchange of data, the "export as CSV" functionality of UM proved useful as it permitted to view the data on the CiPD's own GIS system.

In the case of Roihuvuori, the local community website acted as the main gateway to the eParticipation. The Webmaster created a special information page, where he added text and images about the unfolding of the participatory project. He also placed links to the other tools used, such as the teen-agers' IRC Galleria. He also consulted with Helka ry's technical support person in order to understand

how to embed the real-time video broadcast windows, provided by two online video platforms as iframe code.

Explanatory texts, images, HTML links, iframe code, RSS feeds, the CSV format, all acted as micro-level building blocks for creating connections between the different tools aimed at the different members of the general public and decision makers. The micro level of the Information Ecology is where the "individual points of leverage, ways into the system, and avenues of intervention" (Nardi & O'Day, 1999:50) subside. The micro-level building blocks are thus necessary for making it concretely possible to open up the possibilities for participation to the wider public. They also enable some form of collaborative work between citizens and authorities, through exchange of data and information.

ARTFUL INTEGRATIONS FOR ENABLING PARTICIPATION

In both cases, the webmasters were not initially involved in the preparations of the eParticipation activities. However, their role soon proved to be important. The in-house Webmaster of the Planning Department not only was able to embed the iframe code of the UM widgets to the information webpage on the department's website, but also adapted it in order to aesthetically fit the website (Saad-Sulonen & Botero 2010). She also gave expert advice on crucial issues that neither the planner nor the participatory coordinator had realised. For example, after the information was collected from the residents, she was the one who suggested that residents should be informed of the process through which this information will be handled. She suggested this information would need to be published on the CiPD website, and also be sent to the local neighbourhood website.

In the case of Roihuvuori, the volunteer webmaster of the local community website was not particularly technically savvy, but was willing to experiment with creating new kind of pages (for example the page dedicated to the design of the yard) and making use of new tools we had suggested to him (first UM, then the live broadcasting video tools).

Technical support actors, such as the CiPD GIS expert and the person maintaining the plans website, also played an important roles in processing and further distributing the locative information or the planners' drawings.

It is also interesting to note the role of citizens who are active online and at ease with using online tools. In the case of Roihuvuori, the group of young people involved in the participatory urban design used the UM as well as the IRC Galleria in order to involve other young people in the planning project. The youth instructors and active residents used the Roihuvuori Facebook page to advertise the project and get others involved by placing links there to the info page of the local community website and to the UM page. These actors are also important facilitators and mediators. Wellman et al. refers to them as "switchboards" or "portals", in the context of networked individualism (2003).

eParticipation is thus no more about one single technology but rather "hybrid systems composed of heterogeneous devices" (Suchman, 1994:34). Actors such as the webmasters, or the residents active on Facebook, perform what Suchman labels "artful integrations", with the building blocks at hand and the skills they possess or learn. The role of these actors is crucial - and they become indeed "keystone species" in the ecology - because they are the ones enabling the constructions of the bridges between citizens and planners, by working at the micro scale. Their activity also resembles that of design as bricolage (Büscher et al., 2001), using available technical building blocks, and adapting them to emerging needs and situations.

CONCLUSIONS

In this paper I have presented two cases of eParticipation in the context of urban planning in Helsinki. I have shown that it is important to look at how ICT-mediation, which is at the core of eParticipation, is constructed at the micro-scale level. The mapping of the actors and tools has made it possible to identify the micro level building blocks at play, such as text, images, HTML links, iframe code, CSV formats and RSS feeds. These building blocks are the raw material that makes it possible to build connections between the general public and planners and city administrators, which is what all e-democracy initiatives strive for. Moreover, I have identified new roles in the constellation of actors apparent in eParticipation, namely webmasters (such as the webmasters of city departments and the webmasters of local community websites) and citizens who are active online. These facilitators and mediators contribute to building

healthy eParticipation ecologies through their experimentations and bricolage. eParticipation needs to be designed with and for them.

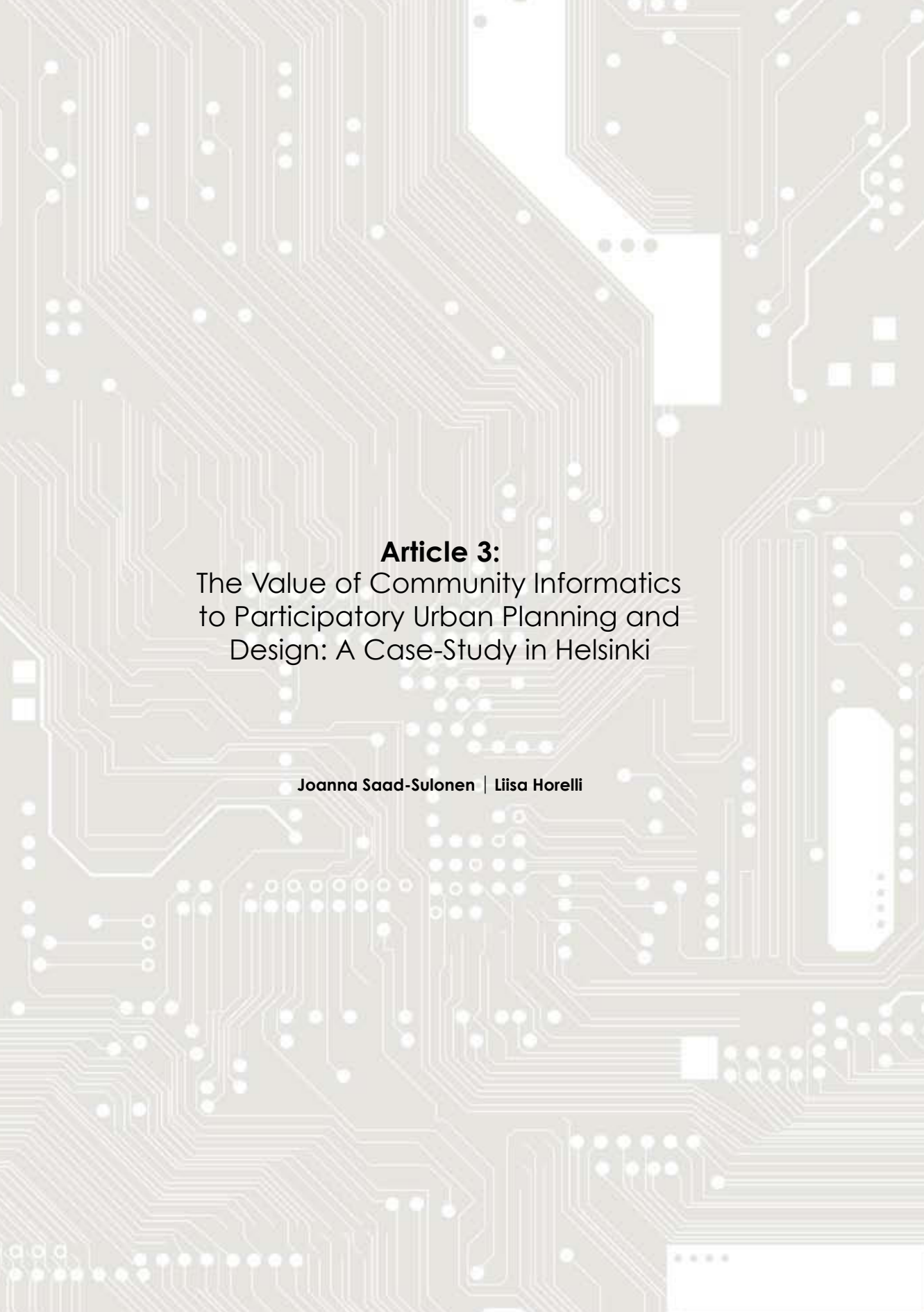
It is important however to also keep in mind the role of other actors, such as those who can provide facilitation and mediation with planning and governance processes. The CiPD participatory coordinator in the Malminkartano case, and the participatory urban planner in the Roihuvuori case are examples of such actors. Further examination of the data collected through the two case studies will permit to investigate a broader spectrum of keynote species in eParticipation.

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Article 3:
The Value of Community Informatics
to Participatory Urban Planning and
Design: A Case-Study in Helsinki

Joanna Saad-Sulonen | Liisa Horelli

ABSTRACT:

The aim of the article is to present and discuss the potentials of community informatics for participatory planning and design, as well as for ICT-mediated participation in general. The article is based on a case study of the co-design of a shared yard in Helsinki. The application of ICTs meant that tools such as the local website and the Urban Mediator were used as platforms and media to co-create, share and distribute information concerning the progress of the design of the yard. We argue that CI-assisted participatory planning and design provide a viable perspective and significant contribution to ICT-mediated participation in urban issues.

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INTRODUCTION

The inclusion of stakeholders in planning processes is referred to with different names both in practice and theory, such as collaborative, communicative, deliberative and community planning. Urban planning is also opening up to the use of ICTs as a major tool for citizen participation. However, the application of Community Informatics in urban planning is still rare in the Finnish context. Community Informatics (CI) means, according to Gurstein (2007), the application of ICTs for the empowerment of local people and communities.

We use the term *ICT-mediated citizen participation in urban issues* as a neutral concept, because it is not tied to any particular field of study, contrary to *e-participation*, which is very much linked to government and the European Union jargon. ICT-mediated citizen participation in urban issues comprises aspects of the relationship between participation and technology being addressed in such areas as governance, urban planning, information systems and interaction design, geography, citizen activism and community development (Figure 1).



Figure 1:
ICT-mediated
citizen
participation in
urban issues

According to Medaglia (2007), the digital terminology is quite fuzzy and needs further definition (see also Macintosh & Whyte 2007). E-participation is closely tied with e-democracy and e-governance (OECD 2002). E-participation, which promises to lead to a more participatory form of democracy, is applied in e-voting, e-referendums, e-initiatives, e-consultations, e-petitions, and e-party meetings. E-participation can be direct or indirect. Its scope of impact ranges from the reception of information, via consultation to real participation or transaction, such as e-voting, and blogging (McCaughey & Ayers 2003).

The same kind of ladder of participation can also be applied in e-planning. However, e-planning is not usually included in the e-family, as the field itself is still in a phase of construction. Silva, who has edited the first handbook on e-planning (2010), emphasizes the need for developing the relationship between planning theory and the use of ICTs in planning. He also understands e-planning as being part of the shift towards a more participatory and collaborative type of planning.

Foth et al. (2009, 99–102) have compiled a summary of the evolving links between planning and technology. Most examples concern Geographic Information Systems (GIS) and Planning Support Systems. Although recent developments explore the potential of using these technologies for enhancing citizen participation (e.g. public participation GIS; Sieber 2006), they still remain expert-based systems. Other recent developments stemming from the area of information systems and interaction design, such as urban computing (Paulos et al. 2009) and urban informatics (Foth 2009), explore more mundane tools, such as mobile phones and Web 2.0 systems, and their availability for use and adaptation in the urban context. NeoGeography also addresses the potentials of these tools, but focuses on the production of spatially related information by non-professionals (Rana & Joliveau 2009). E-activism, or cyberactivism, refers to the use of ICTs and online tools that support the activities of self-organized citizen movements (McCaughey & Ayers 2003). Community Informatics focuses on the empowerment of communities and on the support of community development processes. CI can also be seen as an enabler of activism (Gurstein 2007). Although traditionally concerned with the rural context, CI is opening up to explorations situated in urban contexts as well (Gurstein 2007; 2010).

ICT-mediated citizen participation should, in our opinion, be

approached holistically. CI offers an interesting perspective in this respect, as it enables the integration of a range of ICT-mediated participatory methods and processes, which are embedded in community development and local governance (Figure 2). Our research problem is the following: What is the added value of CI to participatory urban planning? What are the characteristics and consequences of CI-assisted participatory planning and design?

The aim of our article is to present and discuss the potentials of community informatics for participatory planning and design, as well as for ICT-mediated citizen participation in general. We will also elaborate their consequences for the empowerment of young people.

The article is based on a case study of the co-design of a shared neighbourhood yard around the Roihuvuori Youth Centre, in Helsinki. We argue that CI-assisted participatory planning and design provide a viable perspective and significant contribution to ICT-mediated participation in urban issues. We start by framing our theoretical approach after which we proceed to the description of the case study. We conclude by discussing the research results in the light of the theoretical framework.

FRAMING THE THEORETICAL APPROACH

The complexities of urban problems usually require an integrative framework that is built from different perspectives. The framing of our theoretical approach comprises an examination of community informatics and its relationship to the participatory processes of planning and design within the bigger context of ICT-mediated citizen participation.

Community Informatics – A Field in Flux

The basic definition of Community Informatics (CI) as the application of ICTs for enabling and empowering community processes (Gurstein 2007) is still quite open¹. CI is still a field in flux with on-going discussions in terms of what issues and concepts should be included or excluded.

CI strives to bring to communities such Information Systems (IS) that might be able to translate the essence of how the community functions

1. Community can mean
 1. a territorial unit
 2. a local or translocal community of interest
 3. a virtual community.
 The focus of CI is the local, territorial community, which, however, comprises various local and translocal communities of interest. Some of them are virtual.

or should function. Thus, it is hypothesized that CI facilitates the self-development, self-management and empowerment of the (local) community (Gurstein 2007). Historically, CI has adopted Management Information Systems (MIS) as its model and has attempted to articulate its own strategies and techniques by transferring relevant MIS-strategies from the realm of corporations to that of communities. Therefore, CI addresses the potentials to develop Information Systems for empowering communities, in the same way as MIS has tried to empower management and corporate organisations (Gurstein 2007). CI has also a strong civic drive. It attempts to counterattack the commercialised Internet environment by emphasising the relevance of local and public presence and by advocating the need for communities to be in control of their own web portals, applications and tools (Schuler 2000; de Cindio & Ripamonti 2010).

CI is also particularly concerned with the question of the Digital Divide and the use of ICT by less favoured groups worldwide. In addition, CI is often associated with efforts that aim at the empowerment of rural communities instead of the urban ones. Gurstein (2007) points out that it is more difficult to identify the "community" in urban contexts and the consequent need for appropriate CI-applications, tools and sites. However, we believe that it is the "urban CI" (Gurstein 2010), which can enhance ICT-mediated citizen participation in important environmental issues of everyday life. This implies the enhancement of the development, maintenance and sustainability of ICT tools for participation. We believe that CI provides new opportunities for digitally mediated participation by bringing forth questions that concern the role of informatics for communities. Furthermore, CI offers a community-driven approach to the design and use of ICT.

Last but not least, CI can help communities to become truly glocal² by providing them local and translocal networks that might influence global affairs (Horelli & Wallin, forthcoming; Horelli & Schuler, forthcoming).

Due to its background in information systems science, CI seems to imply at times a technology-utopian attitude (Pitkin 2001). The embedding of CI in a larger socio-cultural framework, such as participatory planning and design, might be beneficial for both the development of CI and its outcomes for the community.

2.

Glocal means here the combination of local, regional and global, by using ICT-assisted and non-mediated social networking for shared purpose, such as politics, business or environmental protection. Thus, the mainly analytical concept can also be used in a strategic way. However, there are different types of glocal influence or interaction, vertical and horizontal, scaling up and scaling down (Khondker, 2004).

CI in the Context of Participatory Planning and Design

It is important to recognize that some of the issues related to citizen participation in general, and to ICT-mediated participation in particular, are planning issues. Due to the increasing complexity of issues to be solved, urban planning can be viewed as closely embedded in community development and local governance (Wallin & Horelli 2010; see Figure 2). As community development addresses issues that are related to the self-organization and self-management of communities, it is naturally linked to Community Informatics (Gurstein 2007). Local governance refers to the management and leadership processes of local decision-making bodies, but also to the informal networks, local fora, projects and working groups that "govern" local affairs. The foci of expanded or embedded urban planning are, besides traditional land use and zoning, also the conditions for the development of socio-technical networks, assisted by urban and community informatics (Foth 2009; Gurstein 2008). The implementation of planning takes place, besides building, also through the communication and co-ordination of community-based activities.

The application of ICTs in this expanded view of urban planning provides a special locus for, what Wallin and Horelli (2010) present as user-sensitive service design. In this paper, we propose a more generic view and consider all participatory design processes as bridge builders between urban planning, community development and local governance (see Figure 2). These processes can include the co-creation of common urban space, communal and public services, as well as digital or hybrid tools for citizen participation. The processes related to the latter are what Gurstein refers to as: "appropriating, integrating and repurposing existing technology as community supports, while equally facilitating the development of technologies which in their very design reflect the specific ontology of communities." (2007,39). This resonates with what Lucy Suchman (1994) refers to as "artful integrations", or practices that relate to the integration of hybrid systems of different devices and technical systems. Karasti and Syrjänen (2004) use the terms "artful infrastructuring" or the blurring of boundaries between use, tailoring, maintenance, reuse, and design. These definitions also bring forth the relevance of Participatory Design³ for CI systems (Carroll & Rosson 2007).

Participatory urban planning means in general a planning approach

3. We differentiate in this article between participatory design, which refers to the general participatory design processes, and Participatory Design. The latter is a field of inquiry and practice that promotes stakeholder participation in the design of information and computer systems (e.g. Kensing & Bloomberg 1998).

Figure 2:
 The general participatory design approach acts as a bridge builder that embeds urban planning in community development and local governance through a variety of methods and tools (adapted from Wallin & Horelli 2010).

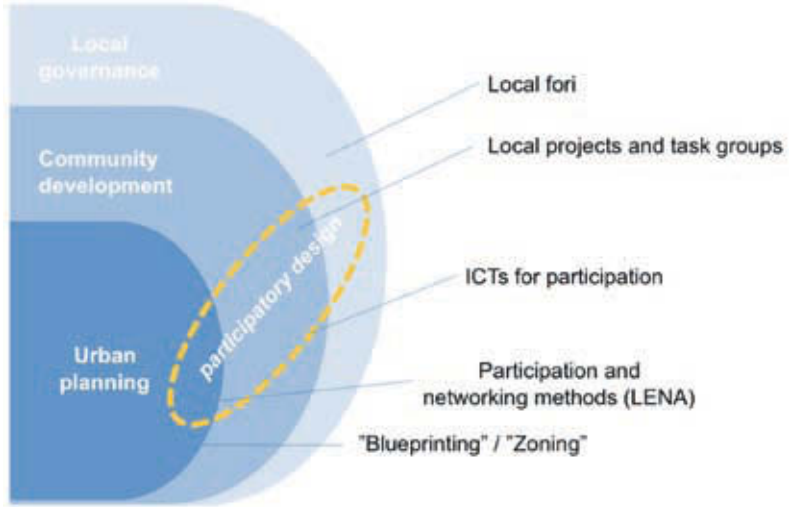
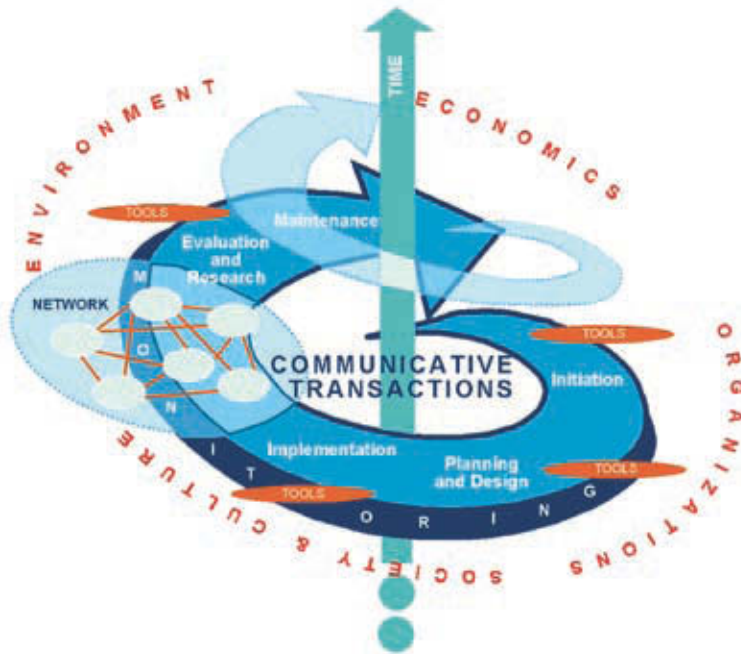


Figure 3:
 A schema of the methodological approach to participatory planning and design



that advocates and facilitates the inclusion of stakeholders in the planning process. Such approaches have been frequent, although not mainstream, since the 1960's. With the communicative "turn" in planning in the 1980's and 1990's, participatory planning has become a theoretical, if not a practical norm, in many countries (Healey 1997).

The cycle of participatory planning consists of a continuum of different phases: initiation, planning and design, implementation, evaluation and research, and maintenance. Enabling tools support the participatory activities of each phase (Horelli 2002; Figure 3). These tools enhance the transactions and knowledge creation of the stakeholders during the phases of participatory planning. They can be classified as diagnostic, expressive, conceptual, organisational and political (Horelli 2002). Horelli includes ICTs, ranging from expert CAD and GIS systems, to Internet-based tools, under the category of expressive enabling tools. The latest technological developments make it possible to include ICTs in the other three categories as well. These tools can, in fact, be regarded as different types of patterns that can be chosen for different purposes depending on the context (Schuler 2008; de Moor 2009). They also make up the ecology of tools necessary for e-planning⁴ (Wallin et al. 2010). Participatory planning becomes e-planning when participatory activities are expanded beyond face-to-face interaction to include ICT-mediated interaction that is independent of spatial and temporal constraints. Participatory e-planning can be defined as a socio-cultural, ethical, and political practice in which women and men, young and older people take part offline and online in the overlapping phases of the planning and decision-making cycle (Horelli & Wallin 2010).

We have been applying a particular version of participatory planning, called the learning-based network approach to planning and community development (Lena; Horelli 2006). In this approach, the cycle of participatory planning is seen as a locus for learning and capacity building for the engaged stakeholders (Horelli 2002). When participation is seen as a continuous learning process, the resulting empowerment of the individual through competence building will foster confidence in further participation (Horelli 2002; Koskinen & Paloniemi 2009). Thus, the learning process can also be enhanced by applying tools, such as ICTs, in a way that increases the understanding of the use, adoption and even adaptation of the ICT tools.

4. E-planning can refer to the: 1) provision and delivery of planning services (building permits etc.) 2) offline planning with e-tools as one technique 3) co-production and application of e-tools and platforms in community development 4) planning of virtual objects and spaces with e-tools (for example in Second Life). E-planning in this article refers to the second and third type comprising both online and offline planning activities.

In the study presented in this article, we examine the phases of initiation, and planning and design of the co-design of a common yard in Helsinki. We identify the different CI tools that act as enabling tools for the participatory urban planning process as well as enhance the learning process of the stakeholders (see Appendix 1).

APPLICATION OF CI-ASSISTED PARTICIPATORY PLANNING AND DESIGN IN A SHARED NEIGHBOURHOOD YARD

Roihuvuori, a residential area of 7400 inhabitants, is situated 10 km east of the centre of Helsinki. It is part of the bigger mixed-use area of Herttoniemi in which we have conducted action research since 2004 (Wallin & Horelli forthcoming; Horelli & Wallin in press). The Roihuvuori Youth Centre⁵ and its surrounding yard are rented by the Youth Centre from the Helsinki Real Estate Department. The need to co-design the 6500 m² yard came up in the Local forum meeting in December 2008, which was held at the Roihuvuori Senior Centre, next to the Youth Centre. A fenced part of the yard is in active use by a local kindergarten that uses the Youth Centre building in the mornings. The rest of the yard is open to everybody, but only the western corner is in active use, by a group of local alcoholics. The yard is not maintained and trees and shrubbery have grown wild between granite rock formations, typical of the south of Finland.

The preparation for the co-design and planning of the yard were made in a series of meetings at the Youth Centre in which the Youth Centre and kindergarten staff, representatives of local projects, members of the neighbourhood association, researchers (us), as well as local officials from different city departments took part. This group chose CI-assisted participatory planning as the strategy for the project.

The planning of the yard officially started in February 2009, when the Helsinki Real Estate Department agreed to hire an architect to facilitate the co-design and to make the preliminary plans on the basis of the negotiations and dialogue with the stakeholders. The phase of co-design lasted six weeks. Funding for the implementation was sought from a special neighbourhood fund that granted money to city departments. At the end of the co-design, in June 2009, the City granted 450 000 Euros for the implementation of the yard.

5. The Youth Department of Helsinki maintains several local Youth Centres, which are open for young people in the age of 9 to 18 years. Besides being open meeting places, supervised by youth instructors, the centres also offer various activities ranging from computer and Internet use to theatre and dance.

The role of the researchers was to facilitate, monitor and assess the CI-assisted participatory processes. The theoretical framework described in this article influenced the participatory action research strategy. It guided the methodology that comprised the application of different enabling tools (e.g. paper map annotations, wiki design, Urban Mediator) and data gathering techniques (observations and focus group interviews). The research questions were: What are the outcomes of the CI-assisted participatory planning? What did the young participants learn? What kind of role does CI play in the project?

Traditional and ICT-Mediated Participation Hand in Hand

Participatory planning is not a common practice in Helsinki, where the official municipal planning is mostly top-down. However, the director and the employees of the Youth Centre wanted to involve adolescents and also other potential users of the yard in the co-design process. This served the goal of improving the integration of the Youth Centre in the community, which so far had not been welcomed by the residents. The yard was also supposed to serve the day care activities of young children in the mornings. Consequently, the kindergarten staff wished to involve young children and their parents in the co-design of the yard. The representatives of the local projects wanted to increase spaces of physical activities for different age groups, including seniors who used the Senior Service centre, next door.

Co-design workshops were organised for six different groups: adults, seniors, pre-school children (two groups), young children's parents, and adolescents. The main method was the "walk around the block" and the annotation of the ground plan by using red and yellow post-its. In addition, a so called "wiki design"⁶ session was organised for the residents by Peter Tattersall, a student of architecture. A discussion with some of the alcoholics who had taken on drinking in one corner of the yard was also arranged. Their participation in the workshops proved however too difficult to organize during the timeframe given.

In addition to the enabling methods described above, the goal of the application of community informatics was to expand the face-to-face participatory process, by involving residents and particularly adolescents in the strategic use of online tools (see Table 1). The Internet

6. Wiki design is inspired by Wikipedia on the web. Instead of co-writing articles, the participants can propose design and planning ideas by using different objects and symbols, such as Lego blocks, candies, magazine pictures, cardboard and paper, which are placed on a scaled model of the area in question (Tattersall 2009).

Table 1:
The list of the various CI tools used in the first phases of the participatory planning process in Roihuvuori.

CI tool	Description	Purpose of use / participatory planning phase	Key actors	Target group
Mailing lists	Collection of e-mail addresses	To contact others / Initiation phase + Planning and Design phase	- Various local actors (e.g. youth instructor acting as secretary in the meetings, kindergarten worker, social worker)	- Different existing groups (e.g. initial working group, parents of the kindergarten children, senior residents)
Urban Mediator (UM) (http://um.uiah.fi/hki and http://um.uiah.fi/hel)	Online map-based tool. Anyone can start an "Urban Mediator Topic" for the collaborative gathering of location-based information related to a chosen theme	To get inspiration / Planning and Design phase	- Group of adolescents - Youth instructor - Researcher acting as facilitator	- Young people in Helsinki
		To report results of the participatory planning workshops / Planning and Design phase	- Participants in workshops (grouped by age groups) - Architect leading the workshops - Researcher acting as facilitator	- Participants from other age groups - Roihuvuori residents
Roihuvuori community website (http://roiuhuvuori.com)	A local website running on a platform provided by. Maintained and updated by volunteers from Roihuvuori. The website includes different theme pages, a discussion forum, information about the Roihuvuori residents' association, and newsfeeds from the City of Helsinki website and Finland's main newspaper.	To inform residents about the ongoing participatory planning processes / Planning and Design phase	- Volunteer webmaster - Researchers acting as facilitator - Director of the youth centre - Spokesperson of the Roihuvuori residents' association - Helka ry tech. support	- Roihuvuori residents
		To archive the documentation of the participatory planning process / Planning and Design phase		
IRC Gallery (http://irc-galleria.net)	A Finnish web platform that enables the creation of one's own online diary. It is popular among teenagers.	To inform friends about the participatory planning project / Planning and Design phase	- Group of adolescents - Youth instructor - Researcher acting as facilitator	- Friends and acquaintances of the group of adolescents
Facebook (http://facebook.com)	An international social networking website	To inform Roihuvuori residents / Planning and Design phase	- Youth instructor - Facebook Roihuvuori page admin	- Roihuvuori residents on Facebook
Floobs (was available during the study at http://www.floobs.com)	A Finnish online video broadcasting platform that was running between 2007 and 2010.	To inform Roihuvuori residents who could not be present during the public presentation / Planning and Design phase	- Group of adolescents - Youth instructors - Researcher acting as facilitator and mediator - Webmaster of roiuhuvuori.com - Helka ry tech. support	- Roihuvuori residents who could not make it to the architect's presentation

was thought to provide opportunities to those who could not take part in the workshops.

Existing mailing lists were used first, in order to reach out for the different age groups. It was then decided that the Roihuvuori local website should be used as the main interface for publishing information regarding the ongoing participatory planning processes. The neighbourhood association of Roihuvuori maintains the local website, which runs on a platform provided by the Helsinki Association of Neighbourhoods, Helkary (Horelli & Wallin in press). Most of the content of the website was published by a volunteer Webmaster, but the discussion forum was open for all parties.

In order to translate the ground plans, annotated by different age groups, into annotated online maps, and to share and distribute information concerning the different visions for the yard, we proposed the application of the Urban Mediator software (Saad-Sulonen & Suzi 2007; Saad-Sulonen 2007). Urban Mediator (UM) is a framework that enables to create, collect and share location-based information (see <http://um.uiah.fi>). UM is an example of CI applications, even though it is still a research tool in beta phase and hosted by the university. UM offers a set of tools that enables users to set up topics of interest in order to collect location-based information. The topics are managed and maintained by the users or groups of users (see Figure 4).

During the initiation phase, only the tools already familiar to the stakeholders, such as mailing lists, were used. During the planning and design phase however, the different stakeholders experimented with new tools (Table 1). These tools enabled them to reach out for others and include them in the participatory process, which then took place in both face-to-face and ICT-mediated mode.

Young People Learning Digital Citizenship

Besides involving the young people in urban design, the instructors of the Youth Centre wanted to provide them with a work-experience type of activity by organizing a series of ten participation events for them. This was thought to activate more adolescents to visit the centre, which was relatively new in the area. The Roihuvuori Youth Centre has a computer room with four PCs, which made it easy to integrate the use of ICT in the

activities of the group. The instructors also thought that the adolescents might become technology experts in the project.

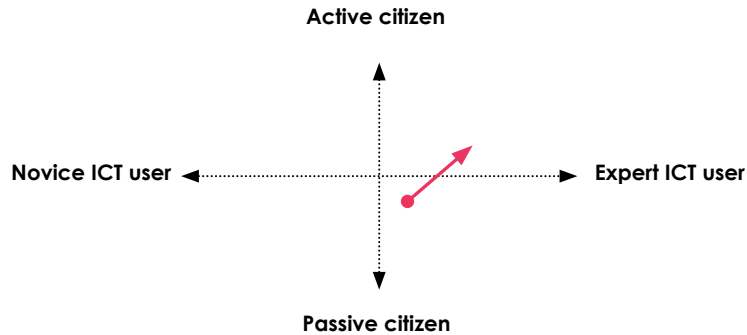
A group of seven young people was recruited by the youth instructors during one of their regular field trips to the local school. The chosen group comprised two boys and five girls in the age of 13 to 17 years. The group met at the Youth Centre ten times during two months. The sessions lasted between two and a half to three hours on Friday afternoons. The program of the sessions was set up by the Youth instructors, in collaboration with one of us, who acted as the technology and media facilitator (see Appendix 1). The goals of the sessions were to get the adolescents acquainted with one another, to collaborate with other participants, to analyse the yard, and to learn how to handle various ICT tools.

The last planning session comprised a collective self-assessment. The youth instructor and the researchers discussed with the adolescents what they had learnt. The group gave many positive answers ranging from technical skills (the Urban Mediator tool), via planning and design skills (how to transform what appears as an ugly yard into a nice place), to collaborative work and consensus-building skills (working in groups). They also stressed the importance of personal growth, as well as emotional and cognitive skills (overcoming shyness, increased confidence in oneself, ability to network with other adolescents and with adults; see Appendix 1). Consequently, the CI-assisted participatory planning and co-design were an opportunity to learn on different fronts, which empowered the adolescents to become digital citizens: both expert ICT users and active persons (see Figure 5).

The involvement of young people in the participatory design (the workshop, the Wiki design session, and the final presentation event) opened up new realities of collaborative planning, including the necessity to work with people that they would not normally interact with. The face-to-face interactions enabled them to realize that adult residents, architects, and even people they considered as having authority (for example the director of the Youth Centre) are, after all, not as one of them had feared, "thinking machines". The adolescents confessed at the end of the project that they had been surprised by the informality of the process, although they realized that it was a serious endeavour.

The use of the Urban Mediator enabled the young people to think and act as masters of technology, instead of being passive users and

Figure 5:
The youth group learned important skills relevant to the digital citizenship by increasing both participation abilities and the knowledge of ICT use.



mere consumers (Gurstein 2001; 280). The Urban Mediator, which had been developed with a co-design approach, has a set of flexible features that enable the user to tailor the functionalities according to their own needs (Saad-Sulonen and Suzi 2007; Botero & Saad-Sulonen 2008; Saad-Sulonen & Botero 2008; see Figure 4). The handling of these tools required the adolescents to be active decision-makers, who had to simultaneously address strategies of collaborative action, as well as to appropriate the technology in order to support these strategies. For example, the group chose together a shared username and a password so that anybody from the group could edit and moderate their Urban Mediator topics. This obliged the group to experience a process of building common understanding of their responsibilities towards the information to be published via UM. It also triggered the building of collaborative ownership of their project. The group did not want to appoint a topic administrator, but preferred a situation where anyone could be the administrator.

Despite the fact that this project, because of limited funding, did not further the co-design of the Urban Mediator, some of the young participants expressed, however, ideas for refining it and making it more attractive for young people. When they were asked, whether they would be interested in participating in the co-design sessions of UM development, they responded positively. We can say that their answer hints to the possibility of intertwining participatory design processes for the development of ICTs with those of participatory urban planning. The iterative spiral of participatory planning (Figure 3) could

therefore include, not only the use of ICTs, but also their co-design by the communities of stakeholders.

The Catalytic Role of Community Informatics

Koskinen and Paloniemi (2009) have presented a model of Environmental Policy Action as a Social Learning Process in which two alternative paths to participatory processes exist. The first one is involvement, which means organised encouragement. The second one is authentic participation, which is self or group motivated. We can similarly regard CI-assisted participatory planning and co-design as a form of social learning and empowerment. This project provided both involvement of young people and authentic participation that was self and group motivated (see Appendix 1).

One of the shy girls told us that she had developed more confidence in voicing her opinions. And an assertive boy said that he had learned to listen more to others.

The role of CI was significant as a catalyst of collective behaviour in the group (see also Rettie 2008). In order to find design solutions, the youth group used a diversity of channels to find information and also to involve their peers to the process. First, the group got acquainted with the CI-type of tools, such as the UM, and learned to apply them. They used the UM to ask others to mark on a map of Helsinki interesting places that can provide inspiration for the design of the yard (Figure 4). The group also made use of other ICT-based information channels, such as Facebook and IRC Gallery platforms, in order to inform others of the participatory planning project they were involved in (see Table 1). The young people acted as, what Wellman et al. (2003) label, "portals". Each young person in the group diffused information about the participatory project via their accounts on social media sites, and invited members of their own (trans)local networks to influence the co-design of the yard.

The CI-assisted participatory planning approach also created what Percy-Smith (2006) refers to as spaces for dialogue between the young and adults. One of the young participants had, since the first sessions, expressed the idea of a graffiti wall for the yard. He discussed this idea with the other group members, the youth instructors and the different

adults whom he encountered in the process. The graffiti wall, which is controversial in the context of Helsinki, became part of the group's own proposal and was later included in the architect's plan. This plan was available for comments via the Urban Mediator. One of the comments, left by an adult resident, showed that not all adults are against the ideas of the young: *"The proposal looks generally good, this graffiti wall is a daring bet and even though it probably has its opponents, I believe that the adolescents will like it"*.

The youth group also used the video platform Floobs for online and real-time broadcasting of the presentations in the final session (see Table 1 and Appendix 1). The young acted as technical experts for the whole neighbourhood, providing it with the possibility to follow the session via the neighbourhood web site in which a video window was embedded.

In sum, the youth group put efforts on many fronts and learnt different skills in order to address the complex situation of their own participation and to involve other young people. It was apparent that several aspects of ICT-mediated participation, such as e-planning, the use and appropriation of existing ICT tools and social media, and the development of new features and tools, came into play. They reinforced both each other and the participatory endeavour as a whole.

The application of CI did not however succeed in engaging the whole community of Roihuvuori. In spite of efforts to mobilise diverse groups, only a small minority of the residents came to the different meetings and used the online tools. The design process had even an adverse effect, as a citizen movement was started by parents of small children who wanted to preserve a former open-air playground and who regarded the co-design project as a threat to their cause. Additional challenges encountered also included the lack of information sharing by city officials regarding the funding grant and the production of the final plans for the yard. Finally, in the implementation phase that is ongoing at the time of writing this article, the group of young people is no more involved in following up the project, even though the initial aim was to involve them. One can speculate that it is due to the fact that the youth instructor, who was leading the planning sessions, has moved to another job. Nobody at the Youth Centre has taken it upon him/herself to pursue the collaboration with the young people. Also, the architect who had run the participatory workshops has not been hired for the implementation phase. Important questions therefore

remain: how should participation itself be organised and designed and how should the political conflicts of power be dealt with (Susskind et al. 1999; Sibbett 2002; Fortunati 2009).

CONCLUSIONS

Our research problem dealt with the questions concerning the added value of CI to participatory urban planning and the characteristics and consequences of CI-assisted participatory planning and design to ICT-mediated citizen participation. The added value that CI seems to provide to participatory planning is that it involves a step towards a more holistic understanding of the relationships between planning and technology. Whereas the OECD and also European Union jargon around e-participation is closely tied to top down definitions of democracy and imposes ready-made software solutions for e-voting, e-petitions etc., CI brings forth a local and collective bottom-up perspective. It is evident that the integration of CI and participatory planning and design enrich traditional urban planning, which turns into e-planning. On the other hand, e-planning provides significant tangible and intangible contributions to ICT-mediated citizen participation.

One of the characteristics of CI-assisted participatory planning and design is that the application of the different participatory design processes enhances the embedding of urban planning in both community development and local governance (see Figure 2). Participatory design of both the yard and the application of CI cut through urban planning, community development and governance, depending on the different stages of the planning process and its implementation. For example, during the planning and design stage, an array of participatory methods, both face-to-face and mediated by ICTs, enabled stakeholders to take part in both the design of the yard and in the adaptation of various tools for engaging with a larger community.

Another characteristic is that the socio-cultural and political process of participatory planning and design has to be enhanced by both traditional and ICT-tools in complementary ways. Thirdly, the use of multiple channels for the gathering and diffusion of information seems to be important.

The consequences of CI-assisted participatory planning and design can imply diversified experiences of learning, besides concrete results in the form of a design in which the stakeholders can find at least some of their important ideas. If the planning process is continuous and comprises several sessions during the planning cycle (see Figure 3), it is possible to build capacity in digital citizenship skills, as was the case with the youth group in the case study.

The future challenges comprise the need to identify and define the range of relevant trans-disciplinary approaches that can address issues of ICT-mediated participation holistically and in a citizen-driven manner, keeping in mind the economic aspect as well.

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APPENDIX 1

SESSIONS	DESCRIPTION	FEEDBACK FROM PARTICIPANTS	LEARNING ISSUES
Session 1	<ul style="list-style-type: none"> - Presentation of oneself and motivations for joining the project - First encounter with the yard / exercise - Introduction to UM 	<ul style="list-style-type: none"> (+) satisfaction with familiar faces and that "normal" and "real" people are involved (not just "boring types") (-) more time for getting to know each other 	<ul style="list-style-type: none"> - Importance of getting to know each other - Overcoming uncertainty in terms of joining a new group and the project
Session 2	<ul style="list-style-type: none"> - First attempt to create a UM topic 	<ul style="list-style-type: none"> (-) only three participants in the session which made it difficult to make decisions 	<ul style="list-style-type: none"> - Writing a text of the project is difficult - Learning by doing - Development of technical skills
Session 3	<ul style="list-style-type: none"> - Refining an explanatory text of UM topic (groups of 2) - Making links and explanatory texts in the IRC gallery 	<ul style="list-style-type: none"> (+) good feeling / best feeling so far (+) working in groups of two helps (+) the competition idea gave a nice feeling 	<ul style="list-style-type: none"> - Group work - Ability to understand the strategy of participation - Proposal to org. a competition at school in order to get ideas from other young people, in addition to the use of UM - Development of technical skills
Session 4	<ul style="list-style-type: none"> - Examination of the material - Being interviewed by a reporter from the Youth Department 	<ul style="list-style-type: none"> (+) best session (+) got a good idea of what young people really want (-) no checking of the places mentioned by other young people 	<ul style="list-style-type: none"> - Ability to analyze the collected material - Ability to present the project and the group's perspective to strangers
Session 5	<ul style="list-style-type: none"> - Participatory planning workshop with the architect - Translation of proposals to UM 	<ul style="list-style-type: none"> (+) the architect was a nice guy (+) it was good to be able to see exactly what the relevant ideas were (-) too little time 	<ul style="list-style-type: none"> - Ability to work in a group and to build consensus - Ability to articulate design-related ideas - Ability to work with a professional - Dev. of technical skills

Appendix 1:
The table lists the process of young people's involvement in the planning of the neighbourhood yard, with their own feedback and the general learning issues.

Session 6 (extra)	<ul style="list-style-type: none"> - Participation in the wiki design session organized for the Roihuvuori residents 	<ul style="list-style-type: none"> (+) a lot of nice people (+) nice to use materials like cardboard and legos (+) easy to work with adults (-) too little time (-) difficult to build on the proposals of other people (-) those who could not take part in the session were sad 	<ul style="list-style-type: none"> - Ability to collaborate with adults - Ability to work with and build on the ideas of other age groups
Session 7	<ul style="list-style-type: none"> - Checking of comments on UM - Advertising the final presentation in the IRC Gallery and Facebook - Getting acquainted with the real time, online video broadcast platform Floobs 	<ul style="list-style-type: none"> (+) Floobs was fun 	<ul style="list-style-type: none"> - Writing info texts about a public event in one's own language, targeted at one's own age group
Session 8	<ul style="list-style-type: none"> - Preparation of the presentation for the final event - Practicing of video recording and broadcasting on Floobs 	<ul style="list-style-type: none"> (+/-) stress related to the public presentation (-) difficulties in writing the script for the presentation 	<ul style="list-style-type: none"> - Dev. of technical skills - Learning how to make a public presentation and to communicate the group's message
Session 9	<ul style="list-style-type: none"> - Final presentation meeting (architect presents his plans, youths present the process they have followed) - Video recording and online broadcast 	<ul style="list-style-type: none"> (+) own presentation (+) the architect's proposal (+) the small size of the audience (-) no introductions and shaking hands when people came in 	<ul style="list-style-type: none"> - Learning about participatory planning processes, actors and activities involved - Becoming confident to speak in public
Session 10	<ul style="list-style-type: none"> - Collective assessment of the whole process - Interviewing of young people by the researchers - Viewing of the video recording of the wiki design and the final event 	<ul style="list-style-type: none"> (+) what was done felt important (+) the process was successful (+) collaboration and group work was successful (+) it was a serious project (+) learned a lot 	<ul style="list-style-type: none"> - Learning how to reflect on the whole process and to pin point what was learnt



Article 4:
Exploring e-Planning Practices
in Different Contexts:
Similarities and Differences between
Helsinki and Sydney

Sirkku Wallin | Joanna Saad-Sulonen | Marco Amati | Liisa Horelli

ABSTRACT

As planners and decision-makers experiment with information and communication technologies (ICTs), it is important to explore and analyze these attempts in different planning systems and contexts. We aim to compare the use of and aspirations attached to e-planning in Helsinki, Finland and Sydney, Australia. This comparison will highlight the interrelationship between a given planning context and its amenability to an e-planning approach. The comparison shows that there are shared themes in both cases: firstly, the complexity involved in reconciling the aims of the e-planning experiments and their connection to the planning process itself (roles, objectives, implementation of tools and processes). Secondly, the way that e-planning opens up cracks in the façade of administration, and thirdly, the ways in which e-planning opens up the possibility to reshape existing planning procedures. However, as we argue, important differences exist between the two jurisdictions' approaches to e-planning which requires noting. In particular, we show how the different planning and governance contexts affect the adoption of e-planning and how this adoption is necessarily a selective process

Keywords: *e-planning, public participation, ICTs, ecology of tools, planning system.*

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EMERGING TOOLS AND PRACTICES OF E-PLANNING

Planning has had a complex relationship with information and communication technologies (ICTs) for a long time. The introduction of ICTs in cities tends to be a turbulent and ad-hoc process, although several cities claim to be City 2.0 and even 3.0 (Anttiroiko, 2011). Graphic and mapping tools, statistical data bases and visual simulations have frequently been used in urban planning practice. More recently, a set of new technologies, many of which have quickly entered everyday or mundane use, has been developed independently of urban planning, such as community web environments, social media platforms, and locative and mobile technologies. These technologies enable citizens to create and share data and information about local issues and the urban environment (Saad-Sulonen, 2012).

We refer to e-planning in this article, as *the sociocultural, ethical, and political practice in which people take part online and offline in the overlapping phases of the urban planning and decision-making cycle* (Horelli & Wallin, 2010, 3). We also take into consideration the extended range of digital tools – official, unofficial, expert, and mundane - and address their use in the context of citizen participation in urban planning. Whereas advocates of technology argue that the application of ICTs might complement or even change participation in planning (Yeh & Webster, 2004; Anttiroiko, 2011), it is important to remember the role of the socio-political context in which the technology is applied. For example, resources are spread unevenly in different sectors of government, some areas of bureaucracy may be better suited to an e-planning approach than others or a particular technology may become associated with an enthusiastic individual or champion.

E-planning includes consideration on how to use ICTs for enhancing the participation processes (Silva, 2010). However, the ways and modes of participation are changing, as well as the administration and decision-making processes too. The emphasis tends to be on new tools and structures, as well as on the timing for participation. In addition, the overall complexity of e-planning seems to change the

linear process and stable power relations of planning (Wallin & Horelli, 2012). Public participation comprises multiple activities in which planners can have some discretion to choose among a number of modes of communication. Therefore, one can expect to identify a variety of uses and aspirations of e-planning in different contexts. It is important to comprehend, why some technologies are considered to be successful and others not. 'Success' in planning is highly contingent on place and history among many other factors (Pressman & Wildavsky, 1984). Understanding these contingencies can help practitioners comprehend, how the latest wave of ICT- adoption is shaping practice.

E-planning is still a relatively new field. We have not encountered any studies (in e.g. Silva, 2010a or Budthimedhee et al., 2002) that would have compared e-planning practices as we define them in this article, in different planning and governance contexts. Yet, such comparisons can help contribute to the theory of why an e-planning tool may succeed in one context and not another. In this article we aim to explore the use and aspirations of e-planning, by focusing on the context in which they are situated, namely the urban planning and governance system. We examine the similarities and differences in the way two ICT-savvy cities from diverse cultures use e-planning, through an international comparison. Furthermore, we wish to highlight the interrelationship between a given planning context and its amenability to an e-planning approach. Finally, we will also discuss the lessons learnt in terms of e-planning theory.

Our study focuses on the adoption of e-planning in Helsinki, Finland and Sydney, New South Wales, Australia. Helsinki, with the population of almost 600 000, is the capital of a Nordic welfare state. Sydney, with a population of 4.5 million (ABS, 2010), is the capital of New South Wales. It is governed by the NSW State Government, which, like all Australian states has been particularly amenable to neoliberal reform since the mid 1980s (Beer et al., 2007). The comparison shows that there are shared themes in both. However, as we argue below, important differences exist between the two jurisdictions' approaches to e-planning which requires exploration. In particular, we show how the different planning contexts affect the adoption of e-planning and how this adoption is necessarily a selective process.

We will first explain the changing relationship between ICTs,

participation, and urban planning and the evolving context in which this takes place. We will then describe and compare the two cases, and finally discuss the findings.

THE CHANGING RELATIONSHIP BETWEEN ICTS, CITIZEN PARTICIPATION, AND URBAN PLANNING

The relationship between urban planning and technology has gone through different phases since the 1960's (Foth et al., 2009). The main focus of this relationship has been on the development of Geographic Information Systems (GIS) technology for overlay mapping. GIS started as an expert technology targeted to be used by planning professionals. Later GIS technology use was opened up for the general public. The development of Public Participation GIS (PPGIS) made it possible to use GIS technology to enhance citizen participation. The development of WebGIS also meant that the technology became accessible online.

Parallel to the technologies that have evolved from the world of professional urban planning, it is also important to note the technologies that have been developed or adapted for citizen participation in general. Often referred to as e-participation tools, they comprise web portals, online questionnaires, polls, petition tools and discussion forums (e.g. DEMO-net). E-participation tools are used to support processes of information, consultation and active citizen participation, which can be integrated into the processes of urban planning (Kubicek, 2010).

The recent emergence of mobile and locative technologies, Web 2.0, and social media, has enabled a greater variety of platforms and applications to be available for use and adaptation by the broader public. These technologies, which are becoming increasingly mundane (Dourish et al., 2010), have a great impact on the everyday lives of urban dwellers or communities as they enable the collection, storage and retrieval of information in and about the city¹ (Townsend, 2009: xxiii; Foth, 2009). Moreover, ICTs have supported the collaborative work of urban and rural communities who undertake local development (Gurstein, 2010). Despite the potential promised by Web 2.0 and social media to provoke a paradigm shift in e-planning towards

1. *The Handbook of Research on Urban Informatics* (Foth, 2009) presents a variety of cases where the use of locative, mobile, and wireless technologies has affected people's experience of the city. Some of the cases particularly address the expanded possibilities of citizen participation that is enabled by tools, such as photo publishing and SMS-based photo annotation solutions (Ananny & Strohecker, 2009), e-mail listservers (Preece, 2009) and community websites (De Cindio et al., 2009). Other examples reported elsewhere indicate the relevance of the use of the social media (Evans-Cowley & Hollander, 2010), virtual reality environments (Foth et al., 2009), and the combination of various digital and non-digital tools (Saad-Sulonen & Horelli, 2010; Saad-Sulonen, 2010; Saad-Sulonen, 2012) in participatory urban planning.

a more participatory and creative form of planning, realities on the ground are still limited due to existing professional and technocratic planning practices (Anttiroiko, 2011).

In sum, public participation in urban planning can take place via different channels and digital tools: expert and official, but also unofficial and mundane. This implies the existence of different communities of practice (CoP)². The planners and participants can choose the tool and arena that they find most suitable for them (Saad-Sulonen & Horelli 2010; Wallin & al. 2010). However, so far no deeper paradigm shift seems to exist in e-planning and in the ways it relates to citizen participation, but, as we will show in this article, the existing planning and governance context plays a role in shaping the participatory experience.

The Evolving Contexts of Planning and Planning Systems

According to Silva (2010b, 8), "*no information and communication technology is as important and determinant for the urban planning system as the planning theory and the policy that guide the use of the technology.*" Indeed, planning professionals around the world have been influenced by a variety of planning theories, and different countries have adopted and developed diverse types of planning practices and systems³.

The Finnish planning system is part of the continental style of planning system that is dominant in Europe (Nadin & Stead, 2008). Planning practice in Finland is still strongly influenced by the comprehensive-rationalist approach of 1960s (Bäcklund & Mäntysalo, 2011). This means that planners and top-down zoning play an important role. Also the planning processes and citizen participation are highly centralized and regulated by laws and bureaucratic governance in the name of the public interest of the welfare state. The application of the system tends to shape the role of planning into being an elaboration of detailed plans by city planners. These are then voted for or against by the members of the elected city council. Nevertheless, Finnish planning has also been influenced by other theoretical paradigms, such as the pragmatic and communicative approaches. The Land Use and Building Act from 2000, has been clearly influenced by the

2.

A community of practice (CoP) means a group of people who share an interest, a craft, and/or a profession. The group can evolve naturally because of the members' common interest in a particular domain or area, or it can be created specifically with the goal of gaining knowledge related to their field. It is through the process of sharing information and experiences with the group that the members learn from each other, and have an opportunity to develop themselves personally and professionally (Lave & Wenger, 1991).

3.

Diverse positions, ranging from positivist to post-positivist, have influenced planning theory over the last fifty years. Allmendinger (2009) lists the most influential seven approaches as being: systems and rational theory, critical theory, neo-liberal, pragmatism, advocacy, postmodern, and collaborative. Diverse theoretical approaches or their combinations are applied in the planning systems of different countries.

communicative turn in planning, as well as by a mix of democratic theories that range from aggregative, to deliberative and even to agonistic ones (Bäcklund & Mäntysalo, 2011).

The NSW planning system is a system born of the 1970s green bans movement. The major legislation is the 1979 Environmental Planning and Assessment Act (as of May 2012 under review). The Act was conceived as an answer to the protests against the rampant development of heritage and conservation areas in the 1970s. This Act provides a framework for the State government to produce State Environmental Planning Policies (SEPPs) to conserve environmental resources, control development, provide conditions for affordable housing and protect vulnerable ecological communities. These SEPPs are statutory documents that in some cases act as zoning requirements, but in other cases deal with procedural matters. Underneath these, local authorities and their councils produce the Local Environmental Plan (LEPs). These are also mainly zoning documents that relate to the use of land and are also statutory. Finally, local authorities must produce district control plans (DCPs). These are non-statutory and relate to detailed items such as urban design. Any development must have accord strictly with an LEP and also with any relevant SEPPs. In some cases having regard to a DCP will also help a development application gain approval.

The implementation of the planning system is closely connected to the application of public administration regimes and their policies, including governance models. Charles Leadbeater (2004) and Victor Pestoff (2012) among others, have shown, how the global shifts in governance approaches have had an impact on the trends of governance and service delivery in Western industrialized countries (Table 1). In fact, the shift has affected the ways in which public interest is defined, who defines it, the performance objectives, the roles of the managers and users. The Traditional Public Sector-approach with top down modes of service delivery is being replaced by the New Public Management (NPM). The latter is based on criteria, such as efficiency and effectiveness. Users are clients who have to get value for tax payers' money, for example, in order to get building permits in decent time. The model for public services and planning in the future may be, due to the expansion of ICTs, an approach known as New Public Governance. This is based on coproduction, multi-stakeholder

Table 1.

Comparison between different approaches to governance and service delivery (modified with permission from Leadbeater and Demos, 2004).

	TRADITIONAL PUBLIC SECTOR	NEW PUBLIC MANAGEMENT	NEW PUBLIC GOVERNANCE
Public interest	Defined by politicians and experts	Customer surveys	Dialogue between providers, funders and users at all levels
Performance objective	Manage inputs, good administration	Inputs and outputs managed for efficiency.	Agreed with stakeholders including user-experience
Accountability	Upwards through departments to politicians	To politicians and users through market comparisons	Directly to users, taxpayers, stakeholders and politicians
Ethos	Patrician public services, technocratic	Market-based	Democratic, personalized, user-centric
Users	Deferential	Consumers, some self-service	Co-producers
Manager's goals	Satisfy political masters, professional self-regulation	Meet contracted performance targets	User satisfaction
Private role	Minor, kept separate	Major, in service delivery	Public from public and individual initiatives
Professional role	Decide and allocate resources	Commission and monitor	Advice, broker, advocate, assemble

4.

The welfare state refers here to the concept of government in which the state plays a key role in the protection and promotion of the economic and social well-being of its citizens through the provision of cash benefits or in-kind services, such as health, education and child care, depending on the policy of the country. Esping-Andersen (1990) has constructed a threefold welfare regime typology, based on the responsible quarter who answers for the social risks and welfare services. The typology has later been criticized and revised, but it still is indicative (Ferragina & Seeleib-Kaiser, 2011): 1. The Nordic model in which the State is responsible for the welfare policy. It is also called the Social-Democratic welfare model, guided by the principle of universalism that grants access to benefits and services based on citizenship. It is applied in Finland. 2. The Central European model in which the responsibility lies on families. This conservative model, which is based on the principle of subsidiarity and the dominance of social insurance schemes, is implemented in France, Austria and Germany. 3. The Anglo-Saxon model in which the responsibility lies on the individuals. This liberal model is based on the notion of market dominance and private provision; ideally, the state only interferes to ameliorate poverty and provide for basic needs, largely on a means-tested basis. Besides UK, USA and Ireland, Australia belongs to this group.

governance and third sector provision of welfare services (Pestoff, 2012). Consequently, it will mean a new mixture of private, public, people-partnerships and solutions assembled from a variety of sources.

Despite the historical roots in traditional, Weberian bureaucratic governance, the Nordic welfare states⁴, have since the 1980's been influenced, by the emergence of the NPM. This has resulted in tensions on the ground between the logic of "input-oriented legitimation" of the existing planning process, and the "output-oriented effectiveness", brought forth by the market actors. However, variations exist in the different Finnish municipalities. Furthermore, there are several informal projects in Helsinki that bear the features of the New Public Governance approach (Wallin et al., 2010; Botero et al., 2012).

In Australia, neoliberalism has generally dominated planning since

the 1980s, making it a key example of how to apply the NPM approach (Gleeson & Low, 2000). The post-war historical conditions in Australia made neoliberal reform particularly likely. Unlike Finland and many other countries in Europe, Australia never developed an extensive social housing program in the post-War period, but relied instead on a range of subsidies and incentives to promote the building of social housing (Beer et al. 2007)⁵. Since the 1980s neoliberal reforms, such as trade liberalization, public fiscal conservatism and deregulation have been applied in Australia, embracing the full range of types mentioned by Jessop (2002, cited in Beer et al. 2007). These include: the move from hierarchical forms of government to more porous forms of governance; the subordination of social policy to economic policy; the 'hollowing out' of the nation state with power moving upwards to international bodies or downwards to local government and finally, the tendency for policy solutions to be borrowed and adapted across national boundaries⁶ (Bell, 1997).

Thus, Finland and Australia/NSW have different planning, governance and participatory systems in place. However, the level of ICT penetration and adoption in the two countries is quite high, with Australia's Internet use ranking 24th and Finland 7th overall (World Bank, 2010). What then, are the similarities and differences between the adoption and practices of e-planning in Sydney and Helsinki, and is it possible to identify the factors that affect these?

To investigate these issues interviews were held with key stakeholders involved with e-planning in both sites. E-planning direction, management and design are still reserved to a small number of specialized practitioners who are known to each other. For this reason a snow-ball sampling method was used to gather the names of suitable interviewees as the research progressed. In some cases the availability of these key individuals was a problem with interviews being scheduled up to three months in advance.

E-PLANNING IN A NORDIC WELFARE STATE AND ITS CENTRALIZED MUNICIPAL SYSTEM: CASE HELSINKI

The term "e-planning" (*sähköinen suunnittelu* in Finnish) is not used by the Helsinki authorities, nor by the citizens. Nevertheless, a variety of

5. Between 1947 and 1961 home-ownership rates in Australia jumped from 53% to 70% further laying the ground for a rolling back of the State in housing and then in planning (Bourassa et al., 1995).

6. While neoliberalism forms the backdrop for change to local government in NSW, the role of local government is further differentiated from Finnish local government by a distinctive historical role. The structures of local government reflected the structures existing at State government as local government was set up as a response to the needs of the colonial government in the late 19th century. This legacy means that local governments act as an outpost of State government in many cases (Freestone, 2010). Furthermore there are considerable differences within NSW local government and between local governments in Australia. This is evidenced even by the different approaches to e-planning and IT which can depend on whether a council is metropolitan or not (Williamson & McFarland, 2012).

ICT-based tools are currently available for supporting citizen participation in the formal context of urban planning, in addition to the application of ICTs outside the formal planning processes. E-planning in Helsinki can be understood as participatory e-planning.

The City of Helsinki has traditionally conducted urban planning and development through exclusive negotiations with land-owners, construction companies and other business parties, as these are the actors that are able to develop the property and implement the projects planned by the City Planning Department (CPD)⁷. The requirements set up by the Land Use and Building Act of 2000 have triggered efforts in the CPD to facilitate the presentation of planning projects to citizens and to organize public hearings. Citizen participation in Helsinki mostly takes the form of consultation and public hearings, such as local citizen evenings organized by the City of Helsinki. These are regulated and integrated in the urban planning processes of the City administration. Citizens also have the possibility to send feedback, at any time, via the Registry Office, which then forwards it to the planners concerned. When new plans have been prepared, they are presented to the elected members of the City council, who then approve them or not. The recent participatory strategy of the CPD comprises the following points:

- Deployment of special civil servants, participation coordinators, who act as mediators and facilitators between the planners and citizens. The participation coordinators play an important role in the organizing of participatory events.
- The provision of a public meeting space and exhibition centre, Laituri, for urban planning projects and competitions, in the city centre.
- The launch of web-based tools that facilitate citizen participation in the planning processes.

From Formal Consultation to Explorations in Partnerships and Community Control

The last strategy program of the City of Helsinki has emphasized the importance of developing means to increase democracy and citizen participation (City of Helsinki, 2009). The use of ICTs is referred to as

7. Helsinki covers 716 km² and has a population of almost 600 000. The Helsinki municipality is the main land-owner and developer of urban space. The City of Helsinki owns 61%. Private people and enterprises own some 20% of the land most of which has already been developed (Helsinki City statistics, 2010). This superior position provides the local planning authority exceptional power to co-ordinate the planning procedure and to decide over the substance of planning, as well as over the degree of citizen participation. However, the City is increasingly dependent on private enterprises for the implementation of the plans.

a potential solution to problems around participation. This approach reflects the general attitude to technology in Finland, where it is seen in general as a positive change agent. Technology has often been imposed, as a means for citizens to enjoy public service, with the expectation that the well-educated public will easily adopt it. Although the high level of computer literacy has enabled the country to use innovative technological solutions, the approach to technology have, however, been quite top-down.

In order to understand the use of ICTs in the formal urban planning process, we interviewed the key representatives of the authorities responsible for the participatory strategy in Helsinki: a participation coordinator, two officers responsible for the development of digital tools and two architects in charge of the city planning in which e-planning tools have been applied. We asked them: What kind of e-planning tools does the City of Helsinki own and use? What are they used for? How has the data, collected with these tools, been used in planning? And, what are the opportunities and challenges of e-planning?

The interviews disclosed that five digital tools launched by the CPD are currently used by planners and participation coordinators (see Table 2).

First of all, there is the website of the CPD that contains information about all planning projects including maps, general data and descriptions of the expected progress. Then, the "CPD forum", a discussion forum with topics that are set up and moderated by the CPD, which is connected to the main website. Another tool, the "Plans on the map", makes it possible to view plans online. These tools form the basic instruments of participatory e-planning, as they provide information and a place for casual discussion.

Lately, the CPD has expanded the way they organize planning competitions. Information concerning how to participate in the competitions is available online. In the case of the South Harbour competition, the CPD held workshops with people on the streets, and collected their views on the future of the area. The material was collected in a report, which was published online, using the City of Helsinki data repository. Thus, the City has finally translated public feedback into planning discourse and enabled citizens' voices to reach the architects and the decision-makers. It means that the traditionally closed institution

of the planning competition is slowly being opened up.

Also another new application is currently available, namely a survey tool called "Tell-it-on-the-map". It has been created to gather and process urban data in a participatory way. This online mapping tool gathers the feedback and comments of local people on specific themes brought up by the CPD planners, such as a local planning case, or the necessity of beginning a planning procedure on a certain site.

Individual planners and the participatory coordinators from the CPD have also explored the use of un-official tools, not provided by the CPD, in various pilot projects. For example, the Urban Mediator⁸, which was developed as a publicly available online map-based tool (Saad-Sulonen & Botero, 2010), has been used in two cases involving the CPD.

In addition to the formal participation processes led by the CPD, residents in Helsinki have explored new ways of being active, often through the use of ICTs. The use of blogs, wiki and social media is relatively recent. However, as early as in 2006, the residents experimented with online tools at hand to highlight problems related to their living environment (Saad-Sulonen, 2008). The City of Helsinki has not yet embraced these popular platforms, as a means to enhance citizen participation, except for the Facebook page of Laituri, which is currently used to inform viewers about the latest developments in the South Harbour competition. However, other departments, such as the Youth department, are present on Facebook, but they have a minor role in urban planning.

The neighborhood of Herttoniemi⁹, has been an interesting living laboratory for citizen activism that is supported by the use of the local neighborhood website, as well as blogs and social media. The local neighborhood associations and other NGOs have played a key role as a counter force to the official urban planning of Herttoniemi centre, by empowering local people to voice their views. The latter have been the main organizers of the local NIMBY (not in my backyard) movements, for example by opposing to the construction of small rental apartments instead of building widely needed family dwellings in the neighborhood.

However, the local community has also developed a YIMBY (Yes in my backyard) approach. During the past five years, they have

8.

The Urban Mediator has been developed at the Media Lab of the University of Art and Design, now the Aalto University, between 2006 and 2008. The Urban Mediator Helsinki (<http://um.uiah.fi/hel>) and the Urban Mediator Helsinki Open (<http://um.uiah.fi/hki>) are hosted on the university servers and are free for use. The UM version 2.0 is available for download as an open source software (<http://um.uiah.fi>).

9.

Herttoniemi is a neighbourhood of 20 000 inhabitants, which lies about 5 km. from the centre of Helsinki and which currently undergoes deep-going changes in terms of housing, commercial building and traffic.

updated their computer and Internet skills, as they have familiarized with the practices of community informatics¹⁰. They have used different social media to collaboratively set objectives and even to steer, to some degree, urban development. YIMBY activism also includes guerrilla gardening, squats and citizen activism (Kopomaa, 2011). For example, a group of parents in the Roihuvuori part of Herttoniemi has actively lobbied against the decision of authorities to close a kindergarten. They have set up their own blog and Facebook page to support their activism. Activities by other groups in the neighborhood have also included the collaborative design of a shared community yard (Saad-Sulonen & Horelli, 2010).

The Urban Mediator has also been used in informal settings. The residents of the neighborhood of Arabianranta used it to collect data and information regarding traffic safety in their neighborhood. They later analyzed the data themselves, with the help of NGO representatives, and contacted the CPD planners to inform them about their concerns. They also discussed, with some success, possibilities for future actions (Saad-Sulonen, 2012; Saad-Sulonen et al., 2012). Arabianranta is one of the newly active neighborhoods in Helsinki, where web-based tools are frequently used.

Challenges to Participatory E-Planning: a Variety of Tools and Experiments without Supporting Structures

A variety of digital tools have been used in the context of citizen participation in Helsinki. However, the use and purpose of the tools vary in terms of their planning context (formal or informal), level of citizen control (Arnstein, 1969; Horelli, 2002¹¹) and the stage or phase of the planning cycle (Saad-Sulonen & Horelli, 2010; Saad-Sulonen, 2012). Moreover, as described in the previous section, the tools in use are either official tools, provided by the CPD or unofficial ones, such as neighborhood websites and social media (see Table 2). 'Unofficial' in this sense means tools for governance and collaboration that are not developed or funded by a government agency.

The interviews with the city planners revealed that the use of the official tools of participation has meant extra work for the planners. For example, to use the "Tell it on the Map" tool, the planners have to think

10.

Community informatics refers to the application of ICT's for the empowerment of the communities (Gurstein, 2010). . Herttoniemi has now a well-functioning local website which has a set of interactive digital tools, service platforms and links to various local and official news feeds. Moreover, the residents have used the social media, such as the Facebook platform, to establish an online presence for the neighborhood and to provide low-threshold possibilities to support the participation and information sharing, as a complement to the local website.

11.

Arnstein's (1969) famous ladder indicates, even if metaphorically, the level of influence or control and space for action by the citizens in specific projects. A five-level scale of participation is adopted here: no participation, information (one-way flow of information exists), consultation (authorities ask opinions about the presented options), partnership (shared working and decision making with the authorities), and community control (users and residents decide and the experts or practitioners are used as resources). The level of participation often varies in terms of the phases of the planning cycle but the criterion for real participation lies, at least, at the partnership level of the planning phase. Full citizen control is rarely achieved, since the legislation only recognizes the decision making of political representatives.

first, what aspect of their planning work will benefit from the use of the tool. Secondly, they have to articulate a clear theme for the questionnaire that will be set up on "Tell in on the map", and they have to choose the pertinent questions. They also have to determine what the right amount of information is that they want from the residents. Even though the participation coordinators help the planners to calibrate the tool and to analyze the feedback, the type and amount of work is something that the planners are not accustomed to. One planner claimed that: *"Web-based information is an up-to-date kind of way to provide services. However, it demands new kind of skills and resources that planners don't have."*

The current official tools are mostly used at the beginning and at the end of the planning process. They provide fragmented information about singular planning cases. Therefore, not even planners are able to look at the bigger picture at the neighborhood level, nor at the level of the whole city or the metropolitan region. Furthermore, there is a severe shortcoming as no tools exist for visioning. When asked about the visioning tools, the developer of the tools for the City of Helsinki said that most visioning tools are so far heavy to use. In addition, she stressed that visions have to be taken seriously: *"It is wrong to give false hope and not to implement even parts of the visions"*.

Planners favor official tools that support the existing planning processes. As the tools enhance information and consultation, they do not greatly increase citizen control over the participatory processes in planning. Thus, the deployment of the official tools reinforces the traditional type of citizen participation. One exception is the new experiment by the CPD, where the planning competitions have been opened up to the general public, by making use of websites and data repositories for sharing citizens' wishes. This opens up the traditional institution of planning competitions towards new audiences.

Another exception is the experiment with the Urban Mediator. The official tools provided by the CPD do not allow citizens to start a discussion or gather information about a topic, unless it has been set up by the CPD. The Urban Mediator has been used in both the formal context of planning and outside it. It has enabled both planners and citizens to start topics around issues of interests. As a flexible tool, it has been used for both consultation in the formal context or for

Name of the tool	Application in "formal" planning	Application in informal planning	The level of citizen control	Phase in the planning cycle
OFFICIAL TOOLS				
CPD site	The official website of the CPD. It contains several sections about the objectives, content and progress of the development of ongoing or future planning and development projects	-	Information	In use throughout the planning process
CPD forum	An official discussion site where the discussion topics are set by the CPD. It is used to get feedback about local or city-level issues or to comment existing or	-	Information and consultation	Can be used at any phase but with no binding role
Plans-on-the-map	A map-based tool, where all new plans are collected and published.	-	Information	In use when the plans are being constructed
Planning competition tool	A web site that gathers information about the regulations and content of a specific planning competition	-	Consultation	A tool under experimentation
Tell-it-on-the-map	A questionnaire-based mapping tool that enables the gathering, analysis and dissemination of public opinions about specific urban planning issues. The topics are set up by	-	Consultation	At the beginning of the planning process, or after the plan have been done or implemented, as part of Post Occupancy
UNOFFICIAL				
Urban Mediator (UM)	An online map-based tool that allows both citizens and planners to set up a topic of interest and ask for contributions to the topic.	An online map-based tool that allows both citizens and planners to set up a topic of interest and ask for contributions to the topic.		At any phase but especially at the beginning of the cycle and in POE
		Local web sites, used for community development with interactive digital tools	Partnership and community control	Highlights any phase if necessary
Social media (e.g. Facebook pages) and blogs		Social media for low-threshold interaction possibilities and information	Partnership and community control	-

Table 2.
Examples of official and unofficial e-planning tools used for citizen participation in Helsinki in terms of the context, level of citizen control and the phase of the planning cycle.

partnership building outside it, as well as at almost any stage of the planning process (Saad-Sulonen, 2012). The flexible use has, however, revealed the extent to which the CPD is short of strategies for dealing with input from citizens that are not delivered through the official tools and the formal processes in place (Saad-Sulonen, 2012).

The purpose of the co-produced neighborhood sites is to enhance the networking and partnership formation of the local stakeholders, and to improve community control at any stage of planning and development. However, although the informal context might provide community control in some projects, the real power in the Weberian sense, "power over", is still the basis for decision-making in the context of planning. Therefore, the community development activities are not being taken seriously enough by the politicians, and consequently they are not integrated into the administration. Unfortunately, this also means that the formal planning is affected by a lack of fit between the plans and the aspirations of the citizens. The type of citizen participation that is enabled by the official tools is the same as traditional consultation. Citizen activities that are facilitated by a new range of unofficial tools are not recognized as participatory activities by the administration, and thus they are not channeled into the formal planning process.

E-PLANNING IN A DECENTRALIZED AND NEOLIBERAL ENVIRONMENT: CASE SYDNEY

In contrast to the power of the city government to control planning in Helsinki, planning in Sydney is split among the 38 local government authorities (LGAs) that make up the Sydney Metropolitan Area. The Department of Planning and Infrastructure controls planning for the whole of New South Wales as well as the 38 LGAs. The State government acts as an overseer of planning activity among the local authorities. The dominance of NPM in planning in New South Wales has manifested itself in the requirement for local authorities to publish performance data on a variety of activities which include the amount of time it takes to reach a decision on development applications.

To complete this part of the research, interviews were conducted with seven officials involved with e-planning in a local authority in

Name of the tool	Application in "formal" planning	Application in informal planning	The level of citizen control	Phase in the planning cycle
OFFICIAL TOOLS				
A variety of development application submitting and tracking tools (e.g. Electronic Housing Code)	A local authority site to track the progress of a development application	-	Information	In use for the development control process
BASIX	A site that allows proponents for a development to undertake part of the certification process themselves	-	Information and partnership	In use for the development control process
Local Authority investigated forum	An online discussion forum used as part of a broad range of visioning activities to discuss the future of the local government area	-	Consultation	At the beginning of the planning process. Broadly to seek ideas and gain opinions
Shape Your State	An online discussion forum to discuss the future challenges confronting the State (e.g. Climate Change)	-	Consultation	To gauge opinion at the broadest level. Related to strategic planning
UNOFFICIAL				
Planning Alerts*	-	An online alert system to tell you where a development application is occurring near you	Consultation	Development applications phase

Table 3.
Examples of e-planning tools used for citizen participation in Sydney in terms of the context, level of citizen control and the phase of the planning cycle.

*www.planningalerts.org.au

12. The local authority chosen represents one of the 17% of Metropolitan local government authorities (LGAs) in Sydney that allow development applications to be lodged online. It also represents one of the 12% of Metropolitan LGAs that run discussion forums on planning (Piracha et al. 2011). One of the interviewees was the director of planning, with two members of the technical team who look after the e-planning system. An additional interview was held with the Director of Participation and Communications at the LGA.

13. This has included a long-running scheme to improve telecommunication infrastructure in rural and remote Australia known as Networking the Nation, which ran for ten years from 1997. While the projects that were funded embraced a wide range of telecommunications projects, some \$5 million in funding, in 2000, was allocated through a project known as 'Local-e Online Action for NSW' to help LGAs standardize their websites and provide some high priority services online (DCITA, 2008).

14. (RRIF) provided \$6.2 million in funding to LGAs to simplify their regulations to help small businesses. Since small businesses usually interact with the LGA through planning issues these funds were used to support online development application processing across 37 councils in NSW over a year (SGS Economics and Planning Pty., 2007).

Sydney's North-East¹². At the State level, an interview was held with the Director of Communications for State Department of Planning to understand the overall trend for e-planning in New South Wales and a Director in charge of implementing the electronic housing code. Finally, interviews were held with Principals from two companies that are contracted by a large number of local authorities to implement e-planning strategies.

The History of E-Planning in New South Wales

Since the early 2000s New South Wales has been subject to a wave of incentives and programs to increase the use of e-planning. At the Federal level considerable resources have been spent to increase the online capacity of local government¹³. Many of the high-priority areas identified were related to planning. The Federal Government further supported e-planning through the Regulation Reduction Incentive Fund (RRIF)¹⁴. The Federal Government also provided funding under the Housing Affordability Fund in 2008 for a national scheme to introduce Electronic Development Assessment (DAF, 2010). One of the outcomes of this scheme was a national e-planning roadmap which outlines a national vision for e-planning (See Table 3). The National eDA Steering Committee defines ePlanning as encompassing 'business process models, methodologies, specifications, systems, services and technologies that support the planning industry in Australia in delivering efficiencies to its stakeholders' (Electronic Planning Australia, 2011). This definition reflects the strong emphasis on business processes and service delivery under the NPM paradigm.

At the NSW State level, the first step towards e-planning was the development of a website known as *iPlan*. The site was officially launched in August 2002 by the Deputy Premier and Minister for Planning, Dr Andrew Refshauge, who claimed that 'the Government is putting the planning system on-line' (<http://www.iplan.nsw.gov.au>). It was funded through NSW Department of Commerce Office of Information and Communications Technology's 'connect.nsw' program and the Treasury. It was then reviewed in 2006 before being decommissioned in July 2008.

iPlan had the ambitious aim of centralizing information for the

whole of the NSW planning system and making it available online in the form of a community-GIS (e.g. Ghose, 2001). However, the designers of the system assumed that centralizing information was necessarily in the various stakeholders' (especially the Local Government Authorities) interests. The aim of the system to be an information clearing house and therefore to transcend the existing silos and boundaries of NSW planning represents the hope that greater transparency would result in better planning outcomes. A legacy of this period of e-planning enthusiasm was an online tool, known as BASIX, for certifying new development according to an environmental baseline. This was developed independently of *iPlan* and was given statutory weight by its inclusion as a State Environmental Planning Policy in 2004.

Despite the experiment with *iPlan*¹⁵, the State government's enthusiasm for technology remained undiminished as can be seen in the expectations attached to e-planning in a discussion paper titled "Improving the Planning System" (NSW DP, 2007). This enthusiasm fed into the rationale to apply for funding from the Federal Government's Housing Affordability Fund, in 2008. This fund had one of its aims to strive at the State level for an online end-to-end development assessment process.

Decentralized E-Planning in New South Wales

The example of *iPlan* shows the difficulty that e-planning can have when it directly challenges silos and must rearrange existing relationships to work effectively. However, the decentralized nature of planning in NSW, with 152 Local Government Authorities in the State and 38 local government authorities in Sydney alone also leads to opportunities for e-planning experiments.

Furthermore, the State government has long sought to couch each new policy in terms of its effects on individuals (so-called 'Mums and Dads'), who might seek approval to carry out an extension to their dwelling. Thus, the reference to supporting 'Mums and Dads' can be found in media releases for policy as varied as the Affordable Housing State Environmental Planning Policy, where the affordable housing crisis is to be helped by allowing 'Mums and Dads' to construct an additional dwelling, such as a granny flat (NSW DP, 2011), the

15.

The NSW Department of Planning and Infrastructure has used that funding to pilot a program involving twelve councils to develop an electronic housing code which has recently gone live (<http://ehc.nsw.gov.au/>). The code allows for a fast-track development application process for 'complying development'. These are developments that are defined by a given Local Government Authority as being eligible for development approval, if they meet certain pre-approved criteria rather than being subject to further assessment. The approval can be issued by the Local Government or by an approved Private Certifier (Gurran, 2007, 243). The types of development that may be pre-approved could include, for example, approval to roof space into an attic for a house or the construction of a swimming pool.

Housing Code which speeds up development applications for complying development (NSW DP, 2010) or the template for the standard Local Environmental Plan (NSW DP 2006). This accountability towards 'Mum and Dads' reflects a perceived impatience of the community with the planning system and certainly with bureaucracy in general. E-planning initiatives that enable the planning system to appear more responsive to the community fit neatly within this agenda. As a part of this, the State government uses metrics to monitor performance application decision times. This has pushed Local Government Authorities to experiment with e-planning as a way of reducing the waiting time for applicants. Ironically, the manager of a State E-Planning project explained that while E-Planning was able to be accessed by individuals their target audience are development professionals who traditionally make up the bulk of applicants. This would suggest that in NSW cutting red-tape for individuals or allowing greater public accessibility and engagement with the planning system is impossible to do with E-Planning alone. Instead such benefits should be made part of a broader reform agenda. As the local authority team interviewed mentioned: *"Yeah, we have to report [Development Application] stats [sic] every... year. They get published. When they're published they're about 18 months out of date, which always good. But as long as you're not in the top 10 worst performing councils, you're okay."*

E-Planning As A Process Driven Exercise

The local authority interviewed had started between 2003 and 2004 to identify an emerging desire for people to gain information about development applications from the internet. It responded by building an in-house system to track online all development applications. Although the planners interviewed described it as 'pretty crude', it enabled members of the public to look up the application number, the address and whether it was approved or refused, or where it was up to. An e-planning system in this format effectively diffuses a large number of enquiries, as members of the public feel by having access to the information, their concerns are dealt with. In addition, the provision of information can enhance the consistency of decision-making through a measure of internal transparency:

'If there was some ability to use the system to say, well at Smith Street we had this issue, and you could create that data base of the information. [It] could assist you in looking at how you're making those decisions and assist the team leaders in ensuring they're consistent...Rather than having to rely on them getting together and talking about the things that have been important...' (Local Government Authority Planner)

The concern with transparency is clearly one that reaches across to the State government. As well as the use of e-planning, in recent years the State government has pursued a variety of attempts to standardize information from the various local government authority areas in NSW. Most notably this has been through the gazettal of the Standard Instrument in 2006. The Standard Instrument is a legislative tool that prescribes the style and language used in local environmental plans. At the State government level officials noted that this trend towards standardization is also a part of the e-planning project. The standardization of information is to extend to Local Government Authority websites in general. This points to a utopian aspiration for 'total government', mediated through the website as the authoritative source of information. As this Senior Official went on to explain:

"...why don't we have a [web] template that looks similar so that people can transact business similarly, no matter what local government they find themselves in, in terms of from, "here's a pothole" or "here's an issue with my library" through to "how do I get approval for my house?"

(Senior official, Department of Planning and Infrastructure)

At a minimum, transparency is expected to engender a system of passive surveillance. However, it is clear that an e-planning system generates data that can be used for active surveillance by the State government to monitor local government. The State government already requires all local governments to produce an annual Local Development Performance Monitoring Report. The production of this report is sensitive, complex and time consuming, however with:

"automated e-planning like the [Electronic Housing Code], and the integration of these systems I hope that this requirement on local government to extract data one-off for an annual reporting system would not be required. Because it would happen by dint of just using these online systems [...] The data would be of high quality, and they could just do exports out of their online systems that are collecting the information. Potentially, not report annually, but maybe report quarterly something like that."
(Senior official, Department of Planning and Infrastructure).

E-Planning as a Visioning Exercise

In contrast with Helsinki, the local authority planners in Sydney saw the value of using e-planning for visioning exercises. They hired a well known company to manage the process of stakeholder involvement explicitly for that purpose:

"We use that online discussion forum for things like asking people for visions and aspirations about the Town Centre; talking about plans and management for lagoons; talking about big ticket capital works projects like walkways, and sporting fields and things like that" (Local Planner).

Because of the number of Local Government Authorities in NSW and the pressure to increase work in this area in recent years, the consultant involved had successfully grown a company in the space of four years to have client list of 80 LGAs in NSW and with a few internationally in New Zealand, Canada and one in the United States. The work was exclusively to run visioning and online consultation exercises for a variety of issues, including planning.

The inexperience of planners in working in communication in general points to the need for such a specialized service, as do the measures of success that are used to understand whether the visioning exercise was well understood.

Success in an e-planning case can be directly measured as a ratio of the hits on particular material compared to the number of comments that material generates. The consultant argued that such a measure is an

improvement on the existing methods of consultation, where:

"We've got our strategic plan and we'd go to the meeting and there'd be six people there and I could've ... and you look around and you're not sure if everyone else isn't there because they're not interested, because they don't care, because there's something on the telly. You really get no sense of the people who aren't there." (E-Planning Visioning Consultant)

At the same time, whilst recognizing the power of e-planning to quickly provide an alternative source of metrics about the feeling of a community towards an issue, he readily acknowledged the amount of time that successful engagement took as part of a longer campaign:

"So part of success is recognizing that and mixing up the processes. Part of it is about repeat, so about doing it a lot so the community get used to it. So in those cases, if you're constantly going out and talking to the community about things, the chances are you'll start to capture those people over a year or two... When you've captured those in your database, then you can be notifying them of new opportunities to be engaged that come up." (E-Planning Visioning Consultant)

Overall a clear distinction was made in the interviews between e-planning to expedite the planning process and e-planning to deliver opinions and stimulate discussion according to Arnstein's (1969) ladder of participation.

"So it works well for different projects and the [Visioning project] was more of the collaborative end. Whereas [e-planning for development applications] are more at the informing end." (Local Planner)

COMPARISON OF THE HELSINKI AND SYDNEY CASES

The comparison of the two cases reveals to our surprise that there are, in fact, more differences than similarities in the use of ICTs (see Table

4). The federal government in Australia has given a significant amount of support to e-planning. Furthermore the pressure from a neoliberal agenda in NSW has forced a number of local authorities to experiment with e-planning to speed up the development application process. At the same time, in some local authorities where development has been seen to be particularly controversial or where the local council needs to quickly gain credibility with the local community, e-planning is used for visioning, because at the minimum it is seen as a way of opening another channel for communication. Of course, this only works in the parts of Sydney that have a high broadband connection and the council is well-resourced.

On the other hand, Helsinki has a highly centralized planning system and a highly centralized landownership structure with less room for discretion. This explains the comment that e-planning is not used for visioning, because it might give people the wrong impression or false hope. The emphasis in Helsinki is on the provision of reliable information to citizens, with the assumption of a concerned, rational, politicized citizenry, who is supported by a similarly rational city planning system. ICT-assisted citizen participation is also a clear continuation of the consultation processes set in place by the Land Use and Building Act of 2000. Nevertheless, Helsinki is also witnessing a number of citizen-initiated collaborative projects in informal contexts in which mundane digital tools are used as supports to gain community control. These indicate that such an understanding of e-planning tends to bring forth devolution of power from planners to other stakeholders. At the same time, these citizen-driven activities are not yet recognized by the CPD and they have difficulties gaining traction with the existing planning processes. Indeed, a mix of tools is being used, but there are no possibilities to go beyond traditional consultation, when the authorities are involved.

An analysis of the application of the different tools shows two distinctive characteristics. Firstly, the purpose of e-planning in Sydney is to make the process of development application lodgment more efficient. This push towards efficiency is clearly to improve on the turn around time. It is seen as much about driving down the waiting time to come to a decision about an application, reducing costs and demands on planning staff than it is on increasing participation. The

	Sydney	Helsinki
DIFFERENCES		
Context and governance model / Planning system	A fairly centralized planning system with space for neoliberal improvisation, embedded in a NPM governance model.	A highly centralized planning system within a Nordic welfare state and governance approaches that are a mixture of traditional public sector, NPM and NPG.
Purpose of e-planning	E-planning to increase efficiency through monitoring and accountability.	E-planning to solve problems of participation in planning.
Way of using tools	Use of collective visioning to shape the content of e-planning	Separation of official and mundane tools in formal and non-formal contexts.
SIMILARITIES		
A variety of tools in use	A variety of e-planning tools, not yet integrated in urban planning.	A variety of official and mundane tools in ad hoc use. E-planning not integrated in decision-making.
Low awareness of e-planning and the ecology of tools	Complexity of the e-planning experiments.	Lay people's voice in competitions; grass-root activists
Problems with e-planning	Problems with real and virtual identification and anonymity of participants.	Problems with increasing complexity and workload for planners. New communities of practise (CoPs)

Table 4.
Comparison of the differences and similarities in Helsinki and Sydney.

emphasis on business processes has brought with it concepts, such as 'key performance indicators' and 'accountability', which are not part of the language of e-planning in Helsinki. Helsinki, on the other hand, addresses citizen participation, although only in the way it is formally understood.

Secondly, online tools are also seen to be useful in the process of visioning in Sydney. This reflects a considerably lighter attitude towards future planning ideas in the NSW planning system, when compared with Helsinki. Essentially, the bureaucracy in Sydney considers

it acceptable for plans to be fluid and a clear demarcation exists between those that are statutory and indicative. This attitude is distinctly different from Helsinki. Few respondents in Sydney mentioned any examples of the use of Web 2.0 tools in planning. The exception to this is the use of a platform by OpenAustralia that will allow the tracking of development applications. In both cities Web 2.0 applications are produced as a reaction to the conservatism of the government's e-planning attempts.

E-planning is a new endeavor and both cities have a fairly low awareness of what e-planning means and what its potentials are. The Finnish language does not even have a suitable word for it, as the direct translation – sähköinen suunnittelu – only provides a narrow image of technical electronic planning. The similarities also concern the variety of tools that are used in both cities, although the contexts are different. In addition, the two cities see that e-planning has several problematic consequences, although for different reasons. However, e-planning brings forth new communities of practice.

At the same time, both city administrations reveal a strong conservatism. While Sydney appears to be a fertile ground for the experimentation with different forms of e-planning, in reality the roll out of this activity is hampered by the legal aspects and a lack of clarity of the roles in the online space. For example, in Pittwater, a council that took the lead in developing an online development application system in 2003 had received legal advice that it was permissible. Other councils received contradictory advice. For two years Pittwater was largely alone in implementing their system.

DISCUSSION AND CONCLUSIONS

The aim of our article was to explore the role and aspirations of e-planning in urban planning and to examine the similarities and differences through an international comparison of Helsinki and Sydney. Therefore, this article did not focus on the usability of the different planning tools but on their nature and their application in formal or informal planning contexts. Nonetheless, this investigation of e-planning instigators allows some preliminary conclusions to be drawn. Our study is important, because to our knowledge so far no international comparisons

of e-planning exist. The results show how much the socio-political context matters for the way e-planning is understood and adopted, and also the manner in which e-planning is transforming traditional urban planning. Finally, we will also discuss the findings in terms of e-planning theory.

The Context Matters

It is evident that e-planning means different things in different contexts. As the comparison of the cases of Helsinki and Sydney showed in the previous section, there are more differences than similarities between the two cases due to the diverse cultures and governance approaches. Helsinki, the capital of a Nordic welfare state, has a highly centralized planning system that is also influenced by a governance approach that can be described as a mixture of the Traditional Public Sector and New Public Management (NPM) approaches, with emerging features of New Public Governance (Table 1). Sydney, on the other hand, is a neo-liberal representative of the NPM approach that seeks efficiency and accountability through transparency and standardization. The focus of Sydney is on individual stakeholders and on the implementation of the projects. In Helsinki, the focus of formal e-planning is on the enhancement of formal participation. However, the citizen-initiated action that is not "in the hands" of civil servants, is not yet an integral part of the planning system. Sydney focuses more on visioning than Helsinki, but perhaps not in a very deep sense. The different planning contexts affect the adoption of e-planning which is a highly selective process that progresses "by trial and error. Neither general policies, nor models for the endeavor exist.

In both cases, the character, deployment and success of the e-planning experiments, are being determined by the underlying system. In general, e-planning seems to be an open field from which governments seem to pick and choose elements that suit their existing mechanisms best. As such, e-planning does not represent an immediate challenge for the system, as neither of the cities is really aware of what e-planning is and what its opportunities are. Yet, according to Winner (1980, 128) "the adoption of a given technical system unavoidably brings with it conditions for human relations that have a distinctive political cast".

The cast in this comparison has had distinctive themes in both cases: 1) the complexity involved in reconciling the aims of the e-planning

experiments and their connection to the planning process itself (roles, objectives, implementation of tools and processes), 2) the emergence of new communities of practice within participation and 3) cracks in the façade of administration and the possibility to reshape the planning procedure.

E-Planning as a Potential Transformer of Urban Planning

The applications of e-planning in the two cities under study were not particularly advanced, nor did they reflect a change in planning paradigms. Thus, the current situation is still far from the “fully developed and accessible e-Planning system”, described by Silva (2010b, 5), as well as from the hype description of Urban Planning 2.0 that is shaping the new intelligent cities (Antiroiko, 2011). Nevertheless, there are signs that participation in urban planning with new digital tools, will eventually transform, not only urban planning, but also the planning systems and governance approaches in planning.

First of all, the formal planning will eventually expand to adopt a variety of tools, official and unofficial, expert and mundane, which include digital and non-digital tools (Wallin et al., 2010, Saad-Sulonen, 2012). The new tools that support the practices of “do it yourself” and “do it with others” have the potential to change the route to and timing of participation.

Secondly, the groups and structure of participation are changing. Various communities of practice (CoPs) in Helsinki are using available mundane tools to produce and share content related issues that have traditionally been handled by urban planning (Saad-Sulonen, 2012). Thus, urban planning acquires new foci that are relevant to the aspirations of the participants. In Sydney, this process is less in evidence. Both online engagement consultants that were interviewed referred to the e-planning attitude of traditional LGAs with some frustration. This frustration stemmed in some cases from the attitude of the managers of LGAs, the lack of experience of LGAs in dealing with some unexpected issues that arise in the online environment, such as privacy and the clearly defined roles that circumscribe the public official's activity. Compared to Helsinki, the CoPs are tightly linked to funding from Federal and other sources and relatively under-developed.

However, it was noted in the interviews that understanding and using crowd-sourcing was going to become a significant tool for policy-makers in e-planning in the future. It has been recognized that during the Queensland floods of 2011, the crowd sourced information on Facebook was more reliable and up to date than the official information. It is likely that this crowd-sourced information will become important in e-planning in Australia as well.

Thirdly, the procedure and resources in urban planning are changing as the possibility to use unofficial participatory e-planning tools changes the resources and "the route" of participation. The planners and decision-makers end up in a new situation, when the planning issues are initiated together with the stakeholders of the neighborhood, or by the latter alone. Even the role of expertise and planning measures are in flux.

Contributions to E-Planning Theory

Our comparison indicated that even the small changes due to the adoption of new e-planning tools make the linear planning process outmoded and threaten the current power relations. The increasing demands, for example the ex-ante evaluations of the plan, drive planners to seek consultancy from private planners and designers. On the other hand, planners have to meet the growing request concerning the application of ICTs in their work, which means again a new set of tasks and novel collaboration. The multi-dimensionality of the planning systems increases general complexity which adds pressure to transform the system.

Silva (2010b) claims that e-planning is a new urban planning paradigm that requires new concepts, methods and tools. From the different approaches to e-planning Silva positions e-planning in the post-positivist family of planning theories. Our study does not provide evidence that such a transformation would yet have taken place in Helsinki, nor in Sydney. However, we agree with Silva that the e-planning tools can be used from different perspectives (positivist or post-positivist) and for varying purposes. Studying the way that e-planning tools interface with existing systems can reveal the underlying characteristics of the planning systems.

The longitudinal studies of the application of unofficial e-planning tools in the Finnish context (Horelli & Wallin, 2010; Wallin et al., 2010; Saad-Sulonen, 2012) allow to suggest a few theoretical principles that seem to guide post-positivist, participatory e-planning. First of all, e-planning tends to embed urban spatial planning in the community development and local governance, due to the multi-dimensionality and complexity of the planning process. Secondly, e-planning enables the integration of process theories with theories of substance, due to the different methods of co-visioning and co-creation. Thirdly, the various tools can form an ecology of tools, if connections between them can be created and maintained (Saad-Sulonen, 2010). The ideal would be that the whole cycle of planning, from the contextual analysis to visioning, designing, implementation and evaluation would include digital and non-digital, official and unofficial, expert and mundane tools with the intention not only to inform participants but to support building partnerships and to make the community a better place to live.

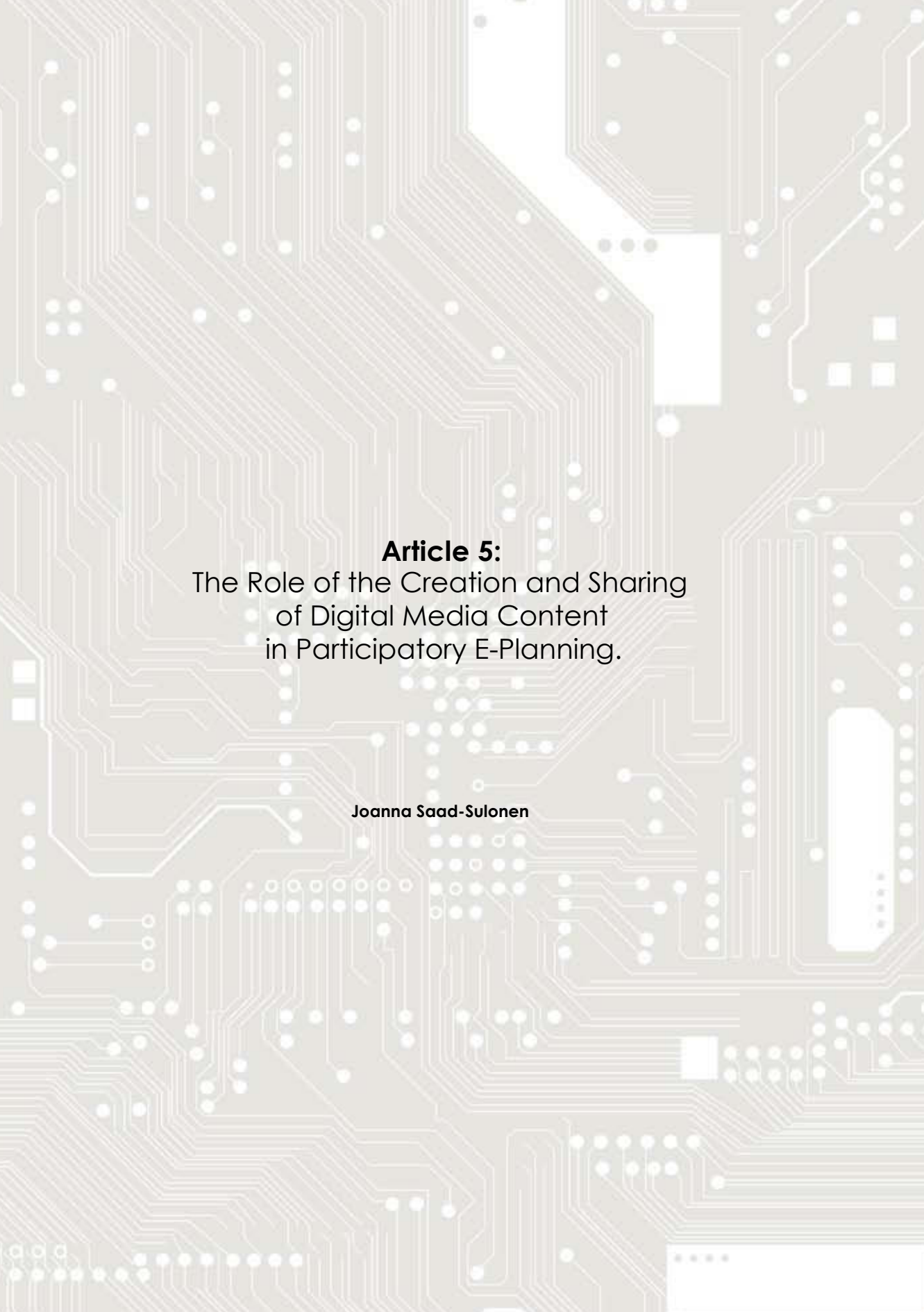
However, the core challenge still remains unanswered: How to connect the new activities and stakeholders of e-planning to decision-making? (Antiroiko, 2011) How to combine representative democracy with the increasing direct influence that the new methods and tools bring forth to urban planning and governance? Will it deliver concrete ways to implement the New Public Governance approach in the practice of urban planning and community development?

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Article 5:
The Role of the Creation and Sharing
of Digital Media Content
in Participatory E-Planning.

Joanna Saad-Sulonen

ABSTRACT

Participatory e-planning research and practice has so far focused on the institutional context of citizen participation in urban planning. Thus, it has mostly addressed the use and development of tools that support modes of participation compatible with the existing urban planning or governance processes. I argue that another type of participation exists, which is also relevant to the development of participatory e-planning. This type of participation emerges from the practices associated with the creation and sharing of digital content, which are afforded by new media technologies. The aim of the paper is to define participatory e-planning as the site of active stakeholder involvement, not only in the traditional collaborative urban planning activities, but also in the co-production and sharing of media content, as well as in the configuration of the supporting technologies. By examining three cases of participatory e-planning in Helsinki, I answer the following questions: What kinds of activities associated with the creation and sharing of digital media content take place in the context of participatory e-planning? What are the consequences of these activities for urban planning processes? What are the consequences of these activities for the technological development for participatory e-planning?

Keywords: *Artful integrations, communicative ecologies, e-planning, information systems, media content, media literacy, participatory planning, social media, socio-technical systems, user-generated content, web 2.0*

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INTRODUCTION

Participatory e-planning belongs to the emerging field of practice and area of research that is e-planning. It adds the aspect of citizen participation to the relationship between urban planning and information and communication technologies (ICTs), which lies at the heart of e-planning. In the recent *Handbook of Research on e-Planning* (Silva, 2010a), the contributors address participatory e-planning mostly through its connection to e-participation (e.g., Kubicek, 2010; Klessman, 2010) or urban planning (e.g., Granberg & Åström, 2010; Bourdakis & Deffner, 2010). E-participation is defined as "technology-mediated interaction between the civil society sphere and the formal politics sphere" (Sanford & Rose, 2007, p. 408). According to Horelli and Wallin (2010), participatory e-planning, similarly to e-participation, can be an important instrument of e-democracy and e-governance. Participatory e-planning is also related to the efforts to open up the traditional technologies used by professionals in urban planning, such as Geographic Information Systems (GIS) and Planning Support Systems, to the general public. Internet GIS is a good example of this direction (e.g., Yigitcanlar, 2010; Kahila & Kyttä, 2009).

The focus of participatory e-planning research has consequently been on the institutional context of governance and planning, as well as on the use and development of tools that support modes of participation compatible with existing governance or urban planning processes. The investigations have been limited to the introduction of a specific technology that addresses a need identified in existing practices of participation, as well as to the assessment of the technology in a context of use that is already defined. In practice, the first generation of e-participation tools, such as online questionnaires, surveys, and polls, to name a few, have mostly addressed needs that stem from consultation, which actually means asking residents for specific feedback. The feedback received is then taken into consideration, or not, in the decision making of experts and professionals. For example, in Helsinki, until very

recently the only opportunity citizens had to give feedback on planning issues was directly to the planner in charge, via snail mail, phone calls, or e-mails. However, now, at the beginning of the 2010s, some new 'official' participation tools have been put into use by the Planning Department, in addition to their website. The tools are: 1) "Plans-on-the-map", which is a website that allows citizens to get acquainted with existing plans; 2) "Tell-it-on-the-map", which is a questionnaire-based online tool to collect citizens' comments on specific issues presented by planners, and 3) the planning competitions website, where citizens can get acquainted with ongoing planning competitions and comment on them. Even though it is now possible to have the feedback from citizens publicly shared and available to all, none of the new tools enables citizens to put forward an issue of concern, and thus the tools and the way they are used continue the consultation model.

Although traditional types of participation are valid and beneficial in certain situations, they are limited in terms of citizen involvement (Arnstein, 1969). At least two mutually compatible approaches exist to transcend the effects of this limitation on participatory e-planning. The first approach relies on addressing the urban planning processes themselves. According to Silva (2010b, p. 6), "without the commitment to empower citizens and to share power, by those that hold political authority to decide on planning matters, the impact of these e-participation tools in the overall urban planning decision-making process will be limited." Indeed, if participatory e-planning does not embrace a more genuinely collaborative approach to planning, the potential for participation remains unfulfilled (Saad-Sulonen & Botero, 2010).

Another approach, which I argue for in this article, is to examine another type of ICT-supported participation. One that is enacted through the practices of the production and sharing of digital media content. According to media studies, the creation and sharing of digital media content are a central element of communication in the emergent participatory digital culture. First, more and more digital technologies are enabling everyone to be a producer rather than a passive consumer of media and information (Jenkins, 2006; Benkler, 2006). Second, the media content produced is shared, making it available to anyone connected to the Internet. The technologies supporting the creation and sharing of digital content are continuously evolving. They now include portable

everyday digital devices, such as digital cameras, mobile phones and laptops, but also a range of applications and online services, such as email, photo and video sharing platforms, Web 2.0 and social media. These technologies are referred to as "mundane", when they become commonplace and integrated in everyday life (Dourish et al., 2010). The aim of the paper is therefore to define participatory e-planning as the site of active stakeholder involvement, not only in the traditional collaborative urban planning activities, but also in the co-production and sharing of media content, as well as in the configuration of the supporting technologies. The research questions are the following. What kinds of activities associated with the creation and sharing of digital media content take place in the context of participatory e-planning? What are the consequences of these activities for urban planning processes? What are the consequences of these activities for the technological development for participatory e-planning?

Questions regarding the impact of Web 2.0 and social media on urban planning are already emerging in the field of e-planning (Silva, 2010b). For example, blogs, wikis, webcasts, and podcasts have been added to the Demo-net list of e-participation tools (Kubicek, 2010, p. 177). However, existing research still addresses the role of specific technologies, such as Facebook or Second Life (e.g., Evans-Cowley & Hollander, 2010), rather than dealing with the general characteristics of digital media. Foth et al. (2009) do question the implications for urban planning of socio-cultural trends such as participation and visualization, which are introduced by new mundane technologies. They likewise end up by taking one specific technology, the 3D virtual world Second Life, as the target of their research. Instead of beginning the investigation with individual technologies, I will take as the starting point the enabled practices of content creation and sharing. I will examine the activities that are enacted through these practices in three cases of participatory e-planning in Helsinki.

I will start by presenting the theoretical and methodological framework, which is based on approaches to participation in the context of urban planning, digital media, and technology development. I will then introduce the three cases, which represent different types of participation in the context of urban planning (consultation, partnership, and community control). I will first examine each case by using the

communicative ecologies approach introduced by Tacchi et al. (2003) and further developed by Foth and Hearn (2007). This approach makes it possible to remove the focus of the analysis from a particular technology and to address the content of the communication, the mix of tools at hand, and the constellation of actors involved. I will then use the key points raised in each case study in a cross-case analysis, which focuses on the outcomes and challenges of digital content creation in participatory e-planning, and on the emerging configurations of tools and actors. Finally, I will conclude with an overview of the main findings and open up discussion of the necessity to develop technical and media literacy, as well as the need for collaborative learning and design in the context of participatory e-planning.

THEORETICAL AND METHODOLOGICAL FRAMEWORK

The theoretical and methodological framework used to understand participatory e-planning comprises concepts of participation in the realm of urban planning, concepts of the creation and sharing of digital content, as addressed in the fields of media and communication studies, and concepts dealing with the socio-technical approach to technology, which addresses the interplay between production and use.

Citizen Participation in Urban Planning in the Finnish Context

The move towards citizen participation in urban planning has been tackled theoretically and practically ever since the 1960s. Collaborative planning draws on the theory of communicative rationality of Habermas, and is often referred to as "communicative planning". This type of planning calls for a break from the scientific objectivism and instrumental rationality that had characterized the planning profession previously (Allmendinger, 2009, p. 234). Collaborative planning also calls for citizen participation and the creation of spaces for discussion, deliberation, and consensus between the different stakeholders involved (e.g., Healey, 1997; Innes, 1998). Therefore, the role of planners changes, as they become negotiators, facilitators, and mediators (e.g., Forester, 1999).

Horelli (2002) proposes a matrix that facilitates the analysis and the

co-design of participatory planning projects. She combines four levels of participation with the five phases of participatory planning, in order better to understand the context for choosing appropriate methods and tools in participatory endeavors. The four levels of participation were inspired by Arnstein's ladder of participation (1969) as they include information, consultation, partnership, and community control. The phases of participation are overlapping and consist of 1) initiation, 2) planning and design, 3) implementation, 4) evaluation and research, and 5) maintenance. The five phases can occur, through different manifestations, in different types of participatory projects, depending on the level of participation. The cycles of participatory planning in Horelli's approach are seen as a locus for learning and capacity building for the engaged stakeholders (Horelli, 2002; 2006).

In Finland, the Finnish Land Use and Building Act (Ministry of the Environment, 1999) has been the main driver for opening up the planning process to citizen participation. The law is, according to Puustinen (2006, p. 193), one real outcome of the discussion on the communicative turn. This law, which became operative in the year 2000, enables citizens and other stakeholders to voice their opinions about town planning proposals in the areas where they live, work, or own land. This has meant in practice that planners have presented their plans to the public for comments during citizen-planner evenings. Even though the law has triggered efforts to support citizen participation *after* the plans have been drafted, not much has been done in terms of involving citizens *before or while* decisions are made, despite the introduction of opportunities for e-participation possibilities (Saad-Sulonen & Botero, 2010). Citizen participation in the municipal planning context in Finland has therefore been limited to public consultation, most often at the stage that precedes decision making over the implementation of plans by elected city boards and the city council. Therefore, the practicing planners still see themselves very much as professionals who provide neutral and value-free expertise for the common good. They thus do not put much effort into the "communicative" role advocated in the theoretical discourse (Puustinen, 2006). Lately, new mediating actors have appeared, in addition to the traditional ones. The City of Helsinki Planning Department has created the position of "participation coordinators" whose role is to act as mediators between the citizens and the planners. Additionally,

actors from outside the city government have emerged. For example, in Helsinki, the role of *Helka ry* (the Helsinki Neighborhoods Association), an NGO that works on improving the dialog between the Helsinki city administration and residents, has grown over the years (Kanervo, 2010).

The Creation and Sharing of Digital Media Content

The proliferation of personal digital devices, such as mobile phones, digital cameras, and portable computers, as well as access to the Internet and the availability of platforms for publishing and sharing digital content, has led to the emergence of new media practices. Consumers of media are turning into producers of media, or into "producers", as Bruns (2006) puts it. In his research on fan and gaming communities, media scholar Henry Jenkins (2006) has labeled the phenomenon of consumer participation in media production as "participatory culture". The latter emerges from the networked information economy as the practitioners make it their own (Benkler, 2006).

Lately, much hype has been associated with Web 2.0 and the prefix "social" attached to such terms as media, networking, and computing. All these terms are roughly associated with web-based applications such as wikis, blogs, podcasts, file-sharing tools, or social networking sites (Kolbitsch & Maurer, 2006), which "enable users to network, share data, collaborate and co-produce content" (iJPS report, 2009, p. 15). Although many of the practices associated with these activities were already present at the beginning of the World Wide Web, the new applications, with their increased usability and opportunities for laymen to publish media, have contributed to a major increase in the creation and sharing of digital media content (Schäffer, 2011, p. 35).

Digital media content refers to both user-generated data and user-generated media content (Schäffer, 2011). Data are raw content, such as personal data or tracking users' activities, whereas media content can be text, pictures, audio, or video produced by the users. Both types are needed to ensure the success of a Web 2.0 platform. Additionally, both types can be understood in terms of their impact on citizen participation and democracy. The idea of citizen scientists (Paulos et al., 2009; Burke et al., 2006) refers to the current possibilities that exist for laymen to collect environmental data, for example via sensors embedded in

their mobile phones. Citizens thus participate in the production of scientific knowledge by gathering digital data that are analyzed either by professionals or by citizens themselves, if they have the necessary skills and technology. Citizen science-type activities can similarly be undertaken in other areas of life, such as urban planning and political decision making. On the other hand, citizen journalists themselves create media content, in the form of text or audio- or video-based pieces of news, which they publish and share with others. The rebirth of the “read and write web”¹, and the portability and ubiquity of documentation devices, have facilitated the process of making news. Moreover, technologies such as RSS (Really Simple Syndication) enable the news to be automatically spread from one website or blog to another.

The Internet in general, and the numerous online platforms and applications available to citizens, have become a shared space where citizens “articulate their autonomous views to influence the political institutions of society” (Castells, 2008, p. 78). The production and sharing of digital media content shapes ICT-mediated communication and can be understood as being part of the public sphere, forming the “cultural/informational repository of the ideas and projects that feed public debate” (Castells, 2008, p. 79). Collaboratively collected data and information are available for all to examine, interpret, and use collectively, combining them with other existing data and information, such as those provided, more and more openly, by authorities in democratic societies.

Evolving Socio-Technical Systems and the Role of Intermediaries

Just as media studies has identified the active role of “consumers” in media production, science and technology studies and research on information systems design have also recognized the active role of “users” in the production of technology.

Technology is not only socially shaped (MacKenzie & Wajcman, 1985), it is also appropriated and transformed through the interplay between production and use (Williams et al., 2009). These processes are not linear and they are not limited to the move from the production phase in the lab to diffusion in the market. They form iterative cycles (Williams et al., 2005) where

1. The inventor of Web, Tim Berners-Lee, wanted from the start to have a “read and write web”, but the possibility for anyone to “write” flourished with the advent of the weblogs or blogs (Gillmore, 2004).

tailoring can take place through design-in-use (Henderson & Kyng, 1991).

Additionally, technology is no longer understood through "the vision of a single technology that subsumes all others" (Suchman, 1994, p. 34), but there is a whole technological landscape in place and in the making (Wenger et al., 2009). Contemporary Web 2.0 technologies have built on the notion of interoperability, and propose features such as open APIs (Application Programming Interfaces) and RSS feeds, which facilitate the integration between different tools and enable the creation of mashups. The context of the production and use of technology is therefore that of existing ecologies of devices, where artful integrations, rather than hegemonies, take place (Suchman, 1994, p. 34).

The ecology metaphor also extends to include other entities that make up socio-technical systems. Nardi and O'Day (1999, p. 49) propose the concept of "information ecology" to refer to "a system of people, practices, values, and technologies in a particular local environment", where each of the ecology elements impacts on the others. Similarly, but with an added focus on the communication role of ICTs, Tacchi et al. propose "look[ing] at the whole structure of communication and information in a people's way of life" (2003, p. 15) through the concept of "communicative ecologies". The latter consist of the following layer structure: the technological layer (devices and media for communication and interaction), the social layer (people and modes of social organization), and the discursive layer (the content, in the form of ideas and themes) (Foth & Hearn, 2007; Foth, 2010).

The roles of the actors interacting with technology are no longer limited to those of 'users/consumers' and 'developers/producers'. A variety of intermediary actors find their place at the site of the interplay between the design and use of technology (Williams et al., 2005; Stewart & Hyysalo, 2008). These intermediaries take part in the activities of configuration, facilitation, and brokering to "create spaces and opportunities for the appropriation and generation of emerging technical and cultural products" by others (Stewart & Hyysalo, 2008, p. 296).

The intermediaries or facilitators can be organizations, such as media companies, telecom operators, or retailers (Stewart & Hyysalo, 2008), as well as individual local experts (Stewart, 2007), such as people taking up the role of "technology stewards" in communities (Wenger et al., 2009). They can even be the designers of technology,

as suggested by proponents of the participatory design approach (e.g., Bødker et al., 1991).

THREE CASE STUDIES IN HELSINKI

Below I will analyze three different cases of participatory e-planning that took place in three different neighborhoods in Helsinki between 2008 and 2011. Each case is first analyzed individually by identifying the different phases of participatory planning (Horelli, 2002), as well as the technological, discursive, and social layers of their communicative ecologies (Foth & Hearn, 2007). The sources of the material studied in each case include notes gathered from participant observation, e-mail exchanges, and open-ended interviews with key actors. The key points raised in each case will be used in the drawing of cross-case conclusions (Yin, 2009), which will be presented in the later sections of the article.

The three cases are embedded, even though to different degrees, in the institutionalized processes of citizen participation and urban planning in the municipality of Helsinki. Each case, however, represents a different type of participation regarding the levels of participation used by Horelli (2002). Case 1 is a clear case of consultation that is driven and modulated by the existing practices and regulations of the City of Helsinki. Case 2 contains aspects of partnership, especially in its first phase, which was led by an independent architect who implemented a participatory planning approach. In the second phase, the project ended up being shared by several City Departments, with their representatives collaborating with only one representative of the residents' association of the neighborhood. Case 3 includes partnership and community control aspects. Participation was initiated and led by a group of active citizens in collaboration with the NGO Helka ry.

The three cases have in common the use and design-in-use of a tool, the Urban Mediator². The Urban Mediator (UM) made possible my own involvement, as a participatory designer (e.g., Saad-Sulonen & Botero, 2010) and an action researcher (Saad-Sulonen & Horelli, 2010), in the three projects. The role of the participatory design of the UM as a research tool will not be dealt with here, as it has been addressed in previous articles (Botero & Saad-Sulonen, 2008; Saad-Sulonen & Botero, 2010; Saad-Sulonen & Susi, 2008). It is nevertheless important to note that the

2.

The Urban Mediator is a server-based software that provides users (citizens as well as city administrations) the possibility to create, obtain, and share location-based information (Points). The collected information is publicly available online and is organized according to the topics of interests (the Urban Mediator Topics), which are set up and maintained by the users themselves. Urban Mediator uses a map-portrayal service as a means to represent location-based information and complements it with a set of Tools for users to process, share and organize this information.

main idea behind the UM as a research tool was to experiment with an “in-between infrastructure” (Botero & Saad-Sulonen, 2010), that could be available to both officials and citizens, and could enable them to share location-based information. Another aim of the UM was to bring openness and flexibility to citizen participation technologies. Many of these aspects currently exist in the features of social media applications, such as open access, the possibility of exporting and importing data via web feeds, the possibility of creating web widgets, and the use of folksonomies (Saad-Sulonen & Susi, 2008; Saad-Sulonen & Botero, 2010). However, they were not mainstream at the beginning of the development work on UM in 2006, and they are still, to this day, not sufficiently addressed in the ‘official’ tools used for citizen participation. The use of the UM in urban planning has shown that it is just one technology, which is part of the bigger technological landscape necessary for participatory e-planning (Saad-Sulonen & Horelli, 2010). I will therefore address the UM as such in this article, while keeping in mind its particularities.

Case 1: A Traffic Safety Consultation Project in Malminkartano

Case 1 occurred in Malminkartano, a neighborhood in north-western Helsinki. It was set up by the traffic planner responsible for the Malminkartano area, a participation coordinator from the City of Helsinki Planning Department (CPD), and the researchers in charge of the development of the UM (Saad-Sulonen & Botero, 2010). The traffic planner and the participation coordinator wanted to ask the residents of Malminkartano to report traffic safety issues in their neighborhood by using the UM. The planner then used the information to draft the upcoming traffic safety plan for the area.

Table 1 shows that the phases of participatory planning in this case were limited to the initiation and planning and design phases. The planning and design phase followed the typical consultation procedures in place in the CPD. Residents were informed of the new plans and had the opportunity to comment on them during the public presentation set up by the planner. However, no information was shared at any time by the CPD regarding the planning and design process itself and why it had taken almost a year for the plans to be produced.

ICT-BASED COMMUNICATIVE ECOLOGIES			
	Discursive layer: created and publicly shared content of communication	Technological layer: digital enabling tools	Social layer: main actors
INITIATION (Jan. 2008 – June 2008)	INFORMATION DISSEMINATION		
	Text on the UM topic and on the UM widgets on how to provide location-based information regarding traffic safety in Malminkartano	Urban Mediator	Planner (CPD), participation coordinator (CPD), researcher, Webmaster (CPD)
	Text on the possibility to give one's opinion on traffic safety issues	CPD website	Participation coordinator (CPD), Planner (CPD), Webmaster (CPD)
	Text on the possibility to give one's opinion on traffic safety issues by visiting the link to the CPD website *	City of Helsinki portal (hel.fi)	Participation coordinator (CPD), Webmaster (hel.fi)
	News feed from hel.fi with the previous news item	Local neighborhood website	-
	Text on the upcoming residents' evening with the lord mayor *	Local neighborhood website	Volunteer webmasters
	DATA & INFORMATION GATHERING		
	Locative information on traffic safety in Malminkartano	Urban Mediator	Residents
	UM topic text informing about the end of the information gathering phase	Urban Mediator	Webmaster (CPD)
PLANNING AND DESIGN (June 2008 – Sept. 2009)	INFORMATION DISSEMINATION		
	Text with a short description of the new plans, links to the UM map, a link to the researcher's questionnaire, the time and location of the upcoming public presentation of the new plans, a link to the "Plans on the map" portal, and contact info of the planner *	CPD website	Participation coordinator (CPD), Planner (CPD)
	Text with a short description of the new plans and links to them, visual graph of the planning process, information on the presentation session, contact info of the planner.	"Plans on the map" portal (CPD)	Planner (CPD)

Table 1:
The participatory planning phases and ICT-based communicative ecologies in Case 1.

* Excerpts from these texts were also used in flyers and/or local newspapers

In terms of the creation and sharing of digital content, Case 1 shows that the focus of interest of an ICT-mediated consultation project lies in collecting the contributions of citizens. With the use of the UM, the CPD experimented for the first time in 2008, with the possibility of having the feedback given by residents publicly available for all to view, rather than it being only available to the planners in charge (Saad-Sulonen & Botero, 2010). Some effort was put by the authorities into informing citizens about the opportunities to participate, but this information was only published on the city's own official channels. However, the RSS feed reader that was put in place by Helka ry made the information published on the City of Helsinki portal to automatically appear on the local community website of Malminkartano³.

3.

The NGO Helka ry freely provides a platform on which many of the local neighborhood websites in Helsinki run on. The local websites are maintained by residents acting as volunteer webmasters. One of the newer features of the platform is a newsfeed reader for news received from the City of Helsinki portal.

Other than the official participation tools, the neighborhood website, and the UM, Case 1 also witnessed the use of professional tools, such as GIS and Computer-aided Design (CAD) tools, which the CPD planners used in their own work.

In addition to the traditional actors (planners and residents), the participatory coordinator and the webmasters of the CPD and of the City of Helsinki portal were identified as key actors in the participatory e-planning processes.

Case 2: The Collaborative Design of a Neighborhood Yard in Roihuvuori

Case 2 is about the collaborative planning of a neighborhood yard in Roihuvuori, in eastern Helsinki. This participatory project was set up by the local Youth Center, which belongs to the City of Helsinki Youth Department (CYD). The yard belonged to the lot they were renting from the City to house the center. The representatives of the Youth Center collaborated during the first phase of planning with local stakeholders, the researchers, and an architect specializing in participatory planning. The UM was used, in addition to other social media and community informatics tools, to involve residents who could not take part in the face-to-face participatory workshops organized by the architect for different age groups (young children, teen-agers, adults, seniors). The results of each workshop were translated by the researchers or the teen-agers to the Urban Mediator maps of the yard and could be commented on by

other residents (Saad-Sulonen & Horelli, 2010). The participatory process was documented on the local neighborhood website by the volunteer webmaster. He added links to the Urban Mediator topics and opened up discussion topics on the discussion forum of the local neighborhood website. Additionally, the group of teen-agers was encouraged by the youth instructors and the researcher to experiment with different digital tools. They used the Urban Mediator at the beginning of the project to ask other young people for inspiration. They advertised information about their own participatory activities on the IRC galleria platform⁴, which is popular with Finnish adolescents, and on Facebook. They also used video cameras and an online video-broadcasting platform to record and broadcast the first residents' evening, when the architect presented his plans. A widget window showing the live broadcast was placed on the local neighborhood website. The second phase of the project started after the presentation of the architect's initial plans. This presentation was live broadcast, but the teen-agers were not anymore contacted for that. The Youth Center received further funding from the city and decided to employ a landscape design firm to draw up the final plans and take care of the implementation of the design. The participatory aspect of the project continued briefly with the organization of a residents' night to inform residents about the situation and future plans. The general public was no longer involved after that. The responsibility for overseeing the new plans and implementation shifted to a new group formed by the landscape designers, the spokesman of the residents' association, the director of the youth center, and representatives from several city departments.

Tables 2a shows that the first phase in Case 2, was a case of participatory planning, in the way advocated by Horelli (2002). Some level of partnership was achieved between the planner and the citizens, through the workshops.

In terms of the creation and sharing of digital content, Table 2a and 2b show that communicating the opportunity to participate (either in the face-to-face workshops, or via the UM) was achieved by using various tools available to the local community. The local neighborhood website acted as the main communication gateway, but the social networking site Facebook was also used, after Roihuvuori's own Facebook pages were established by active residents. The involvement of the group of

4. IRC Galleria is a Finnish web platform that enables the creation of one's own online diary. It is popular among teen-agers.

Table 2a:
Phase 1 of the participatory planning phases in Case 1, and the ICT-based communicative ecologies.

PARTICIPATORY PLANNING PHASES	ICT-BASED COMMUNICATIVE ECOLOGIES		
	Discursive layer: created and publicly shared content of communication	Technological layer: digital enabling tools	Social layer: main actors
INITIATION (Dec. 2008 – Apr. 2009)	INFORMATION DISSEMINATION Text on the UM topic explaining the role of this topic and asking other young people to mark interesting spots in Helsinki Text informing about the participatory planning project, with a link to the UM topic Text informing about the possibility to participate in workshops with the architect *	Technological layer: digital enabling tools Urban Mediator IRC Gallery Facebook Local neighborhood website	Social layer: main actors Group of adolescents, Youth instructor, Researcher acting as facilitator Group of adolescents, Youth instructor, Researcher acting as facilitator Architect, Webmaster, researcher
PLANNING AND DESIGN (Apr. 2009 – June 2010) - Workshops with different age groups: seniors, adults, adolescents, children - Wikidesign workshop	DATA & INFORMATION GATHERING Locative information on interesting spots in Helsinki DOCUMENTATION Pictures from the workshops Pictures and TV recording of the workshop	Urban Mediator Urban Mediator Camera Picasa photo sharing platform Camera TV equipment	Young people in Helsinki Architect, researcher Workshop leader, architect, participants, researcher, TV crew
	DATA & INFORMATION GATHERING Locative information on the different proposals for the yard DELIBERATION Opinions regarding the common yard project, the workshop outcomes and the architect's proposal	Urban Mediator Discussion forum of Roihuvuori community website	Participants in the workshops, residents Residents, Webmaster, member of the residents' association
	INFORMATION DISSEMINATION Text informing about the possibility to view the results of the workshops on UM and include one's own comments and propositions Text informing about the forthcoming presentation of the new plans for the yard	Local neighborhood website IRC Galleria Local neighborhood website IRC Galleria	Volunteer webmaster, Researcher Volunteer webmaster, architect
- Presentation of the preliminary plans and report during the residents evening	DOCUMENTATION Online broadcast and recorded video of the presentation	Floobs video broadcast platform Local neighborhood website	Group of adolescents, Youth instructors, researcher, Webmaster of the local neighborhood website, Helka ry tech. support

PARTICIPATORY PLANNING PHASES	ICT-BASED COMMUNICATIVE ECOLOGIES		
	Discursive layer: created and publicly shared content of communication	Technological layer: digital enabling tools	Social layer: main actors
<p>PLANNING AND DESIGN</p> <p>(June 2009 – autumn 2010)</p> <p>- Presentation of the revised plans during the residents evening</p> <p>--- the implementation phase had just started at the time of writing this article ---</p>	<p>INFORMATION DISSEMINATION</p> <p>Text about the upcoming presentation of the revised plans and schedule of the works *</p>	<p>Local neighborhood website</p> <p>Facebook</p>	<p>Spokesperson of the residents association, director of the youth center, Webmaster</p> <p>Facebook Roinuvuori page admin</p>
	<p>INFORMATION DISSEMINATION</p> <p>Plans</p>	<p>1- Power point</p> <p>2- Urban Mediator</p>	<p>1- Landscape architects</p> <p>2- Researcher</p>
	<p>DOCUMENTATION</p> <p>Online broadcast and recorded video of the presentation</p>	<p>Bambuser video broadcast platform</p> <p>Local neighborhood website</p>	<p>Researchers, Webmaster of the local neighborhood website</p>
	<p>INFORMATION DISSEMINATION</p> <p>Plans</p>	<p>Urban Mediator</p>	<p>Landscape architects, spokesman of the residents association, director of the youth center, researcher</p>
	<p>DATA & INFORMATION GATHERING</p> <p>Locative information regarding the new plans</p>	<p>Urban Mediator</p>	<p>Residents</p>
	<p>DELIBERATION</p> <p>Opinions regarding the new plans and questions regarding the future implementation</p>	<p>Discussion forum of local neighborhood website</p>	<p>Residents, Webmaster of the local neighborhood website, spokesman of the residents' association</p>

Table 2b:
Phase 2 of the participatory planning phases in Case 1, after the Youth Centre received funding for the implementation of the park.

* Excerpts from the text were also used in paper flyers

adolescents also meant that the technological landscape in this case spread to websites and platforms popular with their age group. Data and information gathering was achieved by using the UM. The purpose of its use was to engage a larger group of people than those participating face to face. Additionally, other forms of creating and sharing digital content included the documentation of the participatory project, which was carried out by using online broadcasting platforms. Deliberations also took place, especially on the local discussion forum.

Neither digital tools used by professional planners, nor official tools hosted by the City of Helsinki were used in this case. The role of the local neighborhood webmaster was important, as he took care not only of information dissemination, but also of publishing and broadcasting the documentation of the process. He also animated the discussion forum. The Facebook administrator of the Roihuvuori page complemented the work of the webmaster.

Case 3: A Community-Driven Investigation of Traffic Safety in Arabianranta

Case 3 is different from the other two because it was initiated by residents. It is a community-driven action set up by a group of active citizens from Arabianranta, in south-eastern Helsinki. They collaborated with a representative from Helka ry who was involved in an EU-funded community development project in the neighborhood. The active citizens wanted to prompt the city authorities to act on safety issues in their neighborhood. They used the Urban Mediator to ask other residents of Arabianranta to indicate safety concerns on a map of the area. They themselves analyzed the data that were collected, with the help of the NGO representative and the researcher. They also organized meetings with the planners responsible for their area to present their results. At the time of the writing of this article, a second meeting with the planners is being planned, to discuss the role of the other city departments.

Table 3 shows that, despite being different from Cases 1 and 2, Case 3 bears strong similarities to them in terms of the creation and sharing of digital content. Information and data dissemination is about the opportunity to participate in gathering data and information. This time, it was the residents who asked others for contributions by engaging them in

PARTICIPATORY PLANNING PHASES	ICT-BASED COMMUNICATIVE ECOLOGIES		
	Discursive layer: created and publicly shared content of communication	Technological layer: digital enabling tools	Social layer: main actors
INITIATION (Spring 2010 – Nov. 2010) - Workshop for mapping the safety issues in Arabianranta	INFORMATION DISSEMINATION No digital public content creation during the residents' evening	-	-
	Text on the UM topic asking residents to indicate safety issues on the map	Urban Mediator (UM)	"traffic and lighting group", NGO representative
	Text informing about the possibility to take part in a map-based questionnaire on neighborhood safety, with links to UM, explanations on how to use UM, information about the "traffic and lighting group", the contact info of the group leader, and an invitation to take part in the group's next meeting *	Local neighborhood website	"traffic and lighting group" leader, NGO representative
	DATA & INFORMATION GATHERING Locative information on safety in Arabianranta **	Urban Mediator (UM)	Arabianranta residents
PLANNING AND DESIGN (Nov. 2010 – ongoing)	Text informing of the results of the data analysis and status of the collaboration with the city planners, information about the next step to be taken by the group, links provided by the planners to previously made decisions concerning traffic safety and to sketch plans of current decisions, link to the UM topic and contact info of the "traffic and lighting group" leader	Local neighborhood website	"traffic and lighting group" leader, NGO representative, planners
	--- work in progress at the time of writing this article ---	"plans-on-the-map"	

Table 3:
The participatory planning phases and ICT-based communicative ecologies in Case 3.

* Excerpts from this text was also used in flyers

** The data collected was later analyzed by the "traffic and lighting group", using Google maps, but the analysis maps were not made public.

a citizen-led consultation process. Contrary to the other cases, the text providing information about the results of the process was produced collaboratively by the NGO representative, the residents, and the planners. They communicated between each other by e-mail to come up with the final version of the text, which was then published on the neighborhood website by the NGO representative.

The local neighborhood website and the UM were the main tools used in the process. Links to existing plans available on the "plans-on-map" website were provided by the planners and included in the text published on the neighborhood website. However, the "plans-on-maps" website was not used as a platform for participation in this case, and the feature that makes it possible to comment the existing plans was not activated.

The new role that emerged in this case was the NGO representative, who actively facilitated both content creation and the use and configuration of the technology.

OUTCOMES AND CHALLENGES OF CONTENT CREATION

Despite the differences in terms of the type and level of participation, the three cases have many similarities in terms of digital content production and sharing activities. Most of these activities do not focus on the planning activities themselves, not even on the face-to-face deliberation and consensus building advocated by the traditional collaborative and communicative planning approaches (e.g., Innes, 1998). The digital content creation and sharing activities identified in the three cases consist of: 1) data and information gathering; 2) information dissemination; 3) documentation and broadcasting, and 4) deliberation.

Collective data and information gathering proved to be effective in all cases, whether the initiative was started by planners or citizens. Many residents reported that using an online tool, such as the UM, fits in with their way of life, as they have no time to take part in face-to-face meetings or workshops. They also appreciated the fact that they could view the comments provided by other residents. Participatory e-planning makes use of both user-generated data and user-generated media content. It thus includes aspects of both citizen science and citizen journalism. The use of the data and media content varied. In Case 1, the

location data (such as the position coordinates) collected via the UM were transferred to the GIS system of the CPD and categories illustrating the type of information provided were generated by another participation coordinator. The media content collected via the UM (mostly text and some illustrations or pictures) was not included in the GIS maps. The GIS maps were only used by the CPD and were not made public. In Case 2, the locative data were not used, and the media content was not particularly analyzed by anyone, but it constituted a shared body of knowledge about the project and the different opinions of the residents. In Case 3, the residents and the NGO representative used Google maps to sort the data into categories. They created maps for each category. The Google maps were not, however, published, but the group of active residents shared the username and the password required to view and edit them with the traffic planners. At the time of writing, ongoing discussions were still taking place between the planners and employees of the Registry Office of the Planning Department on how best to transfer the data collected using the UM, to the archive system of the Registry Office. The transfer of the data would make it possible for planners to access them when they work on the area.

Information dissemination includes the production and sharing of the following types of information: information about the possibility of participating (e.g., how to contribute with data, or how to participate in a workshop), information about the results achieved (e.g., reports or plans), and information about the development of the participatory process (e.g., via news items or documentation). Previously, this type of communication existed in the form of information dissemination through flyers, posters, etc. (Horelli, 2002). The information is now accessible to more diverse groups and individuals than before. Digital tools offer more possibilities for anybody with a connection to the Internet to spread information. Castells refers to this phenomenon as "mass self-communication" (Castells, 2008). Wellman et al. (2003) describe it as the opportunity for anyone to act as a 'portal'. Borchorst et al. (2009) speak of constellations of collaboration and communication that are enabled by Web 2.0. The constellation does not need to be place-based. In Case 2, the young people used their own pages on IRC Galleria to inform their friends about the participatory project and asked for their contributions. It was not important that their friends were not from Roihuvuori, or that

they did not use the Youth Center. In Case 3, on the other hand, the active citizens used the UM and the local website to ask other residents to contribute with information about safety in the neighborhood before contacting the planners. In this case, the residents sought the opinions of their neighbors. Information dissemination is also facilitated by strictly technical means. Web feed formats, such as RSS feeds, and the possibility of embedding feed readers on any website in the form of widgets, make it possible for updated information to be automatically accessible on various sites. In Case 1, the planners had not been in contact with the Malminkartano community. However, the fact that the local website included news widgets that received feeds from the City of Helsinki portal meant that the information posted there about the possibility of providing traffic safety-related information via the UM appeared automatically on the local neighborhood website. Additionally, it is important to note that in all three cases, flyers and newspaper articles were also used for information dissemination. The text excerpts were often the same ones as those that appeared in the digital and non-digital channels.

The production of the information to be disseminated proved to be a difficult task in all three cases. Publishing results, such as official reports or plans, is relatively easy, because they are formats that are familiar to planners and municipal workers. Publishing updates on the planning or the participatory process is more challenging. In Case 1, one whole year passed before the new plans were created. During that time, the Malminkartano citizens were not informed about the situation or the future plans. By that time, many had already forgotten that they had contributed to information about traffic safety and that new plans were even supposed to be developed. In Case 2, the director of the Youth Center acknowledged that he should have shared more information with the residents and should have made better use of the neighborhood website. Moreover, once the project moved into the phase of implementation and the project was handed over to the representatives of the real estate department, no information was shared with the public any more. According to the director of the Youth Center, the process had now become caught up in the bureaucratic acrobatics between the different city departments involved. He also added that the institutional culture of the municipal employees does not currently include information sharing. A dissonance seems to

exist between the growing participatory digital culture and the institutional culture of organizations such as the City of Helsinki. Nevertheless, it is clear that the participatory digital culture is not yet ubiquitous, not even outside the institutional boundaries. In Case 2, it was decided that the local neighborhood website would act as the main gateway to e-participation (Saad-Sulonen, 2010) and that the participatory process would be reported there for the residents to follow. However, creating updates of the process proved challenging for both the spokesman of the residents' association and the volunteer webmaster. The spokesman mentioned that he wanted to publish polished texts, similar to the ones he had been writing for the local newspaper, but he did not have the time to produce them. The webmaster, on the other hand, was not comfortable with writing and preferred to receive texts from the other stakeholders, which he could then edit and place online. In all three cases, citizens reported that they would have liked to be better informed.

Similar challenges were also associated with other types of content production, such as the documentation of the participatory processes. In Case 2, the online broadcasting of two meetings was experimented with, as was the sharing of photos on an online platform. In the other cases, the meetings were left undocumented. In Case 3, however, there was some discussion, at the time of writing this article, on the possibility to document the upcoming meeting between the group of residents and the planners as an audio recording.

In terms of deliberation, the discussion forum was used only in Case 2. The discussion mostly involved residents, with comments including complaints about the choice of the yard for such a project, demands for clarification regarding the project, and proposals for the plans. The webmaster, the spokesman of the residents' association, and the youth instructors also contributed to the discussion.

All these activities can be understood as enabling a repository of data and information to be formed concerning "the ideas and projects that feed public debate" (Castells, 2008, p. 79). They thus contribute to the formation of the mediating space – the so-called 'public sphere' – between civil society and government. They also expand the realm of participation to a larger public that can be reached "online". Participation is therefore not limited only to the activities of traditionally

active citizens. The activities of creating and sharing digital content can be undertaken by officials or active citizens, to inform others of the creation or the existence of the repository and its content, as well as informing them about the possibilities of affecting decision making.

NEW CONFIGURATIONS OF TOOLS AND ACTORS

The three cases have shown that the creation and sharing of digital media content can be supported by the use of various tools: digital and non-digital, official and non-official, professional and mundane.

Disseminating information on the local neighborhood website is complemented by posting flyers on the bulletin boards of the local mall, as there is an awareness that not everybody has access to the Internet. Flyers have been generated by both authorities and citizens. Moreover, in Case 2, the plan proposed by the architect at the end of phase 1 was published in the local community newspaper.

The concurrent use of official and non-official tools by both citizens and authorities has proven more difficult. The official city department websites and the "plans-on-the-map" website were used in Case 1, whereas the local community websites and Facebook pages were used in Cases 2 and 3. Case 3 was interesting because the active citizens, the NGO representatives, and the planners collaborated in creating a report about their activities with links to both the data gathered by residents on the UM and older existing proposals for the area documented on the CPD's "plans-on-the-map" website. This report was published on the neighborhood website by the NGO representative.

Case 2 added new tools, such as Facebook and IRC Galleria, which can currently be referred to as 'mundane' in the Finnish context, to the panoply of e-planning tools. As people grow accustomed to using these tools in a casual manner, the threshold for using them to publish information about participation in urban planning becomes lower. For example, in the Roihuvuori case, the webmaster of the local neighborhood website and the spokesperson of the residents' association have both stated that the use of Facebook to post information is quicker than the use of the neighborhood website. Additionally, the information posted on Facebook quickly reaches residents because Facebook has become integrated to the everyday practices of many people. However, they

emphasized the complementary role of both tools, as some residents do not have a presence on Facebook, whereas others are not interested in the community website. Furthermore, the use of IRC Galleria has made it possible to include teen-agers in the participation process as well. Professional tools, on the other hand, make it possible for planners to draft plans (e.g., the CAD and GIS systems used by the planners in Case 1) and for municipalities to archive reports from citizens so that planners can refer to them (e.g., the archiving system of the Registry Office in Case 3). The challenge lies in identifying technical possibilities that connect the tools together. The UM's "Export as CSV" feature, as well as the easy generation of GeoRSS feeds, facilitated the process of sharing data between the UM and other tools. These types of features need to be kept in mind when new tools are being designed or purchased by authorities.

Wenger et al. (2009) identified the need for communities to "make sense of the technological landscape" available to them. They propose strategies to choose systems of tools that will be most suitable for the communities' needs, and for creating working configurations out of the different tools, platforms, and features at hand. Similar strategies that target both planners and citizens are needed for participatory e-planning. The three cases have shown that the complexity of "tool systems of multiple technologies" (de Moor, 2009) has infiltrated the domain of participatory e-planning. The choice of tools, whether by planners or citizens, or by both together, has become an important aspect of participatory e-planning. Furthermore, the ability to configure constellations of tools has become equally important. The chosen tools need to complement one another to address the participation and communication needs. The actors in participatory e-planning thus become engaged in the processes of co-configuring the technological systems that will address the diversified needs of data gathering, information dissemination, documentation, broadcasting, and deliberation.

Choosing and configuring technology is not yet a trivial task. In Cases 1 and 2, the webmasters acted as technical facilitators (Saad-Sulonen, 2010). In Case 3, it was the NGO representative, with help from the NGO technical support, who assisted the group of active citizens. In all three cases, I myself also acted as a technical facilitator, with support from the Urban Mediator software and interface designers. Wenger et al. (2009)

used the term "technology steward" to refer to the community members who are able and willing to take part in "selecting and configuring technology, as well as supporting its use in the practice of the community" (2009, p. 25). Similarly, participatory e-planning needs its technology stewards, both in citizen communities and in professional planning and municipal communities. Their role would be to assist citizens and planners in choosing technologies, configuring and adapting them, and building configurations of several technologies brought together to form a working infrastructure.

In addition to offering technical support, the NGO representative, in Case 3, collaborated with both the citizens' group and the planners to generate the informative texts that were then published on the neighborhood website. She acted as a facilitator for a new kind of collaboration, which is not addressed in collaborative planning, and which resembles computer-supported collaborative work. The NGO representative also facilitated the data analysis process. Burke et al. (2006) introduce the roles of initiators, gatherers, evaluators, and analysts in the context of citizen science. These roles can also be applied in participatory e-planning and can include both citizens and planners. The capacity to generate texts or other media artifacts (photos, audio, or video) that illustrate the ongoing participatory process is needed.

Consequently, it is possible to identify media and technology facilitators, in addition to the more traditional facilitators of participation in urban planning and city governance (e.g., the participation coordinator in Case 1). The new facilitators are often not planners themselves, but include designers, webmasters, active citizens, technical support people, and employees of NGOs. Their role is to support both planners and citizens in acting with media and technology. The different types of facilitators will need to find ways to collaborate.

Acknowledging the importance of the role of the diverse types of facilitators lessens the uncertainty of many planners in terms of the possible growth of their workload as a result of citizen participation. The role of these facilitators is also important as they enable the participatory e-planning processes to be implemented in practice. Technical and media facilitators also support the collaborative learning process that emerges from participatory e-planning. Horelli's cycles of learning in participatory planning (2002) are thus expanded with the learning

aspect associated with the appropriation and adaptation of ICT technology and media communication (Williams et al., 2005). The learning process affects both planners and citizens. Planners gain an understanding of the ecology of tools and the communicative processes through reflection-in-action (Schön, 1983). Citizens develop their digital citizenship skills in terms of understanding the planning processes and their opportunities to affect them, as well as in terms of technological and media communication skills (Saad-Sulonen & Horelli, 2010).

CONCLUSIONS

On the basis of the theoretical and methodological framework and the comparative case study presented in this paper, it is possible to claim that the creation and sharing of digital media content make possible a new type of participation and thus play an important role in participatory e-planning. The new type of participation is not restricted to institutionalized forms of participation, such as consultation, or to traditional approaches advocated by the proponents of collaborative planning, where the participation strategies are based on face-to-face meetings and discussions. The new type of participation complements existing forms of participation by including the following activities: informing others about the participatory activities and their results, documenting and broadcasting face-to-face meetings, collecting and analyzing data and media content, and engaging in ICT-mediated discussions. Thus, the creation and sharing of media content augment and expand the initiation and planning and design phases of traditional participatory planning with the following steps: information dissemination, data and information gathering, documentation, and deliberation. Visualization has not been apparent in the cases presented in this article, but it should be added (Foth et al., 2009). Furthermore, additional research is needed to examine the role of the creation and sharing of content in the other stages of participatory planning, such as implementation, evaluation and research, and maintenance, if they take place.

The activities described above make the process of participatory planning more transparent, as new possibilities open up for participation and collaboration. These possibilities are not necessarily concerned with the activity of planning per se, but with communication and the

collection of data and information. Urban planning, as it transforms by and into participatory e-planning, will no longer solely be concerned with plans as the only material representations of the various ideas and discourses that have come together (Allmendinger, 2009, p. 214). Collections of data gathered by citizens or by planners, documentation of participatory processes co-produced by citizens and planners, and online discussions are available for all, to be examined and used, if needed. Therefore, the processes of urban planning need to take into consideration the new activities, the stages at which they can be performed, and the actors involved. The shared digital media content acts as one concrete representation of the collaboration between citizens and officials. At the same time, it opens up the process of participation to a wider public. In other words, and returning to the "public sphere" of Castells (2008), which is based on media communication networks, the creation and sharing of digital content in the context of urban planning are both a materialization and an enabler of the mediation between civil society and the city government.

The creation and sharing of digital content are made possible by a wide variety of tools, digital and non-digital, official and non-official, professional and mundane. The technological landscape of participatory e-planning therefore widens considerably and affects the approaches that can be taken for the development of technologies for participatory e-planning. Participatory e-planning cannot rely anymore on ready-made technological solutions. Citizens and planners alike need strategies to choose, use, and configure the different tools at hand. Creating connections between the different tools entails both technical building blocks and artful integrations performed by actors who are able to manipulate technology. Such actors have not been previously associated with urban planning. Software and interface designers, webmasters, and technically and media-oriented volunteers, as well as NGOs as media and technical facilitators, thus have a role to play. E-participation and e-planning require a multi-disciplinary approach, not only in research (Macintosh & Coleman, 2006), but also on the ground. Participatory e-planning cannot afford to focus only on planners as the facilitators and organizers of the planning process (Booher & Innes, 2002), but rather on the collaboration between stakeholders with different types of expertise, including citizens and different

types of facilitators.

Nevertheless, it is important to remember that, even though the creation and sharing of content are becoming everyday practices for many, they are not practiced by all. Making use of the existing technological possibilities still constitutes a big challenge to many citizens and planners. Many technical, organizational, and practice-related hurdles still remain. Developing technical and media competences is important for all the stakeholders involved if they are to benefit from the opportunities offered by the new media (ijpts report, 2009). Moreover, media literacy is important for users to be able to recognize the potentials, limitations, and risks associated with the use of different platforms, especially commercial ones, whose terms of use and privacy policies might be hidden. Still, it is not enough to focus on use alone. Wessels (2010) advocates the development of cycles of the learning and development of e-services that enable users to co-construct the new socio-technical systems. Horelli and Wallin (2010) also call for the co-production of digital tools to be part of participatory e-planning. The co-design process of the Urban Mediator is also an experiment in this direction (e.g., Botero & Saad-Sulonen, 2010). It is thus important to develop the capacity to collaboratively imagine tools, platforms, features, or services that might not yet be available (Botero & Kommonen, 2009). In addition to exploring the *potentials* that the use of ICTs might bring to citizen participation in urban planning (e.g., Kubicek, 2010; Granberg & Åström, 2010; Repetti & Bolay, 2010), it is also important to address participatory e-planning as an *evolving socio-technical system* that can be *collaboratively designed*. This, however, opens up further questions as to what kinds of strategies are needed to put the co-design processes in place, and what such strategies will entail for the existing culture of planning in municipalities, for the laws and regulations that concern citizen participation, and for the processes of municipal technology procurement.

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Article 6:
A Long-Term Strategy for Designing
(in) the Wild: Lessons from the Urban
Mediator and Traffic Planning
in Helsinki

Joanna Saad-Sulonen | Andrea Botero | Kari Kuutti

ABSTRACT

This paper addresses the move towards understanding an expanded domain of design for interactive systems. We take up Dourish's invitation to "designing politics", and examine, through the long-term study of the design of the Urban Mediator and its outcomes, how and to what extent the design of an interactive system can impact citizen participation in urban planning. The study shows that with the adoption of an expanded approach to the participatory design of technology, it is possible to impact the processes in place for citizen participation, albeit naturally in a modest way. Issues of different timeframes and rhythms in technological development and the practices and politics of citizen participation need to be addressed, as well as new strategic considerations, which go beyond the traditional role of design.

Author Keywords: *Design in the wild, design-in-use, participatory design, urban planning, traffic planning, MacroHCI*

ACM Classification Keywords: *H5.2 User Interfaces: User-centered design*

General Terms: *Design*

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INTRODUCTION

In her keynote talk at the DIS 2010 conference, Yvonne Rogers reminded us of the move towards "designing in the wild", which has taken the context of HCI research and practice out of the lab and into the messiness of everyday life [25]. The "wild" has come to refer to the workplace, the home, and lately, with the rise of mobile and ubiquitous technologies, to cities and urban space. Designing in the wild is different from ethnographic approaches to interactive design in that it is not about observing the reality and suggesting designs that fit this reality, but it is about intervening in a particular context by creating opportunities for action and change [26].

The concerns for "designing in the wild" have so far focused on the in-situ context, and Rogers was calling for better tools for researchers to cope with the "wild", the new difficult environment for experiments. But, the challenge of the "wild" is larger than that. Real-life experiments may lead from "designing in the wild" towards "designing the wild" itself; experiments may have real-life consequences that start to shape the environment and trigger further changes. There is a need for HCI research to address a wider understanding of "the wild" that would include the socio-political context in which citizen engagement in shaping their living environment materializes.

This understanding of "the wild" has already been recognized by several researchers. For example, the combination of urban computing and Web 2.0 technologies has enabled inquiry into how urban mundane technologies might affect the engagement of citizens in shaping their living environment [12]. It is also apparent in the area of research concerned with HCI for environmental sustainability, where there have been recent calls for bringing the political dimension forward as a way of opening up the design space [1, 7, 10]. Dourish [10] goes even as far as inviting designers to concern themselves with the "design of politics". He claims that: "Political, social, cultural, economic, and historical contexts have critical roles to play, not only because they shape our experience with information technologies, but also, and even more, because information technologies in contemporary life are sites at which these contexts are themselves developing." His claims resonate in fact with older ones, such as those of Scandinavian

Participatory Design, especially at its beginnings in the 1970's [11].

In this article, we take up Dourish's invitation and examine the outcomes of a long-term case of "designing (in) the wild". In our case the "wild" is the context of regulated urban planning and local governance in the post-industrial cities of democratic countries, where citizen participation is enacted. Acknowledging the socio-political context does not mean designing solutions to fit the procedures in place. On the contrary, we argue that interventions grounded in the collaborative design of interactive systems can trigger change in the context of planning and governance. The aim of this article is to show how and to what extent the design of an interactive system has impacted citizen participation in urban planning. We examine in particular the impact of taking an expanded approach to the participatory design of technology, which, in addition to involving stakeholders in the design of the system in the early design phases, also includes considerations for continuing design-in-use [8, 15].

The expanded participatory design approach was used in the design/use of the Urban Mediator (UM), an online platform for sharing, obtaining, and gathering location information. The UM was used and further designed-in-use in several real life cases [e.g. 5, 27] In this article we focus on one: a case of traffic planning in the neighborhood of Malminkartano undertaken in collaboration with the City of Helsinki Planning Department. This case clearly sits in the context of institutionalized citizen participation in urban planning in Helsinki. By examining the design strategy used for the UM, its immediate outcomes in the Malminkartano case in 2008, as well as the outcomes that emerged first two, then four years later, we ask the following questions:

In what ways can the design of technology for citizen participation affect the processes of citizen participation in urban planning? What is the role of the expanded participatory design approach? What can be learned from such an approach and what other strategic considerations need to be taken for designing (in) the wild?

We start by explaining the context of citizen participation in urban planning in Helsinki, then present the initial design process followed for developing the UM, and the way it was embedded in the case of public participation in traffic planning. We then examine the immediate and long-term outcomes of the design and use of the UM,

both in terms of the technology developed and the impacts on citizen participation. We conclude by highlighting the need to take into consideration the different time spans and rhythms of designing for HCI and "designing politics", as well as new strategic considerations that go beyond the traditional role of design. We end by opening up the discussion on the challenges that exist for operating in the expanded domain of HCI research and practice.

WHEN "THE WILD" IS REGULATED: CITIZEN PARTICIPATION IN URBAN PLANNING IN HELSINKI

The planning practice in Finland is still very much influenced by the comprehensive-rationalist approach of 1960s. This means that planners and top-down zoning play an important role. The planning processes and citizen participation are highly centralized and regulated by laws and bureaucratic governance in the name of the public interest of the welfare state. The planners elaborate detailed plans, which are then voted for or against by the members of the elected city council. Nevertheless, the last Finnish Land Use and Building Act [21], which stipulates the role of residents and landowners in the planning process, has been influenced by the communicative turn in planning [24] and other approaches aiming at increasing democratization in general. This law, which became operative in 2000, has pressed the City of Helsinki Planning Department (CPD) to consider strategies for more direct types of citizen participation. Concrete measures were taken, such as naming participation coordinators to act as mediators between the city planners and the residents. Processes were also put in place to ensure that plans are publicized so that concerned citizens can comment them. Much of the focus on enabling citizen participation has remained on zoning plans. Opening similar possibilities for participation, for example in traffic planning, has been left to the discretion of the planners.

Back in 2008, the CPD did not have any specific citizen participation information system. Citizens could (and still can) contact planners directly or file an initiative to the Planning Department's Registry Office. Both options are available via mail, email or phone calls. An initiative can be a comment or feedback to plans made public by

the planners, for example during public presentations or on the CPD's "Plans-on-the-map" website. The Registry Office forwards the received initiatives to the planners in charge and archives them, along with information regarding whether they had been handled or are still pending, in their own archiving system. Later, between 2010 and 2011, the City of Helsinki acquired other tools to support participation [27], but they all act as online feedback channels for issues initially raised up by the CPD, and not by residents.

PLANTING THE SEEDS

The process for developing the UM was at first designer-led and included approaches ranging from Participatory Design (PD) activities that engage users in the design process [13], to end-user development strategies, whose goal is to "empower end-users to develop and adapt systems themselves" [18:2]. The aim was to come up with a technological toolkit that would be flexible enough to be further designed-in-use, in varying contexts of use, after the software and research project would end. This temporally extended approach to participatory design opens up possibilities to plant the seeds for future design activities in situations that cannot be fully anticipated [4].

The Urban Mediator (UM) in Brief

In its current version, the UM is a server-based software that provides users (citizens as well as city administrations) the possibility to create, obtain, and share location-based information (Points). This collected information is organized according to topics of interests (the UM Topics), which are set up and maintained by the users themselves. The UM uses a map-portal service as a means for representing location-based information and complements it with a set of Tools for users to process, share and organize this information. The UM Widgets are tools that enable some UM functionalities, such as the possibility to add a point or view the latest points contributed to a topic, to be placed on other websites. The Urban Mediator software, once installed on an appropriate server, provides a customizable instance that is accessible and usable online, through the web, using a normal PC or any browser-enabled mobile device¹.

¹. The UM version 2.0 was released in June 2008 and is available for download as an open source software (<http://um.uiah.fi>). There are currently two active UM instances on the university servers: the UM Helsinki (uses maps provided by the City of Helsinki), and the UM Helsinki Open (uses a freely available map from OpenStreetMaps)

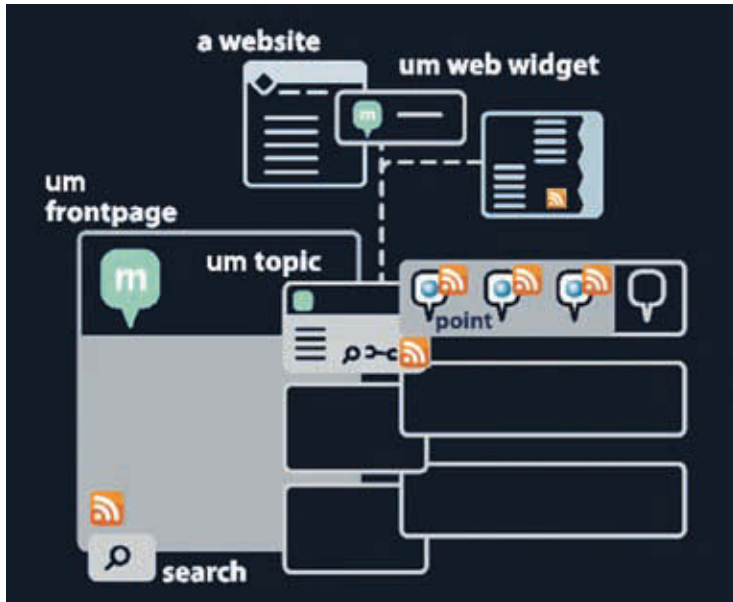


Figure 1:
The main
components
and features
of the UM.

The UM was developed as part of a EU-funded research project ICING (Innovative Cities for the Next Generation), exploring Information and Communication Technologies solutions for eGovernment. Through our work on the UM, we wanted to bring forward alternative approaches to eGovernment, not necessarily to address the 'solution to a problem', but rather to enable the exploration of new types of shared infrastructures for interaction between citizens and city officials [6]. It was clear from the beginning that we needed a design strategy that enabled us to engage both citizens and planners, and to design for further adaptations to future contexts of use.

Towards Design-In-Use

The strategy used for developing the UM started with an application of PD methods for stakeholder involvement in the design process. At its beginnings in the 1970s, PD aimed to address the processes of change that digitalization would bring to workplace democracy in industry, and

the role of trade unions in acting upon that change [11]. Involving the future users in the design of the information systems that they were going to use in the future was thus also a political act. Even though PD has since then lost some of its initial political dimension and might not have fully addressed the complexity at stake [19] it still carries within its discourse a strong link to its original socio-political goal. Since computation has moved beyond the workplace, inquiries into embedding PD in new socio-political domains, such as governance [e.g. 9] and urban planning [e.g. 22, 23, 5, 6] have emerged.

Through the years PD has fostered the development of a rich array of methods for involving future users in the design of information systems, from case-based prototypes and cardboard mock-ups to future workshops and scenario development. The focus of these methods has not only been on the design of the tools themselves, but also on the design of the future workplace practices required [29, 13]. In our case we started by contacting a number of stakeholders that we could identify: active citizens, school children, local developers, and city planners. We engaged them in the initial phases of the design process, through workshops, paper and pen prototype development, and in-situ testing and use of technical prototypes. These initial participatory design activities helped us to identify key stakeholders, collaboratively map practices and needs, collaboratively further conceptualize the UM, develop key features and functionalities, and come up with scenarios of use grounded in concrete examples of the needs of citizens and planners [6, 5].

Commentators have criticized the PD approach for focusing on the initial phases of the design, without addressing that of use [8, 14]. It was important for us to go beyond this limitation because we wanted to enable a possible continuation for the UM, after the limited time-span of the ICING project. We thus borrowed from approaches that have expanded PD into "design-in-use", where the process of design is understood to continue through use, thus bringing up the importance of adaptability and tailorability in the design of information systems [15]. Dittrich et al. [8] refer to on-going design-in-use as a strategy for "designing for change"; change in the context and practices of use, which can be both anticipated or unexpected. Design for change is an alternative to designing solutions for problems. In our case, the UM dissociates itself from the traditional approaches to eGovernment, where IT solutions in

the form of off-the-shelf software packages simply address some issues identified by decision-makers in the processes in place. Our hypothesis was that by designing adaptable tools rather than fixed systems for ICT-mediated citizen participation, the UM could be adapted for use by groups of citizens, local development agencies, or city departments. Such an approach might gradually set the ground for a possible 'real' use of the UM in a variety of public participation activities in the future.

The approach followed for designing the UM thus evolved from traditional PD to "PD in the Wild" [8,17], and from professional-led design activities to use, adaptation and tailoring activities. In the following section, we will explain the transitional phase in the design process, which included both PD and design-in-use strategies in the wilderness of traffic planning.

ACTING "IN THE WILDERNESS" OF TRAFFIC PLANNING

The transition phase was enacted through our involvement in a case of public participation in traffic planning set up by planners of the CPD. The planners wanted to ask the residents of Malminkartano, a neighborhood in North-Western Helsinki, their opinion about traffic issues in the area, in order to help them draw the new traffic plans; a task they were scheduled to start in the near future. Our ICING project partner from the City of Helsinki had been in contact with the planners, and had proposed to them to try the UM. The successful use of the UM in a previous public participation case with the Public Works Department [5] triggered the interest of the planners in trying it in Malminkartano.

Developing a Common Language and Understanding

The working group set up to inquire the use of UM for public participation in Malminkartano consisted of two participation coordinators responsible for the interaction between the department and citizens, a traffic planner responsible for drafting the traffic plans for Malminkartano, the ICING partner from the City of Helsinki, and the UM design team.

After an initial meeting, the CPD planners decided to use the map feature of the UM in order to collect information and opinions regarding specific locations in that part of the city: Where should the traffic speed

be lowered? Where should parking along the street be permitted? Where should street bumps be placed? Where is visibility bad? Where are dangerous spots, related to traffic and movement? Moreover, the planners wanted to ask citizens their opinions about opening up an underpass for general traffic. They were interested in knowing, whether the residents of a certain area were pro or con this proposal. Their initial framing of the project was thus in terms of "polls" and "questionnaires". "Where" was a key issue in all their questions. It was obvious that a map interface could provide an easy entry point for the residents to locate their concerns and to address their questionnaire.

From our point of view the UM was not intended to simply facilitate the setting up of online questionnaires, but rather to offer the possibility to collaboratively gather location information related to a particular issue on an online map. It was important for us not to develop new features just to answer the specific needs of this case, but rather to focus on developing generic tools that would be part of the 'Urban Mediator toolkit' we were aiming at. We decided to make the most out of the existing features and to refine them. For example, we planned to continue work on the UM widgets [5] and develop the possibility for topic owners to customize the "add a point" widget to their needs, and embed them in any website.

During the first meetings it appeared that the way the widgets could work remained unclear to the planners. The term 'web widget', and even our explanation of this term ("a piece of code that can be included in any webpage and that brings up Urban Mediator functionalities, such as the possibility to add a point on the map") did not open up the concept to the planners.

We decided to address this in a hands-on participatory design workshop to help us explain the potentials and limitations of the UM to the planners more concretely and to adapt the UM for the project together with the planners. Moreover, we wanted to better understand what were the needs and objectives of the planners. We used paper prototypes and Post-it notes to mimic the steps needed for setting up a particular topic on Urban Mediator, as well as to create the web widgets that would be included in the CPD pages and would prompt the users to give their contributions. The creation of the widgets meant the provision of information, such as the title of the widget, as well as the

information that would guide users on how to create a point. This meant that the planners had to come up with examples of point titles and tags, which would be suitable for display in the widget prompt. They also had to decide about hidden tags that could help them categorize the users' contributions.

The workshop proved useful and we set up a UM topic and generated the UM widgets that were agreed upon, in collaboration with the Webmaster of the CPD. The Webmaster of the CPD created a link on the main page of the website, which lead directly to a news page about the Malminkartano traffic safety project. On this page, she placed the UM widgets that prompted visitors to a) mark parking problems, b) mark dangerous places, and c) mark improvement suggestions for the traffic. Citizens' contributions would appear as points on the UM map of Malminkartano (see Figure 2), or as comments to existing points (e.g. in the case of the underpass question).

Going Public

The scheduling of a public residents' evening in Malminkartano, where the Mayor of Helsinki and various city planners were to present plans related to the area and answer questions, provided a good occasion to present the project to the residents, and to invite them to participate. This event publicly kick-started the possibility for citizens to participate; explanatory flyers were distributed and an official presentation was made directing the residents to the website of the CPD.

The possibility to send contributions via UM was activated for the period of one month. 73 new points were created (35 dangerous spots, 25 improvement proposals, and 13 indications of parking problems). There were 24 responses to the underpass question (as comments to the point). Some of the points were also commented by others residents. According to the traffic planner, such a level of participation was higher than usually encountered in similar traffic planning projects, where residents have contacted the department by emails, letters, or phone. The planner followed residents' contributions as they came in and drew the plans for the area, taking them into consideration when they were relevant. The participatory planner and a Geographic Information System (GIS) specialist from the CPD also transferred the UM data to their GIS

identified by Kuutti and Bannon in the extended HCI framework [20]. The micro level is that of technological interaction, where the user physically interacts with the system, through its features and functionalities. The meso level is that of conceptual interaction, where the system or application must be understood in order for it to be used. Finally, the macro level is the level of work processes or use situations, where contextual interaction takes place. This level is what we understand as “the wild” in our case. Interaction at that level engages the social contexts in which the system is placed.

The Immediate Outcomes at the Micro and Meso Levels: Sharing Concepts and Building New Features and Functionalities

The participatory design workshops as well as the adaptability of the tool made it possible for the planners to experiment with new ideas and concepts they were not familiar with and had not been in their own work practices. This has given us new insight in the further development of the tool. We have increased its flexibility and versatility by including features useful in formal public participation projects. Such features could later be used in other similar projects, or could also be adopted and adapted through other uses.

The workshop activities helped the planners to better understand the concept of UM and the set of tools provided (topics, points, widgets, etc.). After the workshop, they started referring to the widgets as either the “buttons” (for the Add a point widgets), or the “windows” (in the case of the other widgets). The workshop in a way ‘de-mystified’ the term “widget” for them, and they were able to focus on how the widgets can help them in the task of asking citizens for contributions. They were thus able to communicate to us what the values for the different parameters of the widgets would be.

As the original idea of UM was that of a system for both citizens and planners to share location-based information, we had not envisaged that it could offer possibilities as online questionnaires. The planners, however, addressed the project with their own set of concepts, which were related to their own work practices. This was the case, for example, with the references to create a “poll” or a “questionnaire”, that would

be augmented by a "map software". Questionnaires are tools that are part of the toolbox planners use for online citizen participation. The map aspect of UM brought in new locative possibilities to the "questionnaire" idea. The idea of the poll and questionnaire led us therefore to experiment with the possibility to refine some of the UM tools, so that the Urban Mediator topic administrators and widget creators could include a pre-defined set of questions that users could answer while creating a point on the UM map. This feature is now added to the customization possibilities offered by the "Add point" widget creation. The questions and their answers can be attached to the points created by using this widget. This makes it possible to use the UM in participatory consultation projects, where online questionnaires are needed.

The collaboration with the planners also permitted us to further refine functionalities associated with the use of tags. For example, in order to implement some of the planners' ideas related to a controlled categorization of the data, we introduced "hidden tags" as a lightweight approach for giving the planners a structured possibility to organize the collected data, according to relevant categories. As the "hidden tag" feature proved to be quite flexible and adaptable for various needs, we decided to make it a standard set up feature for UM topics.

Finally, it was rewarding to see that the approach of providing an adaptable toolkit rather than fixed solutions was bearing results. This became apparent as we noticed that the web widgets placed on the website of the CPD had been edited and customized by the Webmaster.

The Immediate Outcomes at the Macro Level: Planners Re-Consider Certain Aspects of the Formal Participation Process

The Malminkartano traffic planning case was the first time CPD planners asked citizens for opinions before any plans were drawn. The CPD has, in response to the Land Use and Building Act of 2000, ensured possibilities for citizens to comment plans produced by planners, but they had not incorporated in the planning processes the possibility for citizens to contribute to the projects already at their very beginning, before any plans are made. After the citizens had given their contributions as a part of the UM trial, the traffic planner mentioned that it had been easier for her to

work on this project because she could from the start focus on what was important to the citizens. She also stated that she could focus on details, already at the stage of the preparations of the first plans, without having to wait for the comments of citizens, which she would normally have gotten during or after the scheduled public presentation of the plans. She did not have to reply individually to each comment or proposal, and explain the same things over and over. The UM made it possible to collect all the comments and to make them available for anyone to view. The process did not include the expectation of a response from the planner. Rather, the plans created by the planners would be the response to the suggestions and information provided beforehand by the citizens.

Although the planners could not at first clearly understand, how a tool like the UM, which enables sharing location information, could help their goals for consultation, they ended up appreciating the fact that the information gathered via UM was publicly available to all. Their initial idea for a tool for ICT-mediated consultation was an online questionnaire that would have a map feature. Online questionnaires used by the different departments of the City of Helsinki. They work as a one-way channels that are targeted at interaction between an individual citizen and the city administration. UM offered therefore a new approach to ICT-mediated participation. During a de-briefing session with the planner, the participation coordinators, our ICING partner from the City of Helsinki, and the Webmaster, the planners indicated that it was actually useful to have all the comments publicly available, so that residents can read each other's contributions. This makes it possible for residents to become aware of the differences of opinions and of the fact that their own needs might clash with the needs of others. The planners indicated that this actually makes visible the difficulty of their own work, which is to ensure solutions that are in a way fair to most residents. People, she said, can now understand that the planner cannot address everyone's desires. Residents have also expressed their appreciation of the fact that they could read each other's comments. It was both useful and interesting to them. One respondent also added that she thinks that the opinion of the residents will be taken into consideration in this case, because the UM contributions show that many share the same opinion.

The collaborative design of the UM has therefore made it possible

for the planners to reflect on issues related to the participatory planning process in their department, making them aware of the new opportunities that certain technological solutions can bring. Dealing with the UM as a mediating environment rather than a questionnaire enabled planners to address the requirements of the Land Use and Building Act in a new way; one that helps their own work practice. Experimenting with the UM made them realize that having the collected information publicly available for all to see, before the plans are drawn, helps their own work. Conversely it also gave citizens the possibility of comparing and getting a general overview of what others were thinking, opening up new possibilities to influence planning practices.

The Delayed Outcomes: Citizens Infiltrate Traffic Planning and Planners Advertise New Best Practices

The ICING project ended in summer 2008, as the traffic planner was preparing the new traffic plans for Malminkartano. The end of the funding meant that we no longer had resources to actively pursue the development of the UM. Much to our surprise, we learned in summer 2010 that the UM Helsinki was being used by a group of active citizens from the neighborhood of Arabianranta in South-Eastern Helsinki. The active citizens wanted to prompt the city authorities to act on safety issues in their neighborhood. For this, they collaborated with a representative from the Helka ry NGO that freely provides online platforms for local neighborhood website. The Helka ry representative was involved in a EU-funded community development project in the neighborhood, and knew of the UM from previous contacts with us. She introduced the UM to the active residents, who decided that it would be a suitable tool for them to use. The residents, mostly elderly, non-technically-savvy people, set a topic on the UM Helsinki with the support of the NGO representative. The NGO representative wrote instructions on how to add a point to the new UM topic and published them in a news item on the local website. The same news item described the goal of the group of active citizens and invited other residents to contribute with their own observations on traffic safety in the neighborhood. After about two months, the UM topic on traffic safety in Arabianranta had gathered 83 points from a diverse range of residents.

The group of active residents and the NGO representative went through the gathered data and started thinking of a strategy to analyze it. At that point we proposed to present to them our experience from the Malminkartano case; what we knew about the way the CPD planners had handled the data gathered via the UM, and how they had categorized it in order to view it on their GIS system. The residents also contacted the traffic planners responsible for the Arabianranta area, to inform them about the data gathered and the plans for analyzing it. It was then decided that the residents would go through the data and categorize it with our help and that of the NGO representative, taking some inspiration from the Malminkartano case. To do that, they engaged in 'adaptation-in-use', by adapting the tagging system of the UM to their categorization needs. They thus created their own customized tagging system and added these 'category tags' to every point on the topic. They then proceeded, after consulting with us, to export groups of UM points, to Google maps that the NGO representative had created for each category. This enabled them to better visualize the outcome of their analysis. In Autumn 2010, they contacted again the traffic planners and sent them, with our help and that of the NGO representative, the following set: the URL of the UM topic, the categorized Google maps, and a CSV (Comma Separated Value) file generated via the UM, which lists all the data gathered in a table format. The active residents then organized a meeting with the planners where they discussed the results of their work and the planners' reactions to citizens' concerns.

The planners came prepared to the meeting. They had prepared a PowerPoint presentation, where they showed the decisions regarding some of the issues raised by the citizens, which had already been handled in the CPD, and for which plans already existed. They also showed new proposals they had started working on, based on the concerns raised by the residents. It was decided, at the end of the meeting, that the NGO representative would write a short memo of the meeting, and that the planners would add to it links to the documents and plans that address issues already handled, and that are available (though difficult for outsiders to find) online, on the "Plans-on-the-map" website. Even though it is not yet possible to know if the new proposals will eventually be accepted by the council, it is a fact that one clear outcome of the citizen-led action has been to get all the information regarding the

current situation in traffic planning in their neighborhood.

We later asked the group of active citizens what they thought of the process so far. They said that they were happy with the collaboration with the planners, and were especially grateful for the help that the NGO representative and we provided. They said that it was important that we had shared our experience from the Malminkartano case with them, as it helped them address the issue of analyzing the data collected, and how to proceed with it.

When asked about the citizen-led action of the Arabianranta residents, the traffic planners said that they welcomed the residents' initiative. One of them said: "This way is new ... I have worked with resident groups before in Helsinki, but the fact that they have concretely gathered data, it automatically brings in a new perspective." The planners particularly appreciated the fact that the outcome represented the voices of a big number of residents, and not just the group of active residents, as is often the case. This reflects the Finnish planners' understanding of their role, which is that of a neutral and fair guardian of the public good [24].

Our interview with the planners also revealed that the Arabianranta citizen-driven data gathering case had triggered discussion between them and the Registry Office of the City of Helsinki, which is responsible for archiving and mediating feedback received from citizens. The planners wanted to know how they could transfer the data collected via the UM to the City's own feedback system so that it can be available for future use. The Registry Office acknowledged that they don't know how to deal with feedback that doesn't come to them the normal way, i.e. as an initiative communicated via individual phone calls, mail, e-mails, or feedback forms. At the time of the interview, the planners had not yet received further feedback from the Registry Office, other than them investigating the possibility of considering all the data gathered by the residents via the UM topic as one single initiative, which can then be classified as such.

The issue of preserving the collected data in the City's archive was not brought up in the Malminkartano case, as the planners only focused on viewing the data on their GIS system. However, for the planners in the Arabianranta case, this was an important point to achieve. This reflects a serious desire to treat the data collected by residents as valuable

information that should enter the processes and systems in place in the City of Helsinki for citizen participation and planning. On the other hand, this case has also pinpointed areas for further development in the City's approach, both at the technical level and the organizational one. There is a need to re-think the whole process of citizen participation that is in place and the way it is currently supported by the technology. For example, the Registry Office would need to collaborate with the planners working on the ground and address citizen participation that is enacted through more complex collective activities, such as citizen-driven initiatives for collecting data – a procedure which is not spelled out at all in the Building and Land Use Act, nor is it even envisioned in the formal participation processes in place.

At the end of 2011, the group of Arabianranta residents and some of us received an e-mail from a resident of Pohjois-Haaga in North-Western Helsinki, asking us if we would care to present to their own group of active citizens, the process followed in Arabianranta of gathering data on traffic safety from residents. Our coordinates had been given to her by the CPD, more specifically by one of the planner who had been responsible of the Arabianranta area, and with whom the Arabianranta group had collaborated. It is interesting to see how the new kind of citizen participation practices, which have evolved from citizens' own needs and initiative, have spread, and the pivotal role of the planners in spreading the word and encouraging these activities.

HARVESTING AND CROSS-POLLINATING

Looking back at the expanded PD strategy we have followed, we can see a continuous process where the initial designer-led intensive participatory design activities give way to a slower-paced user-led process of adaptation of the technology, which, in turn, is intertwined with the development of new politics (such as addressing possible change in the formal processes in place) and practices (both planners' and citizens') of citizen participation (Figure 3). However, change in the socio-political context of use can require a much longer time frame than what is required for technological development. Addressing this issue will be one of the biggest challenges for designing (in) the wild.

In the case of citizen participation in urban planning in Helsinki, the

situation when we started working on the UM in 2006 was different from what it is now, even though no new laws have been applied. Contextual changes independent of our involvement are important to acknowledge. The change of generations in the planners at the CPD as well as a general drive toward more openness and collaboration with the citizens has been witnessed. In Malminkartano in 2008, the use of the UM made it possible for residents to share their views on traffic safety in their neighborhood, both with each other and with the planners, before any plans were made. The residents were also invited to comment the proposed plans during a public presentation at the local school one year later. However, there were no additional possibilities for participation. The Finnish Land Use and Building Act of 2000 has pushed the CPD to ensure that citizens are presented with plans that affect their neighborhoods. This type of participation, which in effect is simply a consultation process, is limited [2]. The planners did not keep the citizens informed of the development phases of the project, nor did they explain what were the processes followed. Some residents even used the online research questionnaire that was later set up by one of us, to communicate ideas concerning traffic planning in the hope that it would reach the planners. There was thus no effort put in opening up the basic consultation process to a more collaborative interaction with citizens. On the other hand, in Arabianranta, in 2010, the group of active citizens and the planners did collaborate. First of all, the two parties actually met on several occasions. Second, they worked together in providing information regarding the planning processes under way. This second type of collaboration, which is in line with what is usually addressed by Computer Supported Collaborative Work, was made possible by the use of e-mail and the help of the NGO representative who collected the information and included it in reports that were published on the local neighborhood website [27].

In addition to naturally occurring contextual changes, the citizen-driven participation case in Arabianranta has demonstrated the benefits of its continuity with the Malminkartano one. This continuity fed it with input on how to adapt the technology and, equally importantly, how to engage in the kind of citizen action that can impact existing planning procedures and incur change in practices of participation. In turn, the Arabianranta case is currently affecting the way in which the

CPD planners are approaching participation possibilities, and the way citizens are approaching their citizen action in Pohjois-Haaga.

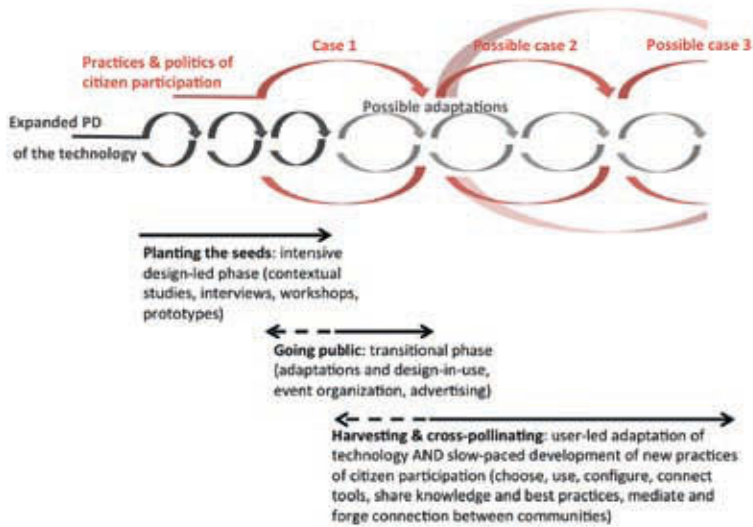
If HCI aims for the "design of politics", we suggest it takes into consideration the different time spans and rhythms that the changes in the context of use of technology may require. Long-term strategies become essential. These strategies can rely on the initial designer-led interventions that act as potential triggers for later developments [4]. The choice of technology will impact the sustainability of the approach: Open Source, modular, and adaptable technology afford design and adaptations-in-use at later stages. However, as the designer-led phases give way to the realities of "the wild", new strategic considerations need to be addressed:

- Thinking in terms of ecologies of tools rather than focusing of single technologies, and developing strategies to choose, use, configure and create connections between the different tools at hand [27], e.g. official tools in use in municipalities as well as everyday mundane ones used by citizens.
- Devising ways to share knowledge and best practices related to technological adaptation as well as citizen participation: e.g. through open documentation and the creation of publicly available and co-editable manuals.
- Mediating and forging connections between communities of (potential) users who share interests and goals: e.g. residents of different neighborhoods that are interested in traffic safety issues.

These considerations support the birth of a kind of 'cross-pollination' between various cases, and produces new outcomes and new seeds for further developments in the design of the technology and the socio-political context of use. In the cases reported in this paper, our own role as designers shifted from an initial focus limited to the development of the technology, to a wider one that included addressing the new considerations listed above, in collaboration with citizens, planners, web-masters and NGO representatives.

Whereas we have shown that the expanded PD strategy has affected,

Figure 3:
A view to the extended design process. The professional design-led phase gives way to slower-paced and potentially user-led iteration cycles of technology adaptation. These are combined with the development of practices and politics of citizen participation.



in a modest way, the participation processes followed by the CPD, it limits "design for change" [8] to only one disciplinary context, that of technological design. In order to better position ourselves for designing (in) the wild, the whole approach to citizen participation in local governance and urban planning would need to be addressed, already at the early stages of the design activities. A deeper methodological inquiry into participatory urban planning [16], and its possible links to PD, might have been beneficial at the beginning of the UM design process. This might have enabled more collaborative activities between the planners and citizens, which are not yet supported by the laws and processes followed in Helsinki.

Finally, it is important to keep in mind that the UM was a software developed by the researchers themselves, in the context of academic research. We recognize that the issues related to the affordability and sustainability of the proposed design approach within a commercial setting, and in terms of the procurement processes of the city administration, have not been addressed.

CONCLUSIONS

In the beginning of the article, we have brought forth Dourish's call for HCI to be concerned with the "design of politics", which can be understood as integral to designing in the wild. We have asked how and to what extent can the design of interactive systems affect "the wild", which in our case, was citizen participation in local governance and urban planning. On the basis of the long-term study of the design of the Urban Mediator and its outcomes, we suggest the following: by developing interactive systems that are flexible and versatile, and by enabling an expanded approach to technological participatory design, which goes beyond the professional design project and enables further adaptations of the system by its users, it is possible to impact the processes in place for citizen participation, albeit naturally in a modest way. The time-frame and rhythm of change of the context itself can be out of phase with those of technological design. It is therefore important to leave the possibilities open for delayed actions and outcomes, which can occur at later times and feed the iterative process of design in general, be it of technology, politics, or of both. New strategic considerations, which are not necessarily bound to the traditional role of design, also need to be acknowledged, such as thinking in terms of ecologies of tools, devising ways to share knowledge and best practices, and mediating and forging connections between communities of users.

One implication of these results is that the way future research on ICT-mediated participation ought to be re-positioned to include possibilities to concurrently address the design of technology and the development of new types of citizen participation. What kind of trans-disciplinary research and collaboration settings need to be constructed?

Another implication concerns the role of HCI design and the designers. As the case of the Urban Mediator has shown, the designed system needs not to be the end-point of the design activities, but it can become a trigger for other kinds of changes in its context of use. In a sense, this means going back to the initial goals of Scandinavian Participatory Design (SPD), where the collaborative design of new computer systems together with the workers themselves was seen as a possibility to affect democracy in the workplace. While SPD thus could be a valuable resource for "designing (in) the wild", its experiences

must be now re-contextualized – both the world where the design is taking place and the technology in use have undergone drastic changes during the decades since the initial experiments were made. What are the possibilities, courses of action, and responsibilities of the designers now? This is a discussion within the DIS community we would like to open.

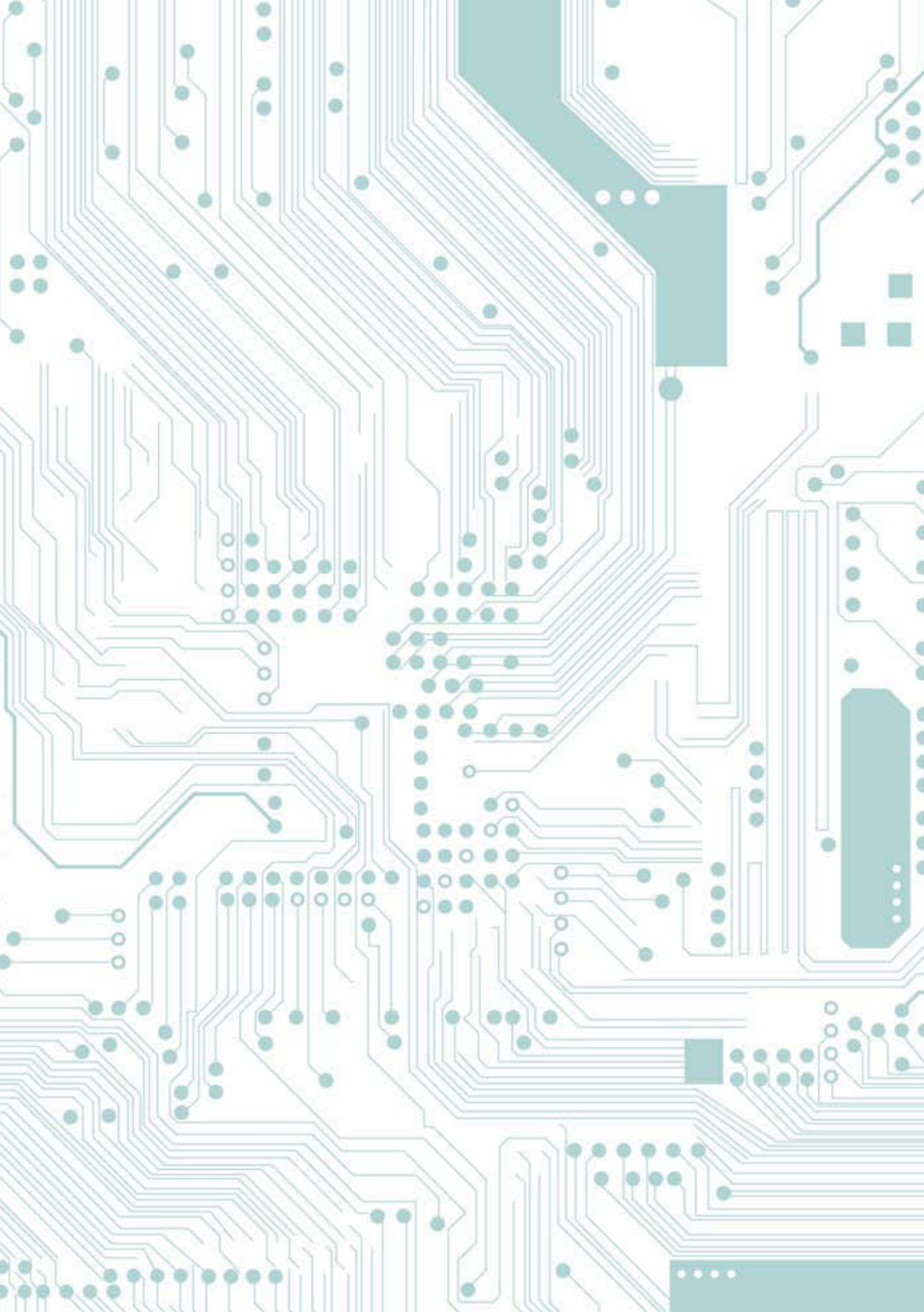
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Combining Participations is a trans-disciplinary work on participatory e-planning, which the author re-conceptualises as comprising different types of participation that take place in urban planning, as well as in the design of digital technology. The different types of participation can occur simultaneously in different combinations and affect one another.

At a time when the increasing rate of both urbanisation and digitisation around the globe is bringing urban planning and digital technology closer to one another, it is important to move beyond buzzwords such as 'smart cities' and 'living labs'. This thesis provides novel tools, such as the matrix of multiple participations and the Expanded Participatory Design approach, which make it possible to explore a more genuinely democratic vision of cities and technologies and to devise ways of realising such vision.

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