

DIGITAL TOOLS IN PARTICIPATORY PLANNING

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INTRODUCTION

– ICTS CHANGING THE RESEARCH AND PRACTICE OF PARTICIPATORY URBAN PLANNING

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Technological change has greatly impacted everyday life. In Finland, Nokia and the mobile phone technology have enjoyed a similar position as a national vehicle for economic and social change, as the tractor in the Soviet Union, in the 1950's. Information and communication technologies (ICTs) have transformed the way people communicate and interact with one another. It has brought, not only new ways of socializing, consuming and producing services and experiencing places, but also new forms of citizenship, activism and political sense making. Everyday life has become increasingly glocal, due to the availability of the Internet and other digital tools that enable local people to communicate with the rest of the world both individually and as a community (Foth & al. 2009).

Consequently, urban planning and the methods for citizen participation in complex urban issues should also be changing (Innes & Booher, 2010). Digital tools invite people to experience urban space in new ways. The massive invasion of i-phones, web 2.0, navigation and digital mapping tools, such as Google Earth, GIS and 3D-modelling, have expanded the limits of our understanding and deploying space. The new extensions of comprehension are, for instance, the augmentation of reality with context-aware information and the virtual exploration of environments and communities (Mitchell, 2000; Foth & al., 2008).

The use and deployment of urban informatics is part of everyday life, for example, when we navigate during the rush hour with context-aware traffic information. The massive movement of digitalization has augmented the role of the user, and left government and civil servants gasping their breath. Previously, planners and professionals were the producers and users of urban information. Currently, the users are also co-producers of urban information. The talent and the mass of user groups create the value of digital applications.

The most sophisticated applications have so far had little to do with urban planning. On the contrary, most applications have been made for leisure purposes, such as playing games, tourism, entertainment or shopping. However, urban planning should find a niche in this evolution. It should be concerned with, how to take advantage of urban and community informatics, how to use them in agile analyses or forecasts of urban issues. New methods should also be created which can enhance the application of the gadgets in urban planning, public participation and decision-making. Then, urban planning could step out and make a statement, why it is relevant in the digital era.

In practice, the development and use of ICTs reflect a dispersed field of interests and capabilities. Some users are better equipped and they have better skills in technology. In the countries of high technology, the use of ICTs is more often a matter of the chosen perspective, objective and social values. It has become a self-evident part of everyday life, although the technologies are used varyingly in different walks of life. Applications of different ICTs seem to be inaccessible, difficult to use and sometimes even overlapping, when the knowledge of the mutual benefits and overall purpose are missing. This is familiar to the endeavours of academics too. Digital tools and urban informatics provide a playground for research and development within several different disciplines, such as geography, computing sciences, engineering, social sciences, architecture and environmental psychology, just to name a few. Each discipline is developing software programs and applications of its own. Even within an interdisciplinary approach, professionals solely tend to produce targeted knowledge and tools in a certain field of interest. Consequently, extensive understanding of the digital tools and methodology in urban planning has not yet emerged.

The field of participatory urban planning has remained surprisingly stable for the past twenty years. The ethos and methods of participatory planning

are widely accepted, but so far poorly used in the daily planning practice (Bäcklund, 2007; Staffans 2004). However, the interest of the inhabitants in their environment, is growing fast. The stakeholders are even eager to act locally on an ad hoc basis and to channel their activism through the Internet (Lindholm, 2005). The planning professionals appreciate local knowledge, but they are so far unable to use the information in the planning process (Puustinen, 2006). The digital tools and the demand for open-access applications for citizen participation do not make the situation easier for the planners. The situation is equally demanding for the researchers of participatory urban planning. In addition to having to use an interdisciplinary framework, the development of digital tools in participatory urban planning requires researchers to reach out to the civil society, to the planners, end-users, NGO's and inhabitants. This evolution poses a great challenge, as both the development of ICTs for participation, as well as the urban planning processes must be concurrently addressed.

In search of a shared ground

This is a book about digital tools in participatory urban planning and community development. We argue that technological change is simultaneously a great opportunity and a challenge for participatory urban planning. The practice of ICT-assisted participatory planning is yet sparse and dispersed. So is research in this field. The aim of the book is to present and discuss Finnish examples of the development and use of a variety of digital tools in urban planning in order to construct a shared ground for research and practice. We bring together, for the first time, the transdisciplinary expertise of researchers and practitioners who are contributing to the development of ICT-assisted or even participatory e-planning in Finland.

This compilation consists of six articles some of which have been previously published in international publications. The main question that this book addresses is: What are the major experiences of and consequences for the emerging field of ICTs in participatory urban planning and community development, both in practice and research?

The chapters in this book share a common background, as they deal with the development of ICT- tools for participatory urban planning in the Finnish context. The compilation covers examples of participatory GIS and public web portals designed for master plan processes, as well as specialized tools

and mash-ups for public participation in local development projects that use GPS, web 2.0 and interactive screens.

The book comprises three different approaches to the digital tools. In the first approach, tools are designed to collect experience-based data about the living environment for both research purposes and to be used by planners. The second approach focuses on tools that enhance the participation of different stakeholders in the planning and community development processes. Finally, the third approach introduces tools and platforms that have been designed in a way that allows people to co-develop and customize them for participation in urban planning and community development. The instruments vary from the development of a flexible web tool to a whole ecology of internet-based web 2.0 tools that embed the fragmented urban planning cases with community development and co-governance.

The development of the tools described in this book began simultaneously. In 2000, the new Land Use and Planning Act made public participation obligatory in the planning processes in Finland. At the same time, the role of technology-based innovations grew fast, as the Finnish Technology and Innovation Fund (TEKES) targeted resources to the research on the use and customization of ICT-applications, including the field of urban planning. Several research groups at the University of Technology, University of Art and Design and Oulu University launched research projects, which aimed at the development of new tools for participatory urban planning. Some of the researchers closely collaborated with the Helsinki Neighbourhoods Association (Helka), which was an important developer of local internet sites and portals, in addition to raising awareness of issues around urban planning and community development.

Besides simultaneous timing, there are more differences than similarities between the tools, presented in this book. Even if all the cases began with a development project that proceeded in an iterative way, some tools were launched as part of straight forward research and development (Soft GIS). Others took more time, as they were engaged with the co-production by the users (Kotikatu, Ubi Helsinki tools). Some of the tools were taken to use, as they were co-developed (Urban Mediator, Espoo Forum). They produced information on maps, which the planners and the inhabitants can use later on. Some tools were pilots, which could be taken to use immediately, although they are not yet in public use as such (WebMapMedia).

Insight into the content

In order to get a perspective to the characteristics and methods that the digital tools for participatory planning provide, we will present the tools according to the purpose that they were designed for.

The book begins with an article on the softGIS-method, in which Maarit Kahila and Marketta Kytä describe the history and current use of the geo-information tool that enables the gathering and analyses of the inhabitants' experiences of the living environment. The tool assists in providing sophisticated data for research on environmental quality that can be used by the planners. In the second article, Aija Staffans, Heli Rantanen and Pilvi Nummi describe the development of the internet forums in Espoo which provide arenas for participation. The web-based arena allows to translate the inhabitants' knowledge to a form that suits the planning procedures.

The main objective in the fourth chapter by Joanna Saad-Sulonen and Andrea Botero describe the participatory design, use and adaptation of the Urban Mediator tool in the context of traffic safety planning in Helsinki. The point of view of the authors stems from media and digital design, rather than from urban planning. Their contribution stresses the relevance of embedding the design of the tools for participation within the context of ICT-mediated participatory urban planning. Their development process has a similar background and purpose of the tool as in chapter five. In this chapter, Virtu Halttunen, Antti Juustila and Johanna Nuojua has been to describe innovative web and mobile tools that enhance communication between the planners and the users in a specific planning case.

The sixth chapter takes even a further step towards the co-production of local web pages. Anna Kanervo provides a new perspective to the practice of participatory urban planning. As a representative of a non-governmental organization (NGO) she brings forth an example of citizen activism in which inhabitants become not only users, but also co-producers in participatory e-planning.

The book closes with the article by Liisa Horelli and Sirkku Wallin who describe the web 2.0 tool development as part of a community development process. These tools were developed on the local web pages that Anna Kanervo dealt with in her article. The final chapter provides the background to the conclusions, which claim that the development of ICT-tools will change both the practice and research of participatory urban planning.

This book tribute to the close co-operation and shared enthusiasm of the authors in participatory urban planning. As editors, we have the pleasure to thank the authors and also the funding organizations, The Finnish Academy and TEKES which have made the research and development of participatory e-planning possible in Finland.

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SOFTGIS AS A BRIDGE-BUILDER IN COLLABORATIVE URBAN PLANNING¹

MAARIT KAHILA
MARKETTA KYTTÄ

Abstract

Current urban planning practices require a new way of thinking and new methods to improve the role of communicative and collaborative planning. New, user-friendly methods will facilitate the participation of inhabitants, allow residents to generate information about their own living environment and establish their role as experts on that environment. The softGIS- methods aim to meet these challenges. We will introduce this new collection of methods and evaluate them in the context of the current critical GIS discourse. The role of the web-based softGIS emerges as a planning support system that strives to build a bridge between the residents and urban planners.

Introduction

Current trends in urban planning and recent changes in the planning culture (Staffans, 2004; Puustinen, 2006) support the development of a new methodology for collaborative planning. Collaboration in Finland is supported by European Union (EU) directives and the Finnish Building and Land Use Act (1999). The latter aims to ensure wide participation and to support open and high-quality planning decisions and processes. In practice,

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such wide participation is difficult to realize as resources are inadequate. The participatory approach also needs to be evident in all phases of the planning process, which is rarely the case in reality.

The views of participants can potentially smooth the planning and design processes and reduce the number of conflicts (Taylor, 1998), promote adaptation to continuously changing societal conditions (Innes & Booher, 1999), strengthen recognition of the differing values of various actors (Healey, 1997), support learning and knowledge-building (Friedmann, 1998) and, finally, help to achieve tangible regeneration outcomes (Beresford & Hoban, 2005). To implement these objectives, planners have to acquire not only new skills and professional roles (Forester, 1989; Puustinen, 2006), but also to develop more usable and effective participation methods, as well as a deeper understanding of the knowledge hidden in the experiences of the inhabitants.

In the first sections of this chapter, a new soft geographic information system methodology, softGIS, is introduced. It has the potential to enhance participation by allowing the residents the possibility to share their knowledge of their living environment with urban planners and researchers. The softGIS methodology refers not only to a whole set of individual softGIS-methods but also to the special collection of theories, concepts and ideas behind the development of these methods. SoftGIS-methods will therefore be evaluated in the light of the comments that O'Sullivan (2006) makes in his critical GIS discourse. That includes the observation that GIS is not merely a technical tool for handling geographical information, but also one that takes into account its societal impact. The aim of this chapter is to analyse to what degree and in which ways the softGIS-methods can build a bridge between the residents and urban planners. Because the softGIS methodology is in the early stages of development, we will focus on the main ideas behind the innovation, the few existing experiences of the methodology's use and the future development prospects concerning the use of softGIS methodology in collaborative planning practices.

SoftGIS methods

SoftGIS-methods allow residents to produce localized experiential knowledge. SoftGIS leads us to ask, how the everyday lives of residents are organized, what kind of place-based positive and negative experiences (Manzo, 2003) residents have and how do they behave in their physical environment. This knowledge is collected through user-friendly internet-

based applications (Kyttä & Kahila, 2006; Rantanen & Kahila, 2008). Finally, the localized experiential knowledge comprises a special layer in the GIS used by experts, such as urban planners and researchers. SoftGIS-methods are built according to the following principles:

- the operationalization of perceived knowledge is grounded in the theories of humanistic geography and environmental psychology;
- the perceived knowledge is gathered through scientifically valid, reliable and ethical methods;
- the softGIS-methods are developed in cooperation with urban planners, who can use this novel knowledge in their planning practices;
- the database enables systematic GIS and statistical analyses possible; and
- the methods provide a user-friendly internet platform for residents to evaluate their everyday living environment.

Our aim is to build a bridge between the residents, researchers and urban planners by promoting the participation and collaboration of citizens with the help of softGIS-methods. These methods promote the sharing of the residents' experiences and behavior concerning their living environment. We believe that the new technology, and especially web-based GIS applications, can become an important communication instrument between the inhabitants and planners (Figure 1).

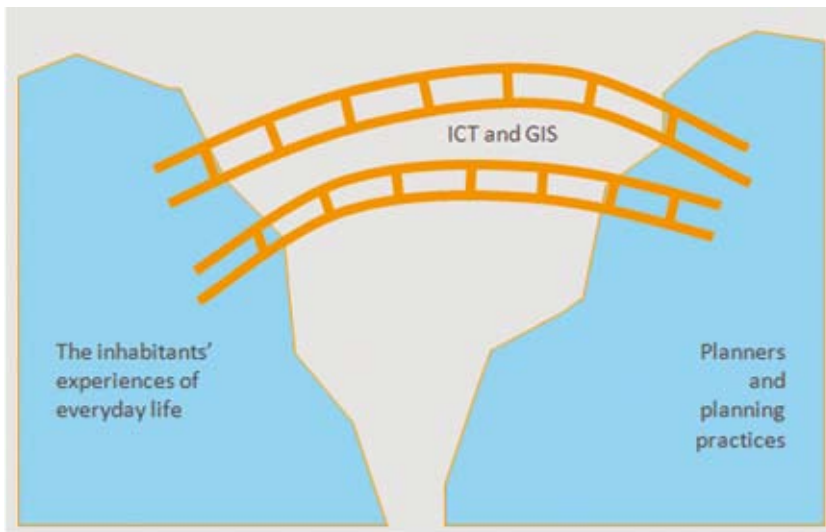


Figure 1. *The softGIS-methodology as a bridge-builder between the planning practice and inhabitants' experiences of everyday life.*

The technical development of these web applications has been realized by varied groups of media technology students in the Institute of Technology of the Espoo–Vantaa University of Applied Sciences. The current technical requirements for the softGIS-methods are presented in Table 1.

Table 1. Technical requirements for the softGIS-methods.

Implementation techniques	Requirements
Programming of the application • PHPS (http://www.php.net) Needed extensions to PHP • MapServer PHP Map Script (http://www.maptools.org/php_manuscript) Database program • MySQL 5.0.18 or later version (http://www.mysql.com) Implementation of the user interface Either • HTML (http://www.w3.org/TR/REC-html40/) • CSS (http://www.w3.org/Style/CSS/) • JavaScript (http://www.ecma-international.org/publications/standards/Ecma-262.htm) Or • Flash 7.0 (http://www.adobe.com/products/flashplayer/) • XML (http://www.w3.org/TR/2006/REC-xml-20060816/).	Server • Apache HTTP server (http://httpd.apache.org/) • MapServer 4.8.4 (http://mapserver.gisum.n.edu/) Web browser • Netscape 6.0 or other compatible browsers • JavaScript-support on

The first softGIS-prototype was launched in 2004 in Järvenpää, Finland. By fall 2007 five different softGIS-methods had been applied in six different municipalities. These web questionnaires have so far reached 3,000 respondents. In the following sections we introduce five softGIS-methods that we have categorized as: (i) softGIS-methods capturing the general perceived quality of the environment, (ii) softGIS-methods concentrating on a specific theme, and (iii) softGIS-methods for a special user group.

SoftGIS-methods for mapping the perceived environmental quality

The first prototype of softGIS-methods was developed to study broadly the perceived quality of environment in the city of Järvenpää (www.SoftGIS.fi). To study the localized, perceived quality factors (affordances), individual eco-social niches, used local services and perceived health and well-being, an internet-based GIS method was developed in 2004 (Table 2). This web questionnaire had a tube structure and it proceeded step by step, meaning that each visitor followed the same route through the application. Special attention was paid to the quality of the maps used in the application. Aerial

photos with a scale of 1:4,000 were used. The orientation was aided by highlighted roads and landmarks. Owing to technical restrictions, it was only possible to mark point information on the map, but not routes or areas.

Table 2. Contents of the softGIS survey on the perceived quality of the environment.

1. Introduction	General information about the study
2. Background information	Age*, Gender*, Family type*, Occupation, Car ownership, Income, Housing type* House type*, Size of the dwelling, Childhood environment, Situation when filling the questionnaire, Participation earlier
3. Positive quality factors*	Introduction, choose 1-5 quality factors from the list, a possibility to name your own quality factor
4. Actualization of the quality factors*	Actualization of the chosen positive quality factors
5. Negative quality factors*	Information, choose 1-5 quality factors from the list, a possibility to name your own quality factor
6. Actualization of the quality factors*	Actualization of the chosen negative quality factors
7. Map application: Location of home*	Mark the location of home to the map and a possibility to express the personal meaning of home
8. Map application: Location of positive quality factors	<ul style="list-style-type: none"> mark the location of those quality factors that where chosen earlier every factor can be located max. in three places quality factors can be located to the map of municipality or a map of Finland maps can be zoomed
9. Additional query	After every location a small query appears <ul style="list-style-type: none"> accessibility of the place means of transport possibility to describe the place
10. Map application: Location of negative quality factors	<ul style="list-style-type: none"> mark the location of those quality factors that where chosen earlier every factor can be located max. in three places quality factors can be located to the map of municipality or a map of Finland maps can be zoomed
11. Additional query	After every location a small query appears <ul style="list-style-type: none"> possibility to avoid the place disturbance at some time of day possibility to describe the place
12. Map application: The location of basic services	<ul style="list-style-type: none"> mark the location of workplace, day care, study place, daily grocery store, schools and other activities after every location, a possibility to describe the place
13. Map application: The questions concerning the community	<ul style="list-style-type: none"> mark the location of those places or buildings that should be conserved place that could be attractive to move to after every location, a possibility to describe the place
14. Additional questions	Floor height for new buildings and the possibility to write down characters that make the centre attractive
15. The perceived well-being*	Three questions from the Health 2000 –survey
16. The perceived health*	Euroqol-scale (EQ-5D)
17. The ending	Feedback about the softGIS questionnaire

In 2006, the Järvenpää pilot study was replicated in three additional municipalities, Mäntsälä, Kerava and Nurmijärvi (Figure 2). These applications were designed in close collaboration with urban planners. The results in each case have been published in traditional research reports and in web summaries, but part of the data has also been delivered as a CD-rom to urban planners to be utilized in their planning projects.

427 inhabitants answered the original Järvenpää survey and about 1,300 inhabitants participated in the subsequent study in three additional Finnish towns. In each case, the web questionnaire was available on the front page of the website of the cities for three months. All inhabitants were eligible to answer the questionnaire. The web surveys were advertised in



Figure 2. *softGIS* quality methods.

local newspapers and libraries. According to our studies, middle-income households and middle-aged women with children living in single family houses were overrepresented in these web questionnaires.

The evolution of the *softGIS*-method to study perceived environmental quality has taken place from more open questions to more structured ones and from longer questionnaires to shorter ones. To make the analysis easier, the originally freely expressed, personal affordances of the original questionnaire were later pre-classified, but we still allowed the respondents to name their own affordances (Kytä & Kahila, 2006). To combine the qualitative and quantitative approaches in each *softGIS* questionnaire, the inhabitants could, for example, write down stories or memories of personally meaningful places.

Thematic *softGIS* methods

In addition to methods that collect experiential data broadly, various thematic *softGIS*-methods have been developed to study, for example, perceived safety, urban mobility or experiences concerning the green environment. In each case, relevant research literature and expert researchers should be consulted to produce valid, reliable, theoretically and practically well-operationalized methods. These applications need to be compact and they have to have tested modules that can be combined with each other. The themes should support current planning challenges and represent themes which planners find interesting and relevant. Planners should also always have the possibility to add to the questionnaires some questions of their own.

The *softGISsafety* method was developed to study the perceived safety of a neighborhood (www.pehmogis.fi/muotiala). This web survey was used in

Muotiala, a neighborhood in the city of Tampere, in Finland. The planning of Muotiala has been inspired by the CPTED-model (Crime Prevention Through Environmental Design). Through the *softGISsafety* method we gathered profound feedback from the residents of the actual perceived safety, sense of community and everyday life of the infrastructure in the area. The residents localized places of perceived social and traffic dangers, pleasant and unpleasant routes and signs of disorder and care. The results give detailed information to the planners concerning the realizations of CPTED principles, for example, how the lighting, public space design or light traffic routing are reflected in the residents' localized experiences and use of their environment (Figure 3). The localizations of perceived danger can also be compared with the police maps of the actual scenes of crime. The data can then also be utilized by the police in their preventive work in neighbourhoods.

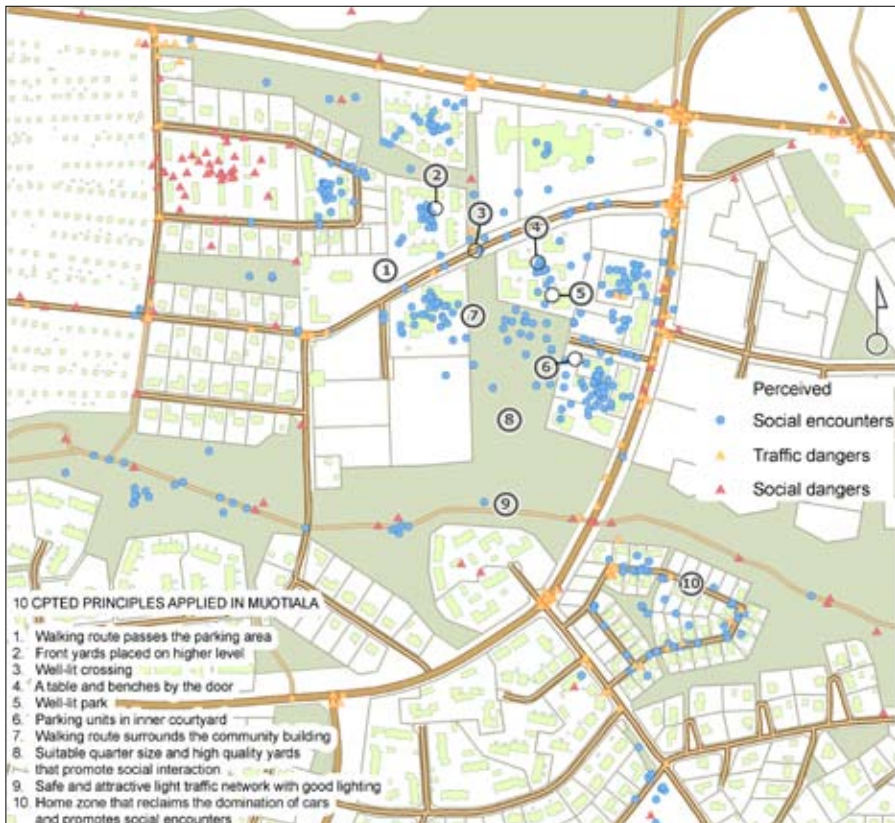


Figure 3. Ten CPTED principles applied in Muotiala and the inhabitants' perceptions of danger and social interaction.

The *softGISsafety*-questionnaire was not publicly accessible, like the earlier applications. Instead, we gathered the addresses from the census register and sent a letter to every household asking all inhabitants over 15 years old to answer the questionnaire on the web. In the second round, a pen and pencil questionnaire was also offered. One hundred and eighty-two (39 per cent) inhabitants returned the questionnaire either on the web or in the mail. About 30 per cent of the subjects chose the traditional questionnaire; the majority of them were over 60 years old. The next new themes for thematic softGIS applications could be the mobility patterns and perceived health of urban inhabitants. Ewing et al. (2003) have highlighted the need for this kind of micro-level research to study the health-promoting qualities of urban settings, as well as the use of GIS-based tools.

SoftGIS as a method for a special group

The softGIS-methods have to be sensitive to the varying skills, interests and orientations of different user groups of the environment. Either special tools for different users or differing interfaces for the same applications must be available to guarantee, as wide participation as possible. The interfaces are designed to be easy-to-use because they are built for people, who are not familiar with web-based GIS services.

The *softGISchildren*-method in Figure 4 is specially designed for the use of children and young people. An internet-based design game (www.kaupunginosat.net/seikkailu/) that mediated children's environmental visions preceded this method (Kytä et al., 2003). Theoretically, *softGISchildren* is based on the definition of environmental childfriendliness by Kytä (2003), where the diversity of environmental resources or affordances and access to play and exploration were chosen, as the two central criteria of a child-friendly environment. In the *softGISchildren*-method, this two-level model was enlarged by a third level, namely the well-being and perceived health of the children. In the *softGISchildren* method, 9–15 year-old children can, for example, locate places (affordances) that are functionally, emotionally or socially meaningful, draw a route from home to school and speak about their perceived health and well-being. This method grasps the essential qualities of child-environment relationships that are theoretically-based and empirically-tested in earlier studies.



Figure 4. The *softGISChildren* method.

Currently, we are collecting data with the *softGISChildren* method in the city of Turku with the help of local comprehensive schools. The local actors, city authorities and schools have been active during the method development and are eager to receive the results. These different actors have differing interests that are reflected in the data. The *softGISChildren* application will be opened after the research data collection and a special tool to explore the experiential knowledge in the web has been developed. An online, interactive map-based data analysis tool, *softGISview*, is currently under construction that can be used by both planning professionals and the public. Privacy needs to be carefully considered in the development of this online tool to explore the experiential data of children and young people in the web.

A future example of a method targeting a special group can be a *softGISelderly* tool. Although the elderly are a challenging group to approach through the web, an interesting theme could be, for example, the mobility constraints of the environment from the point of view of ageing women.

The critical evaluation of the *softGIS*-methods

The interface between geographic information science and geographical social theory has created an interesting critical debate concerning the different uses and theorizing around GIS and especially concerning the possibility to ‘straddle the fence’ between human geography and GIS (O’Sullivan, 2006). In the core of this critical GIS discourse, three viewpoints are especially relevant to the *softGIS* methods. We will evaluate the *softGIS* by following these three themes.

The first critique of the traditional, technical use of GIS is grounded on the work that supports the capabilities of the laypersons and communities to utilize GIS in their everyday life. The development of public participation GIS (PPGIS) or participatory GIS (PGIS) that allows lay persons to take part in GIS, has been significant in recent years. On the other hand, the planning support systems (PSS) aim mainly to support the work of experts. We will first compare the softGIS-method with some examples of PPGIS and PSS and argue, that softGIS can build a bridge between these two systems.

The second step in the critical GIS literature concerns the need to adapt more qualitative information to GIS. As Kwan (2000; 2004) and Pavlovskaya (2005), who represent feminist GIS research, have pointed out, GIS data should be completed and enriched with the details of everyday life. Talen (2000), who has developed a special bottom-up GIS (BUGIS) tool, says that *“The goal of a BUGIS should not be to capture all meaning but to strengthen the quality and depth of communication about residents’ views and preferences”* (Talen, 2000, 281). Because softGIS is about attaching experiential knowledge to GIS, we will discuss the nature of the knowledge collected with softGIS-methods theoretically and consider the possibilities to handle this information with expert systems.

Critical issue for the softGIS methodology is its ability to support the democratic structures of society. In collaborative planning, the flow of information between different actors is critical (Healey, 1997). The competence of the softGIS methodology is challenged, by the extent to which experiential knowledge can be transferred to various actors in the planning process. In the critical ‘GIS and society’ -discussion issues, such as privacy, access and ethics are essential. In the softGIS methods, where the mapping of individual data is central, concern arises about the data collection, transfer, analysis and storage (O’Sullivan, 2006).

The expanded use of GIS

GIS/PSS and PGIS/PPGIS are developed to ease and support the work of experts with geographical information or to enhance the laypersons’ access to geographical information and communication between different stakeholders. In the next section we will study the similarities and differences between softGIS and other existing methods. SoftGIS aims to form a bridge between the existing traditions in the fields of participative GIS and PSS (Figure 5).

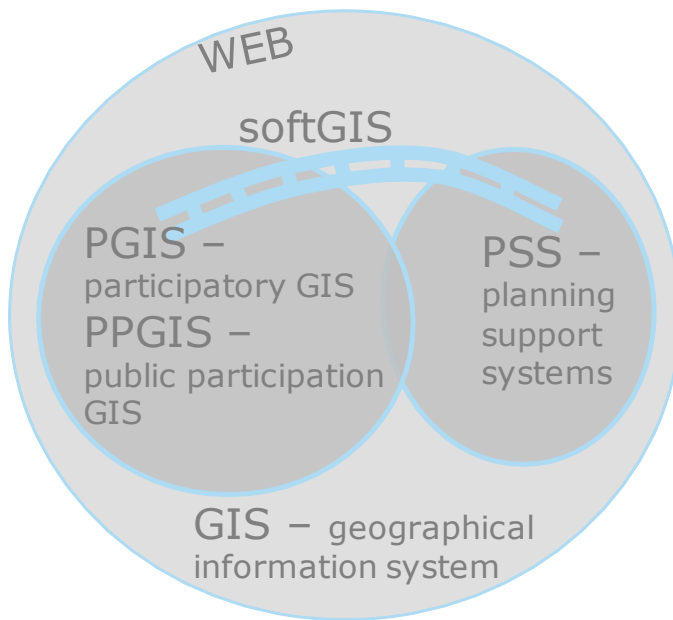


Figure 5. SoftGIS: building the bridge between participative GIS and PSS.

SoftGIS and PSS

Our target is the rich use of GIS in collecting, storing, analyzing and visualizing place-based experiential knowledge. GIS should not only be seen as a container of maps in digital form, but also as a supporter of spatial decision-making (Nedovic-Budic, 2000) and a facilitator of spatial thinking throughout the process (Pavlovskaya, 2005). It should also be a tool for revealing, what is otherwise invisible in geographic information (Kwan, 2000; 2004; Pavlovskaya, 2005), such as social spatial patterns or in our case, the soft spatial knowledge (Rantanen & Kahila, 2008).

Formulating softGIS knowledge for planners

One of the most crucial questions is, how to analyze and present the experiential knowledge in planning practice in sufficiently digestible ways. If this task does not succeed, the experiential dimensions are unlikely to become embedded in design and planning practice (Thwaites & Simkins, 2007). When transferring new information to the urban planning practice,

we should be aware that the planners are already struggling with a huge information overload. Visualization plays a key role in this challenging task, not the least because urban planning is graphical by its very nature. Owing to more effective GIS capabilities, the role of mapping has changed from an end-product to a tool that is actively used in all the phases of the planning process. In this sense, visualization and mapmaking can be seen as a bridge between research and design. In addition to the traditional focus on available statistical or register-based information, information produced by different actors is also needed (Laurini, 2001). Van Herzele (2004) calls for new 'interpretative frameworks' that should be available for planners to help them better understand the different forms of non-expert knowledge and views. We agree with McCall and Minang (2005) that this kind of knowledge must be seen to be as legitimate as the experts' knowledge. In participatory planning GIS can be an important enabling tool (Horelli, 2002).

We created a small web-questionnaire for politicians and urban planners and asked about current participation possibilities and the perceived value of the data gathered with the softGIS methods. Respondents thought that the current participation procedure is adequate, but the experiential, localized data could offer additional value to the available knowledge. The contexts, where the softGIS data could be utilized, varied from town and general planning projects to development projects in renovated and new residential areas.

The success and impact of the softGIS approach in the planning processes will eventually depend on the willingness of the planners and decision-makers to use the produced experiential knowledge and the new methods in their work. In the near future we will study in what form and in what part of the process different actors are ready to use the experiential knowledge produced by the softGIS methods.

Theoretical and analytical challenges of the softGIS-method

The theoretical background of the softGIS-methods lies in the humanistic geography, environmental psychology and urban planning theory that emphasizes the experiential approach to planning (Thwaites & Simkins, 2007). In these traditions we have looked for transactional approaches where the person-environment relationship is seen as a dynamic, interactive system.

The transactional approach stresses the active role of both parties in this interactive relationship. People are active agents in their environments and can influence their environments and change them. In the same way, the material, social and cultural environment actively influences human beings by providing prerequisites for certain functions or by facilitating social encounters (Altman & Rogoff, 1987).

There is a long ‘mentalist’ tradition in environmental psychology and social sciences that ignores the physical environment itself, even in people-environment studies. Consequently, there is a lot of theoretical and empirical research within humanistic geography and environmental psychology concerning, for example, cognitive representations, cognitive maps or mental maps of the environment without reference to the physical features of the environment that they try to represent. Existing studies on perceived environmental quality share the same essential flaw (Bonnes & Bonaiuto, 1995; Skjaeveland & Gärling, 1997). In social sciences, too, the material world has long been disregarded. The ‘new wave’ of humanistic geography and social scientific studies aims at a better understanding of the relationship between the material and the social (Thrift, 1996; Gieryn, 2000; Latour, 2002).

As a whole, the dissolution of the dualism between the mental, experiential world and the physical world has presented a challenge. The few non-dualistic approaches that aim at bringing the material environment ‘back’ to the person-environment research offer a relevant basis for our work. An example of a truly transactional, non-dualistic theoretical concept that does not create dualism between a person and his/her environment, is the notion of affordance that is used in ecological perceptual psychology (Gibson, 1979). The term ‘affordance’ has traditionally referred to the perceived opportunities and restrictions concerning a person’s actions in a given environment. This concept can be expanded to include the emotional, social and socio-cultural opportunities and restrictions that an environment offers (Gibson, 1979; Kyttä, 2003; Heft, 2001). The concept of affordance breaks the subject-object dichotomy; an affordance is not a characteristic of the environment, nor a characteristic of the individual, but rather something in between. When the concept of affordance is applied, the transactional relationship between the person and the environment can be operationalized. That is exactly what we have attempted to do in the softGIS methodology.

SoftGIS attempts to capture both the experiential knowledge of the inhabitants and the information about behavior in the environment, as well

as the use of the infrastructure of everyday life (Horelli, 2002). On the other hand, GIS offers a unique possibility to operationalize the depiction of the physical environment, although GIS is not an objective representation of the environment. Still, it is so far the most useful description of the physical qualities of the settings that we trace from the point of view of everyday life and individual experiences (Figure 6). We strive to link the human experience with spatial expression in ways that are relevant to design and planning decision-making. This is one of the crucial tasks, if we aim to build a bridge between the planning practice and experiential knowledge.

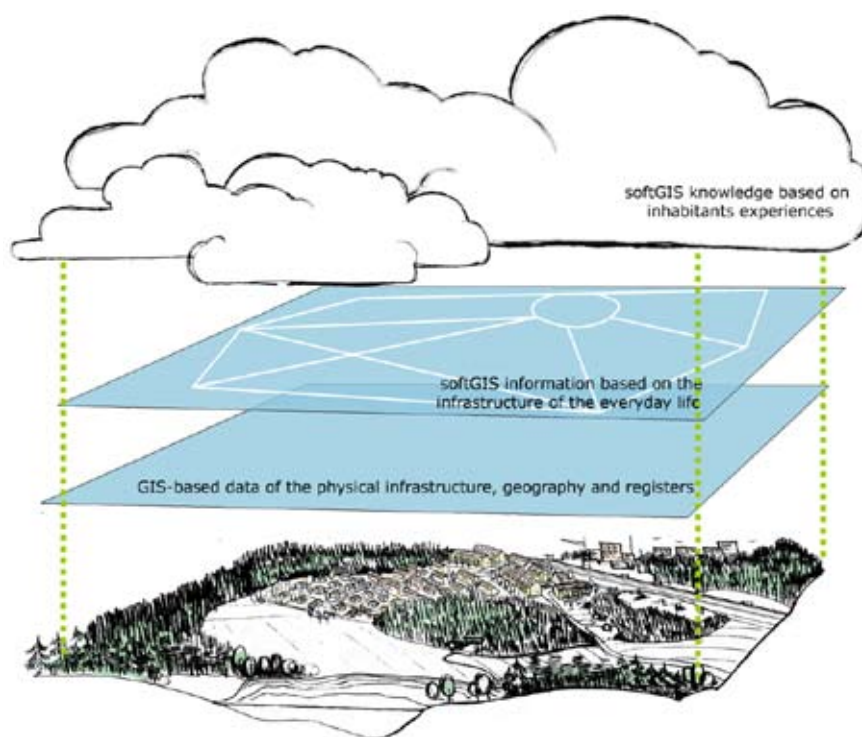


Figure 6. The various layers representing the experienced, lived and physical environment

Processing the softGIS data

The personally meaningful affordances of different user groups (adults, children) in various types of urban and rural settings are distinguished and located in softGIS. The actualization and the accessibility of these

affordances are studied, together with the characteristics of the physical environments. The construction of the softGIS-methods and the analysis of the data produced by the residents are based on scientific principles concerning the validity and reliability of the data. With the help of GIS techniques, the perceptions of the residents are combined and analyzed along with the information concerning the physical structure of the city, for example, the density, the type of land use, the amount and quality of the green areas, the connectivity of urban structures etc. Experiential knowledge is also thoroughly analyzed with both qualitative and statistical quantitative methods.

The softGIS-methods allow the construction of a database that contains a rich set of background information and both located and non-located experiential knowledge. The database can be transferred to various statistical and GIS programs. In GIS analysis, the geographically imprecise and fuzzy softGIS data are challenging, which has to be taken into account, when the results are interpreted. Often the GIS data are assumed to be 'perfect' and only technical problems receive major attention. Nevertheless, GIS data, including softGIS data, are not free from social and human influences (Taylor & Johnston, 1995).

The map material that is used in the softGIS applications affects the residents' opportunities to read and orientate on the maps. It also affects the accuracy of the gathered information. In our applications we have used aerial photographs, address maps and geocoded axonometric projections. So far we know that the softGIS respondents find address maps generally easier to orientate and use than aerial photographs. On that basis the use of aerial photographs is problematic, although we have manipulated the photographs by highlighting roads and adding street names. Originally we thought that the aerial photographs could work well in the mapping of experiential knowledge, because it is possible to zoom even to the yards, locate trees, etc. The map tool is especially difficult for the oldest and the youngest respondents. In the *softGISchildren* method, a technical mapping aid is used to help children to orientate themselves (Figure 7). In the future, we will study systematically the usability of different types of maps and the map-reading skills of different user groups.

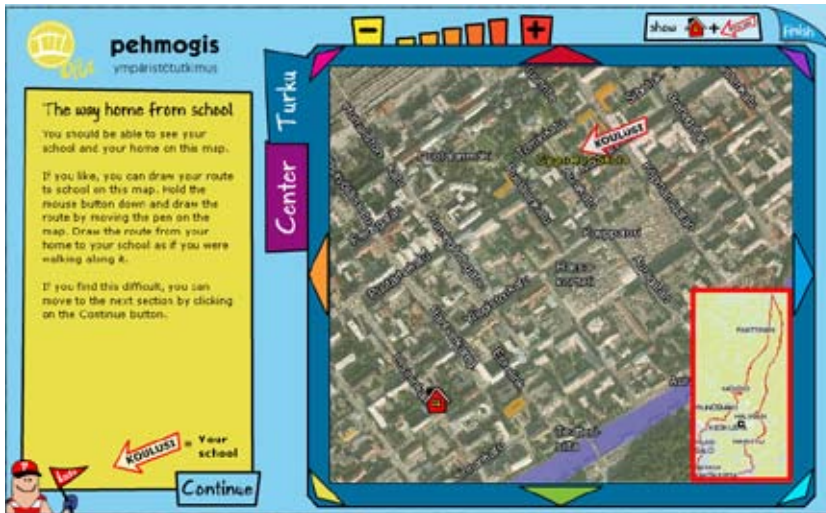


Figure 7. *The softGISChildren application actively aids a child to orientate in the map*

In the earliest softGIS applications it was only possible to locate point information. Respondents, nevertheless, would have preferred to locate their experiences areally. Technically, and in the analysis phase, this type of localized information is challenging. In the *softGISChildren* and *softGISsafety* applications it has been possible to locate route information (Figure 8). Some inhabitants found the route-drawing tool quite difficult to use. In the *softGISChildren* application, where a Flash Player is applied in the user interface, the route-drawing tool is more user-friendly. Maybe the most relevant way to locate the soft fuzzy knowledge is the spray-can tool that has been used, for example, to map the high crime areas in the city of Leeds (Waters & Evans, 2003).

Compared with the traditional 'hard' GIS data, all our softGIS data are qualitative by nature, because they are based on the residents' experiences and behavior (cf. Kwan, 2000, 2004; Pavlovskaya, 2005). Nevertheless, from the point of view of social sciences, part of our 'qualitative' softGIS data can be analyzed quantitatively (the classified, closed questions) and another part qualitatively (stories that the residents attach to their meaningful places). Although it may be tempting only to collect qualitative information with the softGIS methods, the analysis of the argumentation maps (Rinner, 2001) is quite laborious. As we seek to combine the 'soft' and 'hard' data in our softGIS data analysis, the quantitative analysis of soft data has turned out to be more useful for that purpose.

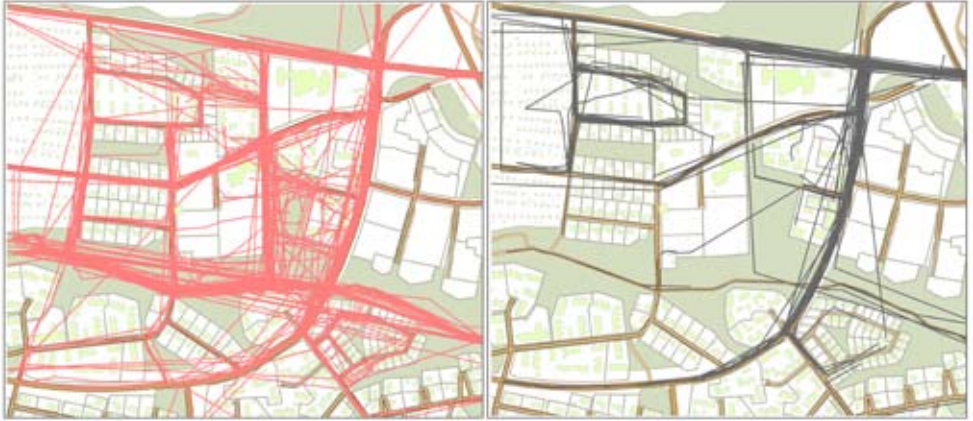


Figure 8. *The pleasant (left) and unpleasant (right) routes can be located in the SoftGISsafety method*

The rich, multidimensional and imprecise softGIS data challenge the spatial GIS analysis. The visual exploration of the softGIS data on the various types of maps is the basic step in the analysis. Maps that show how the affordances cluster and what kind of hotspots can be traced, allow visual data-mining and further considerations of the following analysis (Figure 9). These maps tell us ‘stories’ in a visual format about the deeper understandings of the living environment. In this sense, maps can be used in the analysis process, and not only as end-products. Visualization should be used, because it has been proven to be an effective way to deliver knowledge (Wood, 1992).



Figure 9. *Visualisation of the positive quality factors (left) located on a map of Järvenpää and (right) on an aerial photo clipped from the city centre of Järvenpää.*

The buffering technique was utilized to analyze the physical qualities of the respondents' immediate surroundings and the degree of urban density. The amount of green space was calculated within the buffers surrounding the respondents' homes and a sufficiently sensitive measure for the physical qualities of individual surroundings was found. Our results showed a significant negative correlation between urban density and perceived overall quality of the living environment (Kytä & Kahila, 2006). The distances between localized affordances and the respondents' homes were also calculated and the individual quality networks compared in different neighborhoods. Spatial interpolation and thematic mapping were used to study, for example, the strength of the clustering of the positive and negative affordances.

SoftGIS and the socio-political GIS

In a democracy, the possibilities for public participation form an important cornerstone. In urban planning cultures, the communicative or collaborative turn denotes a type of planning practice whose emphasis is on interaction and communication between various stakeholders. According to Horelli (2002), enabling tools refer to any techniques that enhance the transaction and knowledge-creation of the stakeholders during the different phases of planning. Horelli distinguishes a number of different enabling tools that can be classified as diagnostic, expressive, conceptional, organizational and political. Though researchers have developed and studied many different participation tools, they are rarely implemented in the urban planning practice. In Finland, public hearings are the most common participation methods. The collection of softGIS-methods can be seen as a methodological package that is best suited to the evaluation phase of the planning process where diagnostic tools and traditional research methods dominate. In the future, softGIS can also become a continuous method for monitoring during the whole planning process starting from the initiation to planning, implementation, evaluation and maintenance.

As the current participation methods inadequately support opportunities for democratic participation (Healey, 1997; Kingston, 2007), the web-based methods can make participation more democratic than the traditional approach, because they free participation from the limits of time and place, and they can potentially reach large numbers of inhabitants anonymously.

Face-to-face meetings and conversations are certainly needed, but the internet-based methods have an increasingly important role in communicative planning processes (e.g. Kangas & Store, 2003; Yeh & Webster, 2004).

In the collaborative planning process many different actors work together. Planners and designers are essential, but also the potential utilizers of the softGIS knowledge. Politicians and local city authorities strive to find ways to influence neighborhood development projects. SoftGIS data can potentially help find empirical evidence of themes that interest these actors. In the city of Turku, where we have realized the *softGISchildren* study, different authorities have expressed varying interests in the softGIS data (Table 3).

Table 3. The varying interests of different actors in the softGISchildren project.

The softGIS project partners in the city of Turku	The various interests towards the softGIS data
Environmental and city planning department	<ul style="list-style-type: none"> utilization of the data in various planning projects e.g. in land use plan for green environment information on the places where young people spend their free time
Real estate department	<ul style="list-style-type: none"> thematic and regional reports concerning the experiential quality of environment willingness to transfer the original data into their own geographical information systems
Center of sports services	<ul style="list-style-type: none"> what children and young people do in Turku, how they spend their free time and what kind of social networks they have softGIS knowledge could be utilized e.g. in departmental statements of the city plans the exploration of the data in web, online queries of the experiential knowledge according to background information
Social Center	<ul style="list-style-type: none"> the preventative use of softGIS knowledge the well-being of the young people the need to transfer the opinions of the young people directly to decision-makers
Health office	<ul style="list-style-type: none"> mapping the regional differences of the perceived well-being and symptoms of the young people
School center	<ul style="list-style-type: none"> possible use of the method to support environmental education
Cultural center	<ul style="list-style-type: none"> the location of the most used library services the collection of localized memories of the young people
Youth work center	<ul style="list-style-type: none"> the places where young people gather together things they like to do in Turku and mapping the differences between region's abilities to offer these activities the perceived safety of the young people; regional differences in well-being

It is obvious that the digital divide can weaken equality between different users. In Finland, the readiness to adopt web-based participation methods is quite high, because the majority of households have access to the internet and every school and public library offers access to the web. On the whole, reviews and comparisons between the web- and traditional surveys do not show significant differences in the characteristics of the respondents (Gosling

et al., 2004) or in the results of the surveys (Rittel et al., 2004). According to our experience, softGIS is able to reach those inhabitants that are underrepresented in traditional participatory gatherings. While older people dominate in public hearings, middle-aged, busy inhabitants are the majority of softGIS respondents. We have found little evidence of repetitive answering or result manipulation in the softGIS studies. Effective ways also exist to reduce that threat (Gosling et al., 2004).

In the collection of large databases an important ethical issue is the protection of privacy. The confidentiality of GIS-based individual data collected on the internet is especially vulnerable. The privacy questions do not concern only the data collection phase of the softGIS surveys, but also the analysis, storage and delivery of the data. Data are usually always aggregated, so that the individual respondents cannot be identified. The captured data are stored carefully and only part of the raw data can be transferred to urban planners. The visualization requires special care in order not to stigmatize certain areas. Because residents need to be convinced of privacy protection, information concerning ethical issues must always be found in the softGIS web pages (Figure 10).

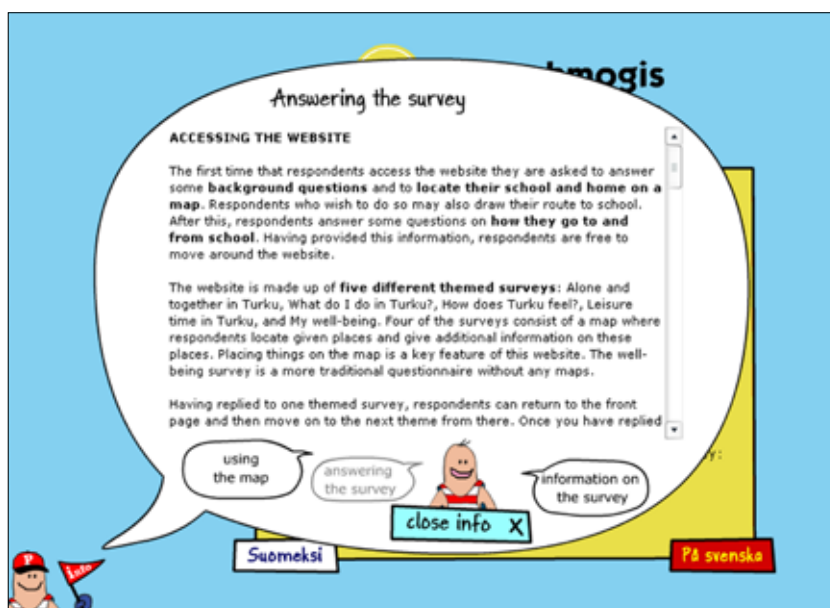


Figure 10. Picture of the info-pages in the softGISchildren application

Conclusion and future visions

The web-based GIS services have a great potential to become an established information framework to the city authorities, urban planners and lay persons in the future. At the moment, many good practices in the field remain diverse and dispersed. While the utilization of the web more effectively has huge potential, the dangers and challenges of web-based GIS services should be recognized. One challenge relates to the information overload that is the result of the improving possibilities of knowledge production (Curry, 1998). Although many useful services are already developed, most of them are not established practices. Further, ICT and GIS technology innovations are needed but they are not enough: social and societal innovations are also required. Development work must therefore be transdisciplinary, and the practical knowledge of different actors of urban planning must be applied.

The softGIS methods, among other participatory GIS methods, have the potential to be applied in environmental management and in traffic and community planning. In the future, the collection of various softGIS-methods could form a methodology that provides a new platform for collaborative planning. To guarantee the use of the methods and the quality of the information they produce, further development of the methods and their theoretical basis is needed. Currently, we are studying, how the softGIS can form a bridge between the participatory GIS methods and planning support systems, between research and practice, and above all between planning practices and the inhabitants' experiences of everyday life. To advance the methodology, research and development are needed on three different levels. First, the methodological development work aims at achieving a stable technical platform, based on a sound theoretical framework. Secondly, we are continuously searching for new, relevant ways to analyze and reveal located experiential knowledge. Finally, we are keen to study, how the knowledge of everyday life can be assimilated in planning practices and decision making.

Acknowledgments

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ONLINE ENVIRONMENTS SHAKE UP URBAN PLANNING – DEVELOPING LOCAL INTERNET FORUMS¹

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PILVI NUMMI

Abstract

The Internet is shaking up the expertise and production of knowledge in the planning institution. Digital citizens are searching for information from different places, combining formal and informal sources without apology. The public planning organisations will be fully stretched to adapt their practices and services to meet these demands. This chapter presents the research results of a project that embarked on gathering and combining local information and knowledge on urban planning on Internet forums. Interactive applications were also developed to support public participation in ongoing land use and development projects in the City of Espoo, Finland. The research results demonstrate how fragmented the local, place-based knowledge is, how difficult it is to combine informal and formal information in urban planning, and how inaccessible the public data systems still are.

Introduction

Urban planning involves major social interests. For example, in Finland, the preparation of and decisions on land use plans are a municipal monopoly, so the connection of land use to governance and political decision-making is strong.

¹ Staffans, A., Rantanen, H. and Nummi, P. 2010. Local Internet Forums. Interactive Land Use Planning and Urban Development in Neighbourhoods. In: Carlos Nunes Silva (ed.) Handbook of Research on e-Planning: ICTs for Urban Development and Monitoring. Hershey and New York: Information Science Reference (IGI Global). ISBN 9781615209293, pp. 80–102.

The connection of land use planning to policy-making and governance is also reflected in planning theory, which over the years has focused specifically on the political nature of planning and power relations. The most important theorists in the field have stressed the social and institutional nature of planning. They have emphasised institutional design (Healey, 1997) and the position of the individual planner as a central actor in the urban planning institution (Forester, 1989).

One of the general features in the debate on planning over recent years has been the promotion of communication and collaboration. There is broad support for increased interaction, but there has not been much debate, however, on what connection the increasing use of information and communication technology will have on the content of the knowledge and on expertise. The connection of the exercise of power to information has been highlighted (e.g. Flyvbjerg, 1998), but not whether the strong expert institution will be willing to open itself up to genuine public debate about what types of cities and environments should be planned and constructed.

The Internet is the most important knowledge building environment in today's world. "Digital citizenship" includes the idea of the ability of citizens to effectively participate in social activities in real time via data networks (Mossberger et al., 2008). Participation in the production of knowledge in online environments is determined through its members own capacities, interests and objectives (Wenger et al., 2005).

Digital citizens, or at least the "born digital" generation, digi-natives (digital natives, Prensky, 2001), expect the same kind of high-quality usability, flexibility and reliability from electronic services provided by public administration as they do from commercial services. Applications like Wikipedia and Facebook have spawned a generation that is not content simply to read articles by others, but which wants to comment on and add to the knowledge itself, both as members of a community or a network and as individuals (Foth et al., 2008).

The expansion in expertise and knowledge building is challenging the monopoly position of expert organisations in urban planning as producers of urban knowledge. Planners have to consider their own ways of working and the methods through which planning information is created, distributed, processed and used (Goodspeed, 2008). The use of the Internet in planning projects has also raised questions concerning the utilization of formal and

informal knowledge that has been generated in public online environments (Rantanen & Nummi, 2009).

In this chapter, we will examine urban planning, not from the institutional perspective, but from the local perspective of urban areas and neighbourhoods and the people who live there. The aim is to describe and discuss how the Internet has been used in interactive land use planning processes. We ask, with the aid of a few Internet applications that have been developed and implemented, how online environments are shaking up practices in urban planning.

The learning-based urban planning, OPUS

The research presented in this chapter is part of an extensive research project called the learning-based urban planning, OPUS (the acronym comes from the project's name in Finnish), which was carried out by the Helsinki University of Technology in, 2005–2008 (Staffans & Väyrynen, 2009). The learning-based urban planning refers to the integrative practices that are used to build a bridge between three different urban perspectives: the democratic self-governing city, the competitive metropolis and the local village town (Figure 1). The key concepts in developing the methods have been local knowledge, perceived environmental quality, shared processes, and 4P partnerships, which refer to the cooperation between the public sector, private sector and citizens (public-private-people partnership).

Several methods that utilize the Internet were developed in the OPUS project. Also their suitability for interactive urban planning processes was studied. The local Internet forums presented below are part of these methods. Model forums were established for the City of Espoo.

Defining the OPUS forums

The OPUS forum is an Internet-based concept in which local, place-based knowledge, information and data are compiled, processed and shared. It is a knowledge building platform where knowledge is linked to local land use and development projects. OPUS forums act as meeting places for formal and informal information. They offer local service providers, developers and planners a platform for partnership and collaborative projects. The forums compile many types of information from various sources and the information accumulates in such a way that a locally important databank is created.



Figure 1. The learning-based urban planning.

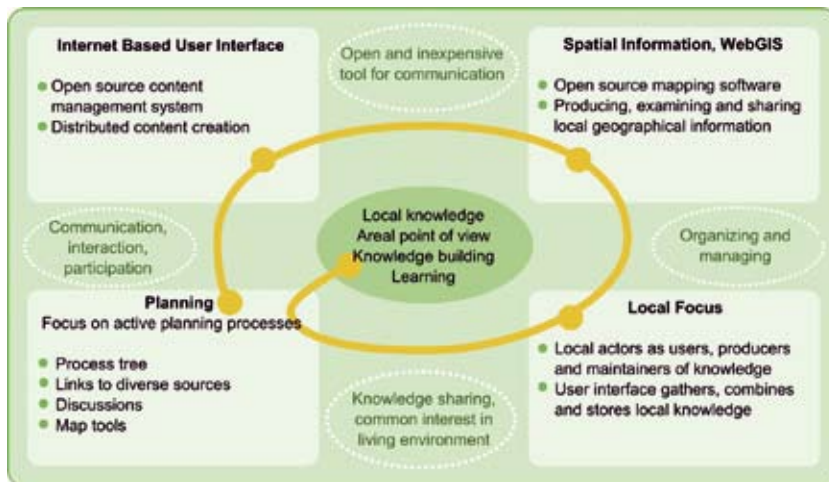


Figure 2. The concept design of the OPUS forums.

The forums do not operate by themselves simply with the participation of users, but require a local maintenance group. The forums also need information facilitators who analyse and condense the information accumulated from the various sources and raise issues. Users, on the other hand, produce news and comments. The facilitators can be members of the maintenance group, researchers or civil servants.

From the perspective of the planning organisation, an OPUS forum is a locally focused communication tool that can assist in reaching the residents in a more flexible way than the official websites (Figure 2). The forums have no direct connection to municipal decision-making in land-use planning, which means according to the ladder of Arnstein (1969) mostly public consultancy.

Forums for different stages of urban development

The pilot forums of the OPUS project were developed and implemented in the City of Espoo for three neighbourhoods that were in different stages of urban development. In terms of these experiments, the OPUS forums can be divided to three categories: inventory, planning and development forums (Figure 3).

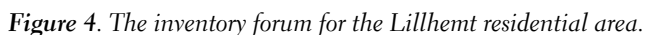


Figure 3. Forums for different stages of urban development.

Inventory forum – before a planning process

The inventory forum is suitable for assessing the public opinion of residents in an existing residential area. The tools in an inventory forum include a commentary map, a message board and a local knowledge map on which residents can mark their place-based comments. Information about important places, routes used by the residents, development areas and potential sites for infill building can be marked and commented on the map. The active

An inventory forum was set up for the Lillhem residential area, where the City of Espoo was initiating a town planning process that will improve the area. Experts carried out an inventory of the area's building stock and the evaluations were placed on the forum so that the residents of the area could make comments and additions to them. Similarly, the points of view of the residents on the merits of the area were also assessed. (www.lillhem.fi, Figure 4)



The inventory forum becomes a planning forum once the environmental assessment and the inventory stage move to the active planning stage. The planning forum follows up the planning process. Its core content includes presentations of the plans in everyday language. Interaction takes

place through the debate and commentaries, which can be linked to the published articles and places on the map. The forum's most important user groups are the current and possible future residents. Reaching new residents is challenging and requires active marketing on the forum. The planning forum is a tool for planners and designers, but the construction companies, as well as other consultants concerned with the project also benefit from it.

An example of a planning forum was carried out in the Hista area, where the City of Espoo is planning a new district for 20,000 residents. Hista is predominantly an area of agriculture and forestry. It has at present around 2000 residents. The progress of the planning and construction of the area are being followed via the forum. (www.hista.fi)

Development forum – a different kind of local portal

The development forum is an Internet-based knowledge building environment which serves the local developer community and residents. It is a platform for interactive planning. It is more clearly focused on land use and development projects than the traditional web portal of the area. The development forum is a local medium that is connected to the area's development efforts (Kurki, 2005; Staffans, 2004).

Local residents, as the users of the site, comment, debate and write news and articles. The maintenance group is responsible for the updating and editing of the site. It decides on the local policies and content of the development forum. The people involved work voluntarily, which is motivated by the opportunity to participate in developing the area. In terms of the city, the key actors are the information officers and officials responsible for planning. The support of the municipal managers to the forum is important, because it is in this way that the city's representatives gain a mandate to operate through this "external", unofficial forum. In practice, there is a need for an intermediary party who gets the project going, brings the actors together and markets the forum.

An example of a development forum was carried out for the Centre of Espoo, which is the district centre for 30,000 residents in Espoo. In spite of the fact that also the administrative centre of the City of Espoo is located in the area, the area's reputation is rather bad, mainly due to the poor construction practices in the 1970s. For this reason, several development projects aim at improving the situation, and the development forum is supporting and pulling together these projects. (www.espoonkeskus.fi).

Tools and content

Although the OPUS forums (inventory forums, planning forums and development forums) serve different types of urban planning situations, their design maintains structural consistency. All the forums have the following tools and content, albeit with varying emphasis (Figure 5):

- 1 *The local content*
 - a. News, events and services
 - b. Editorial content: history, stories, pictures
- 2 *Interactive tools*
 - a. A local knowledge map (on top of which the commentary map forms one level)
 - b. A message board
 - c. A commentary on articles (blogs)
- 3 *Content relating to the urban development projects and land use planning*
 - a. A process tree
 - b. Presentations of the plans

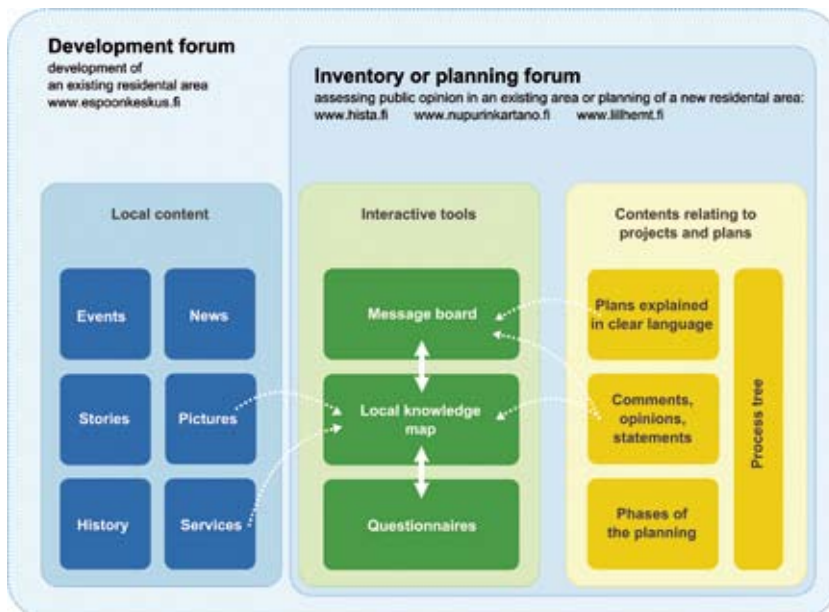


Figure 5. The tools and contents of the OPUS forums.

Points 2 and 3, i.e. interactive tools and websites presenting the planning projects, are common to all the forums. Point 1, the nature and extent of the local content, varies significantly on different forums. The inventory and planning forums only have information for the planning projects in question, but on the development forums, the provision of information, event monitoring and service offering may be quite extensive.

The local content

The local content, such as news and lists of events, provides comprehensive insight in the area. However, the site also requires a certain amount of commitment of the local editors and distributed updating. The creation of news items and events has been made easy through a separate news editor, so that anybody can send articles to be published. These news items then become material that is used later for the process tree. The editorial content, such as the local history, personal recollections of residents and pictorial material, is also put on the website, forming a local database of the background information and documents.

The OPUS forums utilize browser-based content creation software and an open source map application. The content management system used by the OPUS forums is Joomla 1.0 (<http://www.joomla.org/>) and the map functionality was created using the MapServer (<http://www.mapserver.org/>) development platform. The use of the open source software instead of commercial products was reasonable, because of the low costs, many suitable features and also because there was already some experience of Joomla in the research group. A link between the map application and the content management system was designed. A moderator application was designed to manage and publish data and comments on the map. All the data can be retrieved from the database, for example, into an Excel file. That can also be transferred to a GIS application for further processing.

Interactive tools

The local knowledge map is an interactive map application for examining place-related information (Figure 6). This information could be, for example, formal information concerning projects and plans, or informal local knowledge, such as user experiences, statements from regional associations, or news in other media. What is essential is that the person searching for information finds it on the basis of its geographical position and not, for example, through a hierarchical organisational structure.

Users can also leave their own positive and negative comments on the map, as well as development proposals. The comments are public and anonymous. A link is created from the comments to the message so contributors can engage in further debate. Background information on the respondents can be collected (e.g. age group, gender, neighbourhood). The comments can be studied by using a simple tool of analysis on the basis of the date, type of comment (positive/negative/development comment) or information about the respondent. In this way, the information accumulated on the map can be shared and examined by the entire community.

Further improvements of the forums will focus in particular on the usability of the map application. GoogleMaps have already created new standards for map interfaces. Open source solutions are offering excellent opportunities to implement map interfaces. The use of open source also meets the needs of the local NGO's.

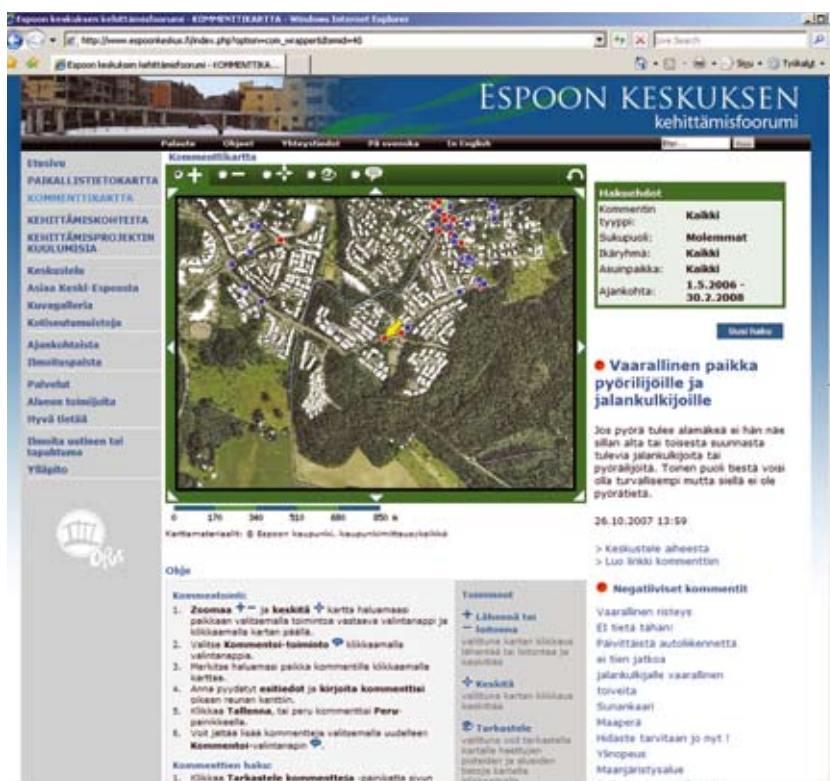


Figure 6. The local knowledge map.

The message board is the most important interactive tool of the forum, which encourages local actors to create content for the site. The topics are optional

and can also be introduced to the debate at the request of the planners. Debate can be carried out in the form of a blog by linking it to the articles and news items. The conversations are moderated afterwards, if necessary; moderating in advance effectively kills the discussion. Users could also be required to register themselves, but that inevitably reduces the number of debaters. Although registering does not require the user to reveal his or her identity, it contributes to keeping the debate civil. Officials generally appear on message boards under their own names.

Contents relating to projects and plans

Planning projects are presented in an informal way on the forums. In addition to the official planning documents (eg. maps and reports) illustrations and other visualizations can be published. Starting points, goals and the planning drafts and proposals are described in plain Finnish.

The process tree has proven to be a good tool for visualising and archiving the various stages of a given project in a chronological order from three different perspectives. The process tree comprises a table that grows upwards, on the left side of which is the formal process, in the middle the general history or other “neutral” frame, and on the right the informal process comprising information in other media, opinions of associations and parties, and other themes relating to the issue. The process tree brings several types of information together in one place, thus creating a general picture of the issue at hand. It also brings together the disparate news and static content within the forum into sensible themes. Planners have used the process tree, for example, at public events to illustrate their presentation material and the history of the project.

Experiences from the forums

So far the OPUS forums have not been under external evaluation. Two doctoral theses will focus on the forums, one on the usability of the forums and another one on knowledge management. The following remarks about the forums are based on the monitoring of the number of visitors to the forums and the feedback from them, on a survey arranged by the research group to the users of the forums and on the researchers’ overall experiences of the intensive development phase.

User feedback

Monitoring user opinions and the number of visitors to the OPUS forums has been an integral part of the introduction of the concept and evaluation

of its success. Only a sufficiently large mass of visitors can help to achieve two important objectives: the municipal organisation gets the benefit of this additional communication channel, and the forum users are enabled to build common knowledge within the context of urban development. The number of visitors is also linked to the legitimacy of the participation, since the more people that visit the site and take part in the discussions, the more representative the interaction can be considered. It would also be an unwelcome development if several local parties remain outside the forum.

The number of visitors. The development forum for the Centre of Espoo was opened in October 2006. The statistics show the slow start of the forum from October 2006 until the following summer. Only in autumn 2007, the number of visitors to the site started to show a clear increase. A local traffic survey mobilised a large number of visitors to the site due to the conflict surrounding some of the issues, and was reflected as a spike in the statistics. In 2008, the website attracted around 4,000–7,500 visitors per month. There is still considerable room for growth in the number of visitors.

Compared to the development forum, the number of visitors to the planning and inventory forums has been smaller as a result of the smaller target group for the pilot websites. However, those who visit these forums have spent a longer time on them. The number of visitors to the Lillhemt forum has been over 700 hits per month at its peak. This is a high figure for a residential area of around 600 people. The corresponding figure for the Hista forum has been slightly over 600 hits per month at its peak.

The user surveys of the forums are currently being drawn up. Preliminary results are only available for the survey targeted at the users of the development forum for the Centre of Espoo.

In the preliminary survey, the development forum was seen, above all, as an unofficial website of the residents and other actors. According to the respondents, the website for the Centre of Espoo was considered to be a success, especially with respect to the contents and discussions concerning the ongoing construction and planning of projects. News items, information about locally important events and the message board were closely followed. The website also reinforced the feeling of home in the area. The accumulation of knowledge and compilation of historical knowledge was considered to be important. One user comment stated that the regional website acts as a “knowledge databank, as the preserver of a collective memory.”

In terms of its usability, the site was considered to be good – only the map application had usability problems. Three out of four respondents believed that the development forum helps residents to have a say in matters. However, the residents wish that officials would be more often present on the website.

Understanding the users and the user context

The forum for planners: The adoption of OPUS forums as a tool by planners and other officials is only in its infancy. The inventory and planning forums are closely linked to the formal planning processes, and therefore they are easier to integrate in institutional practices. The development forum, on the other hand, requires extensive areal partnership and cooperation. Establishing a development forum in an area is therefore a long process, but it can result in most useful benefits.

From the perspective of planners, the forum is, above all, an information management tool. The planner or development manager acts as the knowledge manager in the process. This, however, requires an active use of the forum and the adoption of more communicative working practices in the entire organisation.

The usability of the forums must be further developed. The production of knowledge must not require the planner to have special ICT skills. In the future, the planner should be able to easily produce the content relating to the different stages of the project over the Internet alongside his or her routine work. This would demand a certain degree of integration between the City's own data systems and the forums.

The forum for inhabitants: From the perspective of the residents, the forum works best when information on planning is provided openly and alternative solutions are debated at an early stage. The experiences from participative processes demonstrate that residents appreciate the option of giving feedback early on in the process. Accordingly, the forums could act as proactive platforms for producing new ideas and development needs or for making these visible. This would enable the residents to shape the agenda for the area's future development.

For local NGO's, a development forum may be a new tool that needs to be learned. Establishing new communication practices takes its own time – this process is still ongoing in the Centre of Espoo. However, once the actors commit themselves to shared local objectives, awareness of the forum will

increase. Furthermore, over the course of time, the local actors will also become more familiar with social media tools in general.

It is still difficult to say what impact OPUS forums have had on the residents in the area. It is evident that officials should participate in discussions more visibly, as this would be an important signal to the residents in terms of the implementation of transparent governance. In Espoo, the manager of the development project has been involved in the discussions and he has produced material for the site. He has highlighted the official point of view, explained future projects and quashed incorrect rumours. The planners, on the other hand, have not been so active in the discussions. The researchers' own work as producers of material and activators of debate has also been important throughout the whole process.

The forum for local service providers: From the business perspective, the forums are a regional communications tool that can act as a joint tool for sharing and publishing information for local partners and cooperation. The involvement of business partners is desirable, but also fairly challenging. It can be difficult for companies to see the direct benefit of participating in the forum activities. Therefore, the cooperation models should be easy to implement from the point of view of entrepreneurs.

No adverts or material produced by sponsors have been published on the OPUS forums. However, it is possible that a development forum can, as it increasingly takes the form of a local portal, start publishing sponsored content linked to the local economy.

The forum for politicians: For decision-makers, the OPUS forums offer a place where they can participate in the local debate. Decision-makers are usually well-informed and have influence over many local matters. Politicians often have the kind of "inside information" that others do not necessarily have, and they can share this information on the forum. They could, if needed, promote tools, such as the OPUS forums within municipal organisations. The forums highlight the common problems associated with citizen participation in decision making: what significance do local discussions have on the planning process, what weight should be given to opinions? Decision-makers can also find out all kind of "tacit knowledge", which would not otherwise be communicated to the decision-making process.

The input from a couple of active councillors on the development forum for the Centre of Espoo has been significant. However, decision-makers always

take a risk: their comments can be publicly criticised. The readers of their messages are also voters.

It can be asked whether the OPUS forums promote *direct democracy*. In the current crisis of representative democracy – voter turnout in elections is currently at record lows in Finland – this question is especially relevant. Basically, the OPUS forums promote representative democracy indirectly, as communal knowledge building increases the understanding of planning issues. Voters become increasingly aware of factors that affect the development of an area, which, on the other hand, activate people to participate directly. This assumption is supported by the research on the impact of the Internet on the willingness of “digital citizens” to participate (Mossberger et al., 2008).

Multichannel marketing

The usual problem with Internet-based research projects is the inadequate marketing of the website. Several means were employed to increase awareness of the OPUS forums. Various informative events were organised, and visits were undertaken to events organized by local stakeholders, as well. Writing articles in local newspapers and placing advertisements on shop notice boards are useful but laborious ways of promoting the forums in a district of over 30,000 residents. Alongside these means, it has also been important to consider search engines and networking via links to other websites.

The primary way of searching for information by Internet users is nowadays by using search engines, such as Google. People are directed to the forums once they have searched for information on particular projects, events or services. For the search engine to be effective, it is important to acquire a good and unambiguous domain name for the website.

The website of the City of Espoo also has several links to the OPUS forums. The statistics from the server shows that a relatively large number of visitors are directed to the OPUS forums specifically from the City’s website. The forums are also accessed by the City’s intranet, i.e. from the workstations of the officials.

The OPUS project has cooperated with neighbourhood associations by cross-linking the forums and association’s websites. In addition to this, the maintainers of these websites publish news items on the OPUS forum websites, and the maintainers of the forum pick out news items from the associations’ websites.

In-between the “formal” and the “informal”

The maintainers of the OPUS forums have continuously had to consider what the relationship between the forums and the official websites of the municipalities is, and how the content of the cities’ websites can be treated on the forums (Figure 7). Another issue related to this is that it has been important to clearly highlight on the forums where the original information is located, i.e. whether is it a formal or an informal source. There is a need to specify the position of the OPUS forums, as being in between the formal and informal online environments.

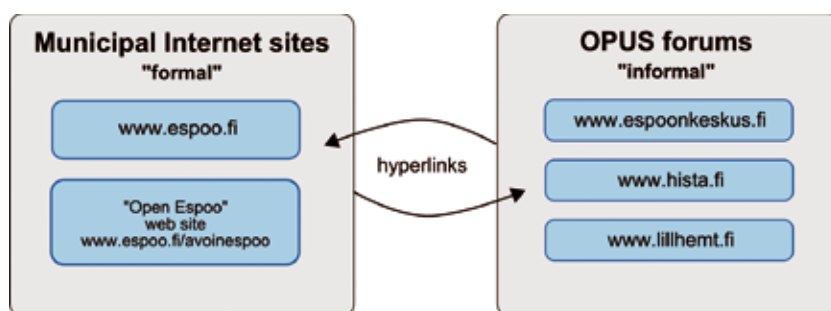


Figure 7. Formal and informal web sites in Espoo.

The evaluation of the degree of formality of the information is often based on the organisation that has produced the information. Information produced by the public administration mainly comprises various types of reports, press releases, statements and decision documents. They are drawn up in accordance with a certain set of rules, under particular terms, and they fulfil the technical and legal requirements.

The official decision and planning documents do not necessarily create an adequate knowledge base for an overall picture of the area. As the residents may feel that the official websites do not present enough locally important knowledge, informal, experiential knowledge is needed to make up for this shortcoming (Rantanen & Kahila, 2008).

From the administrative perspective, the OPUS forums are informal online environments outside the municipal data systems. However, from the perspective of the residents, the forums are at least semi-formal. The status of this ‘in-between’ environment should be clarified in relation to the municipal organisation. From the maintenance point of view, it has been important that the OPUS forums have not been owned or published by the

City, but that the City is an actor among others. The intermediary party, i.e. the university, has been considered neutral and thus a suitable actor between the residents and the city administration.

Many levels of structural, organisational, and technical problems, as well as problems relating to the operative practices emerge, when informal and formal information and knowledge are integrated. There are no agreed practices on how the local websites, such as the OPUS forums, should be monitored by municipal departments, or how the information added to the map, for example, should be used in the municipal GIS system. The closed intranets within public administration, incompatible data systems and deficient interfaces are also frequent problems. There are no structures that could be used to transfer the information compiled on the forums to formal organisations.

Analysis of the comments

– the difficulty of interpreting open discussions

The interactive maps and the message boards generate qualitative data the use of which is not unequivocal. The map comments are processed by content analysis, i.e. by reading through the comments and classifying them to relevant categories. Local knowledge is needed to avoid the misinterpretation of the discussions and map comments (Rantanen & Nummi, 2009). Opinions can in general be ranked according to their quantity or content (as an interesting proposal). It is often considered that an opinion is credible in the eyes of the authorities only if it is presented by a sufficient number of citizens. However, a good argument is not necessarily formed as the result of a vote.

Online discussions are still fairly unconnected to the decision-making and planning processes. Innovative ideas from residents are easily left unexploited, because they are presented in the wrong place and at the wrong time. In the OPUS project, the aim has been to connect online discussions on forums to the actual planning and development processes in terms of their timing and locality. However, there is no clear evidence of the effectiveness of the discussions on the planning and decision-making. At best, the information on message boards is shared and processed so that the understanding of an issue by all the parties improves and better decisions are formulated.

Online discussions are held, in any case, all over the Internet. Discussions on interesting subjects, such as a person's own residential area, are nowadays conducted to an increasing extent on local websites and in informal web

communities. Why should the residents use a particular forum organized by the administration for a debate? Should the City's representatives, on the other hand, monitor these forums and participate in all these informal conversations?

From knowledge gathering to knowledge management

Knowledge management refers to processes that are employed to manage the creation, dissemination and utilisation of knowledge (Gupta et al., 2003). The aim of knowledge management is to find the means as to how knowledge work, such as urban planning, is managed within organisations (Tuomi, 1999). The task of expert planners is increasingly to distil the information and ideas produced by various parties and to mediate the interests of various groups of people (Eräsaari, 2006). Planners are nowadays increasingly knowledge managers working in collaboration than isolated virtuosi.

Knowledge management requires that the organisation's structures are developed to support knowledge processes (Gupta et al., 2003). Knowledge management is not possible without the data systems and tools supporting it. Organisations have traditionally used various groupware and online learning environments. Nowadays, organisations are learning to use social media applications, such as wikis and blogs, as well as networking tools, such as the Facebook and Linked-In.

The data systems for urban planning include GIS systems, various registers, databases, and databanks. The greatest challenge of knowledge management in urban planning is, however, the fact that many other parties produce knowledge, in addition to the municipal organisations. The linking of these parties to the urban planning knowledge management process as fully equal partners is the starting point of the OPUS forums. Information technology offers means through which the knowledge gathered by many actors can be transferred for use by the planning process.

Web 2.0 incorporates the idea of an integrated Internet-based operating environment in which the work and leisure time of people become interconnected, information is shared openly and the roles of people as producers, users and upgraders of knowledge is closely connected to the (virtual) community they belong to (http://en.wikipedia.org/wiki/Web_2.0). The concept of one-way communication seems increasingly old-fashioned: the publication of information is only one step in the processes in which the information is further processed and adapted in various ways.

Conclusions

The Internet forums presented in this chapter are part of a methodological framework that can be used to develop practices for learning-based urban planning. The key concepts are local knowledge and interactive knowledge building in which social media and voluntary citizen sensing of the daily environment are in focal roles. The following conclusions can be drawn from the research on the internet-based OPUS forums:

- a. The forums create the conditions for place-based, locally focused policies by bringing together and fostering debate on knowledge concerning the development of the area.
- b. The forums expand the urban planning knowledge base by integrating formal and informal information that comes from various sources of information. From the perspective of the planning institution, this means challenges in terms of data management and the need to develop information systems.

The methodology of the learning-based urban planning includes the user-centered development of the online planning environment. The most important aspects to the overall usability are:

- the usability of the tools,
- the quality of the information, which means illustrative, accessible, local content
- the competence and willingness of the municipal organisations to work interactively, and
- the impact and meaningfulness of participation in urban planning from the point of view of the inhabitants.

Planning institutions cannot become enclosed in their own information systems any longer. Internet-based participative applications will operate to an increasing extent on the principle that the information is gathered from databanks produced by several different actors and organisations. The basic challenge is to genuinely link planning-related local forums to the actual decision-making process. Technical possibilities for this already exist. The planners will eventually get familiar with online interaction with the citizens: municipal interaction in local and other forums will be understood as part of the openness and transparency of governance as declared in the municipal strategies.

Surprisingly little consideration has so far been given in planning theory to the impact of the social media on urban planning expertise and on the future of the planning institution. The experiences of the OPUS forums only hint at, how far the current planning practices are from the future knowledge society. The experiences concern not only the technical systems and operating practices, but also the attitudes of the expert institutions toward the new producers of knowledge.

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THE URBAN MEDIATOR AS A TOOL FOR PUBLIC PARTICIPATION

– A CASE OF COLLABORATION BETWEEN DESIGNERS AND CITY PLANNERS¹

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Abstract

This paper presents an overview of the citizen participation project set up in collaboration between designers from the University of Art and Design Helsinki and planners from the City of Helsinki Planning Department, in spring 2008. The planning department wanted to ask the residents of Malminkartano, a neighborhood in the northwestern part of Helsinki, to give their opinion on traffic issues in their neighborhood. Residents could, in that way, inform the department's upcoming project on traffic safety planning. The design team had been working on the development of the Urban Mediator software, a platform for sharing, obtaining and gathering location-based information, and wanted to develop it further through collaborative design with City planners and citizens. The collaborative work between the design team and the City planners enabled the participatory project, as well as the further development of the Urban Mediator features, each feeding one another, both in terms of addressing limitations and opening up new possibilities.

¹ This article is based on an earlier work: Saad-Sulonen, J. and Botero Cabrera, A. 2008. Setting up a public participation project using the Urban Mediator tool: a case of collaboration between designers and city planners. In *Proceedings of the 5th Nordic Conference on Human-Computer interaction: Building Bridges*, NordiCHI '08, vol. 358, pp539–542, (Lund, Sweden, October 20–22, 2008)} ©ACM, 2008. <http://doi.acm.org/10.1145/1463160.1463239>

Introduction

The Finnish Land Use and Building Act (Ministry of the Environment, 1999), which became operative in the year 2000, calls for providing citizens and other stakeholders the possibility to voice their opinions on town planning proposals in the areas where they live, work or own land. This law has pressed the City of Helsinki Planning Department to consider strategies for 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. Despite a growing interest in the possibilities presented by Information and Communication Technologies for facilitating citizen participation, the Planning Department had no specific online customer feedback system in place, at the time this research was undertaken. Citizens could comment the plans either directly during public presentations given by the planners to local residents, or by snail mail, email or phone calls to the Planning Department's registry office, which then forwarded the comment to the planners in charge. Within the department, planners were using a system with a map interface for storing information about town planning projects. They were thinking of its possible application to serve the need for presenting the projects to the general public.

The City of Helsinki strategy for information technologies (Helsinki City Office, 2002) follows the general lines of the Finnish information society strategy, as well as the EU's strategy of "*An Information Society for All*" (Commission of the European Communities, 2002). This strategy emphasizes the importance of creating channels of interaction between City authorities and citizens, and using these channels during planning and implementation. Although Helsinki had, by 2006, a range of online services available in terms of e-government, and that they were considered of good quality by international standards (Holzer & Kim, 2008), there was a lack of systematic approaches that applied ICT-based solutions for citizen participation. The City still lacks an overall strategy to guide the development and acquisition of new information and communication solutions. It has been common that each department decides over their specific technical implementation. This means that these systems are not compatible with each other, nor can they be used for the exchange of information with citizens. Moreover, these systems have most often been ready-made software packages, bought as such from software companies. The systems have been impossible to customize or adapt in-house. All in all, there has been a lack of attention to the design

of the tools for ICT-mediated citizen participation from the part of the city administration.

The research problem addressed in this paper is concerned with the lack of open and adaptable ICT solutions for citizen participation in urban planning. We argue that a collaborative design approach to ICTs for citizen participation enables the creation and adaptation of tools to the work practices of city planners, as well as to the needs of citizens, which make ICT-mediated participation efforts more relevant. The paper is based on a case study of the design in use and adaptation of the Urban Mediator tool, to be used in a traffic safety planning project in the neighborhood of Malminkartano in Helsinki. Our aim is to present the elements of the collaborative design approach and to assess its outcomes both in terms of the design of the tool and the traffic safety planning project as a whole.

We start with a brief description of the Urban Mediator tool, as it was at the time of the study. We then introduce the collaborative design approach that was followed, and explain the theoretical and methodological framework used. We proceed with the description of the case study, explaining how the collaborative design of the Urban Mediator tool was embedded in a public participation project, in that case, the traffic safety planning project of the planning department. We then present the outcomes and limitations of the approach. We conclude by identifying some of the challenges that need to be addressed in the future.

The Urban Mediator in brief

In its current version, Urban Mediator (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 Urban Mediator *Topics*), which are set up and maintained by the users themselves. Urban Mediator uses a map-portrayal 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 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 device. Urban Mediator is, since June 2008, available as an Open Source software package (<http://um.uiah.fi>).²

² Urban Mediator was developed as part of an EU-funded research project ICING (Innovative Cities for the Next Generation).

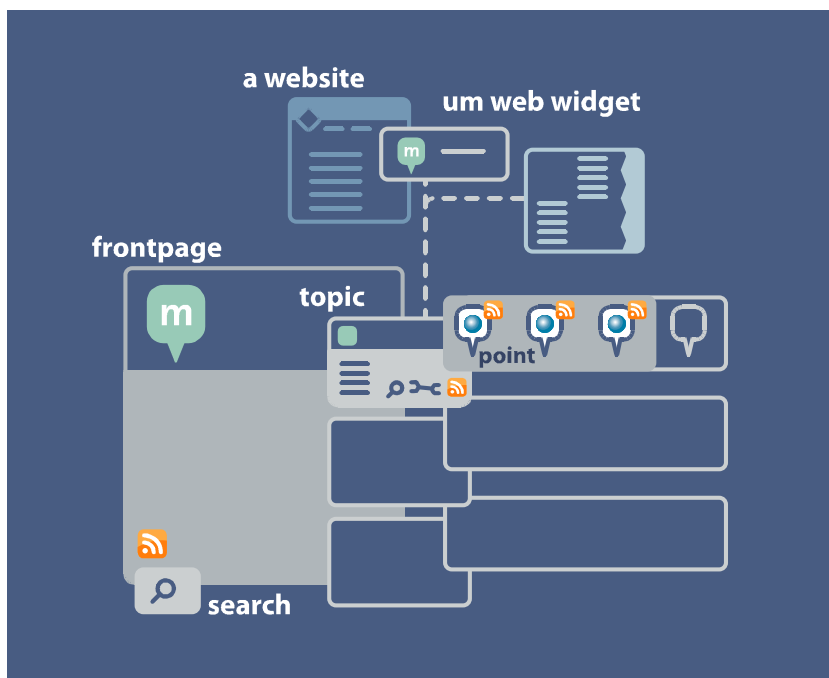


Figure 1. The main components and features of Urban Mediator. These are explained in detail in Appendix 1.

The collaborative design of Urban Mediator

The collaborative design approach applied in the development of the Urban Mediator tool brings together methodologies from both participatory design and end-user development. This approach includes the development of strategies for enabling the participation of the identified stakeholders in the development of the system, during “design time” and “use time” (Fischer & Giaccardi, 2006).

The theoretical and methodological framework

The Scandinavian approach for the development of user-centered systems (Nygaard, 1979) has given birth to the field of Participatory Design (PD). The initial Scandinavian projects of the early 70’s were embedded in the processes of change related to workplace democracy in industry, and they

were very much linked to trade unions (Ehn, 1988). The original goal of PD was to develop workplace democracy by supporting the involvement of workers in the development of the future IT systems that they were going to use at the workplace (Ehn, 1988; Greenbaum & Kyng, 1991; Bjerknes & Bratteteig, 1995).

PD has fostered the development, through the years, of a rich array of methods for involving future users in the design of information systems. These methods range 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 (e.g. Schuler & Namioka, 1993; Greenbaum & Kyng, 1991; Kensing & Blomberg, 1998).

PD has undergone many changes since its early days, and has expanded beyond the Scandinavian context (e.g. Greenbaum, 1993). Lately, research has even advocated a role for PD beyond software design projects. Dittrich et al. (2002), for example, claim that participatory design should be an issue for everybody, rather than only for the software development community or the workers' unions. This means that design is tightly interwoven with use. The concept of "design in use" highlights the "need for [...] continual adaptation and further development" of any technical artifact (Dittrich et al., 2002:125).

Fischer and Giaccardi (2006) have further identified the concepts of "design time" and "use time" as being essential components of their proposed "meta-design" framework, which supports new forms of collaborative design. The system is created during the design time; it is used during the use time. It is during the use time that the need for modifications to the system arises, as users are interacting with the system within the actual use context. The system should therefore be designed in such a way that it allows the users to adapt it during the use time. The tailoring and adaptability of systems constitute the basis of what is referred to as the end-user development (EUD) paradigm (Lieberman et al., 2006). EUD is about "empowering end-users to develop and adapt systems themselves" (Lieberman et al., 2006:2). Such an approach has close ideological links with PD. It has been addressed, already back in 1991, by PD researchers Austin Henderson and Morten Kyng, who identified continuing design in use and tailorability as key elements of truly collaborative design (Henderson & Kyng, 1991).

The collaborative design approach

UM development has, since the beginning of its development, followed an iterative, participatory design approach. Various stakeholders (e.g. active citizens, school children, local developers, city planners) have then been involved in the design process by taking part in a variety of participatory activities, such as workshops, paper and pen prototype development, and in-situ testing and use of prototypes. These initial participatory design activities helped us to conceptualize UM and to come up with scenarios of use, grounded in concrete examples of the needs of citizens (Saad-Sulonen & Susi, 2007; Botero & Saad-Sulonen, 2008).

We also wanted to address the potentials of following a meta-design and EUD strategy because such an approach might enable a possible continuation for UM, beyond the limited span of the EU-funded ICING project. Our hypothesis was that by designing adaptable “tools” rather than fixed systems for ICT-mediated citizen participation, UM could be adapted to be used by groups of citizens, local development agencies, or city departments. Such an approach might gradually set the ground for a possible ‘real’ use of Urban Mediator in public participation activities in the future.

The collaborative design approach thus brings together strategies and methods from both PD and EUD. Such an approach offers the possibility to iteratively explore with stakeholders³ what the relevant features for the software might be. It also makes it possible to refine the service possibilities, and to gradually populate the Urban Mediator working prototype with relevant content, which prepares the prototype for future public use. This reflects the very nature of Urban Mediator as a system, whose content is not pre-provided by any particular actor but is rather continuously provided by stakeholders, either directly, or through established feeds from various relevant sources.

Embedding the collaborative design of urban mediator in a public participation project

From the beginning, our interest was to find productive and appropriate ways to involve city administration employees in the participatory design activities. Despite the fact that the City of Helsinki was a partner in the

³ In the case of Urban Mediator the stakeholders are potential users, information providers, authority figures, designers.

ICING project, it proved difficult at first to organize the collaboration (Saad-Sulonen & Susi, 2007). In 2007, however, with improved UM prototypes and features, we were able to better communicate the possibilities offered by UM. This resulted in more concrete collaborations with city officials. The first trial was set up in cooperation with the Public Works department of the City of Helsinki. At that point the department was interested in asking citizens to report the sightings of bunny rabbits in Helsinki, as well as the damage done by them, in an effort to study this new urban problem (Botero & Saad-Sulonen, 2008). The success of what we started referring to as “the bunny rabbit case” triggered interest in other city departments. Our ICING partner from the City soon informed us that the planning department was considering using the Urban Mediator to involve residents in a preliminary inquiry about traffic safety issues, which would inform the upcoming traffic safety planning in the neighborhood of Malminkartano, in Helsinki. Unlike the bunny rabbit case, we managed this time, in collaboration with the City of Helsinki ICING partner, to engage the planners in collaborative design activities, while setting up the public participation project.

Engaging the city planners

The first documents and briefs given by the city planning department explained in general terms what they initially had in mind. They wanted to ask the residents of Malminkartano their opinion about traffic issues in the area. They wanted to use the Urban Mediator’s map feature in order to collect information and opinions regarding specific locations in that part of the city. Included in the draft was a set of questions targeted to the residents. They included: 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 the opening up, or not, of an underpass for general traffic. They were also interested in knowing, whether the residents of a certain area were pro or con this proposal. Their initial framing of the project was 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.

As Urban Mediator was not intended, in our opinion, to simply facilitate the setting up of online questionnaires, but rather to offer the possibility to

collaboratively gather, on an online map, location information related to a particular issue, we decided to set up some participatory design activities in order to help us explain the potentials and limitations of the UM to the planners more concretely. At the same time, we hoped to better understand what the needs and objectives of the planners were in this case. Through this strategy, we hoped that we could propose the best solutions, by using the Urban Mediator tool, which can be adapted and further refined. 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 efficiently during the timeframe we had, generic tools that would be part of the ‘Urban Mediator toolkit’ we were aiming at. We also decided to make the most out of the existing features and to refine them.

Developing a common language and understanding

The working group for setting up the Malminkartano project with the Urban Mediator tools 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. In the first meeting, we presented the Urban Mediator (by then version 1.0) and proposed our own interpretation of their questionnaire (set of questions) through the possibilities presented by the existing Urban Mediator features, and the ones we thought we could develop further. By using the “bunny rabbit case” example, we explained the way UM works and how topics of interest can be set up and used to gather location-based information around the topics. We proposed to create a specific UM topic for the project, and complement this with two web widgets that could be included, for example, in the planning department’s website. The UM widgets would prompt the user to: 1) Indicate dangerous places, and 2) Propose solutions. These widgets would lead users to the UM pages, where they could respond to the prompt, by creating a point on the map, giving it a title, tags, description, and attaching a picture to it, if needed. We also proposed that the question concerning the underpass would be a point in the topic, which should be created by the planners, before the start of the project. By opening this point, citizens could respond by using the commenting feature. In other words, we located this particular single question that was bound to one location, onto the topic map, as a “point” that could be commented.



Figure 2. The paper and pen toolset used during the workshop.



Figure 3 (centre). The planners working on a paper prototype during the participatory design workshop.

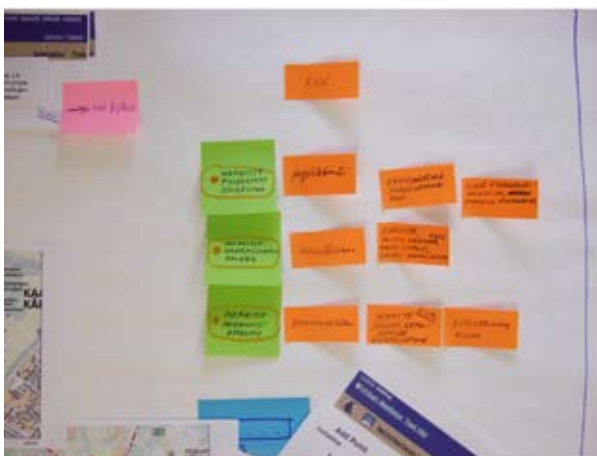


Figure 4 (right). The green Post-it notes were used to define the Add a point widget titles, and the orange ones for defining the information that had to be associated with each (hidden tags, title examples, and tag examples)

During the first meetings it appeared that the way the widgets could work remained relatively 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, where the planners and the designers could adapt together Urban Mediator for the project. The workshop took place in March 2008. 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 planning department pages, which 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’ points (see Figure 4).

Public participation as public trials

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 residents’ questions, accelerated the process of setting up the project. The participation coordinators and the traffic planner decided it would be a good occasion to present the project to the residents, and to invite them to participate. This event kick-started publicly the project; flyers explaining how to take part were distributed and an official presentation was made directing the residents to the website of the Planning Department. There was a link on the main page of the website, which lead directly to the Malminkartano traffic safety page. On this page, the Urban Mediator widgets prompted visitors to a) mark parking problems, b) mark dangerous places, and c) mark improvement suggestions for the traffic (see Figure 5). Citizens’ contributions appeared as points on the UM map of Malminkartano (see Figure 6), or as comments to existing points (e.g. in the case of the underpass question).



Figure 5. A screenshot of the Malminkartano traffic safety planning page on the City of Helsinki Planning Department website, as it appeared on 13.05.2008, with the UM widgets embedded in it (on the right-hand side).



Figure 6. The Urban Mediator user interface. The screenshot of the topic view for the Malminkartano traffic safety project shows, on the left-hand side, the active map view. On the right-hand side is the set of widgets to add new points, the free text widget for the underpass question, the search field, and the tag cloud.

Outcomes of the collaborative design approach

In general terms we can say that the collaborative activities of the designers and city planners provided important contributions for the development of UM, not as a customized solution for a particular case, but rather as a flexible and versatile platform for ICT-mediated participation. Moreover, the collaborative design approach affected the traffic safety planning as a whole.

The impact of the collaborative design approach on the development and use of the tool

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 encountered in their own work practices. This has given us, the designers and developers of the system, new insight in the possibilities of furthering the development of the tool. We have increased its flexibility and versatility by including features useful in 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 similar 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”. The questionnaire was indeed a tool they used and that was part of their toolbox 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 Planning Department had been edited and customized by the webmaster. Moreover, after this case was successfully closed, the City of Helsinki Youth Department also decided to use Urban Mediator as a tool to ask young people to propose possible locations for new skateboard parks. We briefly gave their webmaster an overview of how to set an Urban Mediator topic and how to create widgets. This enabled her to appropriate the UM tools and make use of them for the skateboard park project.

The impact of the collaborative design approach on planning

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 planners, 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.

It is important to note that this was the first time the planners asked citizens for opinions *before* any plans were drawn. The City of Helsinki Planning Department 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 at their very beginning, before any plans had been made. After the citizens had given their contributions as part of the UM trial, the traffic planner mentioned that it had been easier for her to work on this project because she could focus, from the start, 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 to the plans, which she would normally have gotten during or after the scheduled public presentation of the plans. She furthermore explained that it was a relief not to have to reply individually to each comment or proposal, and explain the same things over and over. UM made it possible to collect all citizens' 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 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 own 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 for consultation and citizen participation purposes work as a two-way channel, targeted at interaction between the city administration and an individual citizen. UM offered therefore a new approach to ICT-mediated participation. During a de-briefing session with the planners, 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 others' 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. It is interesting to note that 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, because it shows that many share the same opinion.

The collaborative design of the tool for citizen participation has therefore made it possible for the planners to reflect on the issues related to the participatory planning process in their department, making them aware of the new opportunities that certain technological solutions can bring.

The hypothesis of Urban Mediator as a mediating environment, and not just an online questionnaire, made it possible for planners to address the requirement of the Land Use and Building Act in a way that helps their own work practice. Experimenting with UM made them realize that having the collected information publicly available for all to see actually helps their own work, contrary to the existing two-way channel solutions in the city administration, which requires of them more effort and time.

Limitations of the collaborative design approach

The Finnish Land Use and Building Act of 2000 has pushed the City of Helsinki Planning Department to ensure that citizens are presented with plans that affect their neighborhoods. However, the requirements have not encouraged collaboration between planners and citizens, which collaborative and participatory planning calls for (Healey 1994; Horelli 2002). The use of Urban Mediator made it possible for residents to share their views on traffic safety in their neighborhood, both with each other and with the planners. They were also invited, one year later, when the plans were ready, to comment them during a public presentation at the local school. The planners did not keep the citizens informed of the development phases of the project, nor did they explain what the process that they followed was. Some residents even used the questionnaire that was set up by one of the researchers in order to communicate ideas concerning traffic planning, in the hope that it would reach the planners. It is not therefore possible to evaluate the so-called participatory project for traffic safety planning in Malminkartano by addressing solely the collaborative design of the tool for ICT-mediated participation. The whole approach to planning needs to be addressed. Furthermore, the original idea of the Urban Mediator was that of a shared tool for citizens, planners and decision makers, which would make collaboration possible through exchange of information. This could not be achieved so far, mostly because it was difficult to get the planners to communicate with citizens.

Collaborative design activities with citizens within this particular case could have been beneficial within the context of traffic safety planning in Malminkartano. However, as designers, it was difficult to break the existing boundaries between the planners and the residents during the time frame

of this case. Thus, it was not possible to organize common participatory activities for both planners and citizens. This reflects the weight of the existing planning system in Helsinki, where the opportunity for truly collaborative activities between the planners and citizens has not been made possible.

In addition to the limitation induced by the lack of a participatory planning approach, there are limitations implied by the fact that UM was a software developed by the researchers themselves. We recognize that a similar project would have faced more challenges, if the technology design had been lead by a commercial company. Then, the issues related to the affordability and sustainability of the collaborative design approach within a commercial setting, and in terms of the procurement processes of the city administration, should be addressed.

Conclusion

On the basis of the theoretical and methodological framework and the case study presented in this paper, we can say that the collaborative design of open and adaptable ICT solutions for citizen participation in planning provides positive outcomes for both the development of the technology and the participatory planning process. The collaborative design approach requires participatory design methods to engage stakeholders during the process of the design of the tool, or design-time. It also calls for developing features that make it possible to continue the design of the tool during use-time. Embedding such an approach in a real public participation project requires setting up collaborative activities that bring together the different stakeholders. These stakeholders include at least planners, system designers, and citizens. This case study also identified the in-house webmaster of the Planning Department as a key actor.

The limitations encountered are linked to the fact that the City of Helsinki and its planners have not adopted a truly participatory and collaborative approach to planning. The current approach followed does not imply that citizens are potentially active partners in the planning process, but instead they are rather passive spectators. Recognizing this limitation of the collaborative design approach as presented in this paper, calls for the consideration of a wider trans-disciplinary examination of the research problem; one that includes urban planning and organizational issues as well.

Acknowledgments

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Appendix 1: Urban Mediator features

Topics are used to gather collections of Points related to an issue of interest.

Anyone logged in to Urban Mediator can set up a Topic by giving it a name, a description, a color scheme, an icon, and select a map area that shows as the default. Contrary to the use of the term topic for forums and BBS software, UM does not, in its present form, encourage discussions: it is rather a place to link many discussions together.

Points are used to mark locations that hold information such as location (Where), creator (Who), time of creation (When), explanation (What), and purpose (Why). Anyone logged in to Urban Mediator can create a Point, within the context of a Topic, by marking it on the map or giving a street address, and by giving it a title and a set of keywords. It is possible to add comments to points.

Tags are free-form keywords, associated to Points and Topics. The tags subsystem makes discovery of the points or referring to the specific set of points more effective and can allow the exploration of folksonomies.

Widgets in the Urban Mediator terminology are web widgets that offer the possibility to extend and embed the functionality and content of UM Topics into any other website. There are different kinds of UM widgets that address different needs; for example the Add point widget, makes it possible for the user to add a point to the topic the widget was created for, directly from another website.

Tools in Urban Mediator are part of the Topics' functionalities and offer possibilities to process, share and organize the location-based information available. Some examples of tools available in UM v2.0 are the CSV tool that makes it possible to export information gathered through topics in a Comma-separated values format, and the Newsfeed import tool that makes it possible to import GeoRSS feeds, which will automatically create points out of the feed entries, for the associated topic. New tools can be developed in time, in response to Urban Mediators' users needs.

In concrete terms, users of UM can 1) create topics of their choice in order to gather location-based information or contribute to topics created by others, 2) create and view points (meaning the marked locations that contains information regarding it), 3) search all the information collected though all the Urban Mediator topics and combine it into new topics, 4) import and syndicate content to and from UM by using standard feed formats (RSS, Atom/GeoRSS, KML, and others), and last but not least, 5) create UM widgets to embed UM functionality and information in other web resources (websites, blogs, etc).

TECHNOLOGIES TO SUPPORT COMMUNICATION BETWEEN CITIZENS AND DESIGNERS IN THE PARTICIPATORY URBAN PLANNING PROCESS¹

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Abstract

Communication between citizens and designers is one of the core issues in the participatory urban planning process. Digital media and information technologies can help in overcoming distances and encourage and enable the participation of those who could otherwise be marginalized. We have developed three technologies that utilize maps and location-based functionalities to support communication during the early phases of urban planning and tested these technologies in the field. With these technologies, we supported participatory planning by enabling the acquisition of experiential, contextual local knowledge in the form of pictures, voice stories and comments, as well as discussions about the plans and the places by sharing the planning material over the network. The technologies are quite promising, but the integration of new technologies in the planning processes needs to be studied further.

¹ Reprinted on a permission granted in 3rd of March 2010 by The School of Architecture Saint-Lucas, Belgium. Previously published in *the Proceedings of the Conference of Communicating by Design* 2009. ISBN 9789081323802. pp 559–569.

Introduction

The use of land areas and the building activities on them are guided by land use planning. In Finland, as well as in many other European countries, the rationalistic view on planning has traditionally been dominant. In this tradition, the planners and decision-makers acquired the opinions of citizens almost solely by hearings. However, particularly in the 1980s and 1990s new actors began to arise: the citizens, as well as industry and commerce adapted a more active role in planning. A communicative breakthrough occurred. In Finland, the new Land Use and Building Act (Finlex132, 1999), which came into force at the beginning of the year 2000, emphasized the role of participation and interaction in planning practices instead of a one-sided hearing process. The Act aims to ensure that everyone has the right to participate in the process, and that the planning is high quality and interactive.

The participatory planning of land use is a new paradigm aiming to integrate the stakeholders in the different stages of the planning process and develop the environment in accordance with the values, ambitions and interests of individual citizens and groups and hence influence the quality of the living environment. The possibilities of the citizens participating in the planning can be considered synonymous with the possibilities of participating in the construction of the planning knowledge and thus contribute to the preparation of municipal decisions (Staffans, 2004). In general, local knowledge is characterized as experiential, contextual knowledge attached to people's everyday lives and to the places where people work, live and act (Rantanen, 2006). Various methods of participation, such as citizen support groups are being used to make local knowledge part of the creation of land use planning knowledge.

In Finland, the existing practices of participation cannot fully respond to the requirements set by the new Land Use and Building Act. In recent years, the conventional methods of participation have been criticized by many (Kingston, 2007). Equality in communication among citizens and between laymen and the responsible officials is difficult to ensure in public meetings that are usually held at a fixed time at a fixed place. Typically, only the most active citizens participate in the planning process, and the public meetings are dominated by bold, extroverted and quick-witted persons (Kahila & Kytä, 2006). Moreover, the firm and unreceptive urban planning system is founded on expert knowledge that during the process takes the form of planning maps and surveys that are difficult for laymen to understand and prepare

(Staffans, 2004). This means that every potential participant does not have the information, time or expertise to make an efficient contribution. Therefore, new methods for public participation are needed in order to make the urban planning process more interactive, transparent and, through this, democratic. Above all, there is a call for novel approaches to acquire local knowledge for the planning organization and tools for enhancing communication between planners and citizens.²

An experiment related to participatory planning was conducted within an urban planning course during Autumn 2008 in the village of Sevettijärvi with 350 inhabitants, in cooperation with the Laboratory of Planning and Urban Design. A group of 13 architecture and applied geography and regional planning students volunteered to take part in the study. Sevettijärvi is located in the farthest corner of northern Finland, about 35 kilometers from the border of Norway. Ninety percent of the inhabitants of Sevettijärvi are Sámi people, whose culture and language differ significantly from those of the planners living in Oulu, 600 kilometers south of Sevettijärvi. During the three-month course, the students initially produced three alternative plans for the selected target areas. The final strategic plan of the future land use for the municipality was synthesized from these alternative suggestions. The essential feature in the planning process was participation, which was supported by four conventional participation methods. Two public meetings were held in Sevettijärvi, and a citizen support group consisting of local parties of interest had a chance to influence the planning process by making comments and suggestions during a videoconference and three visits to Sevettijärvi. In addition, the final plan was exhibited to the public with an opportunity to give feedback. An environmental psychological method called “gåtur” (“a walking trip”) was used to analyze the target planning areas. The guided walking tour consisted of walks around the selected target areas in small groups of local stakeholders and planners. Observations were written down and discussed on the site and later on.

The supporting technologies

In addition to the traditional methods, three new technologies – Tell a Story, WebMapMedia and Shadew – were investigated for supporting the participatory planning of land use.

² Editors note: The aim of the chapter is to describe an experiment in which three new digital tools were tested, and to discuss the results.

Tell a Story – a mobile phone application for collecting location-based stories

The aim of the Tell a Story (TaS) tool is to provide a tool for supporting participation throughout the planning process. The tool allows the creation of location-based stories with contextual information. The context of one's whereabouts (place, time, activity, etc.) may bring up issues and questions that would not be remembered in a meeting room. When people move about their daily environment, with an active attitude of evaluation toward their surroundings, issues relating to the built environment emerge. Local contextual knowledge is important, and the best place to collect and "remember" that knowledge is the place that knowledge is associated with.

According to Langendorf (1992), understanding complex information about planning and design may be greatly extended if the information is visualized. Visualization also helps to communicate with different participants during the planning process. So photographs could be used as a knowledge creation tool – an image tells more than thousand words. The question is, *which* words? The average user dislikes writing more than an SMS text on a mobile device. Thus, knowledge creation in the field cannot rely on text input, which is also impractical in conditions, such as rain, darkness and while moving. Our aim is to combine user identification (who), contextual data (location being the most important, along with date/time), photos and, more importantly, illustrated *voice stories* recorded on a mobile phone as a way to create knowledge in the field.

As users record their stories using the TaS on a mobile phone, the GPS location, date and time of the story and/or photo are saved. The tool then stores the media files with the meta-information on a web service. The stories are then available to the planners from the web service by using Google Earth and Google Maps. Planners are also able to view the citizens' stories on the site, using the Radar view of TaS (Figure 1, middle), which shows the stories near the current location of the planner.

The photovoice is a method by which people can identify, represent and enhance their community through a specific photographic technique (Wang & Burris, 1997). Group discussions as a way to contextualize photos have been considered one of the most challenging parts of the conventional Photovoice concept. Participants with weaker social skills do not necessarily have the courage to stand for their points of view in public. Castleden et al. (2008) also



Figure 1. Using 'Tell a Story' (left), the 'Radar view with nearby stories' and the 'Google Earth view to stories'.

point out that the Photovoice poses challenges for photographing intangible items or issues. The context ("who, where and when") is saved together with the photographs as metainformation with TaS. As the story (the "why") is primarily the source of contextual knowledge, we believe this augmented storytelling approach is a promising step forward from the Photovoice method. HyConExplorer (Bouvin et al., 2005) focuses on contextualizing information to support learning outside classrooms, and Iacucci et al. (2003) on the context of learning architectural design. Bouvin's concept, "browsing with your feet", describes how information related to a place can be glanced at, while moving around places. The process of local knowledge acquisition in land use planning can also be seen as a learning process. As our current prototype also supports "browsing with your feet" with the Radar view, the planners have a similar possibility of "being educated" and learning after the citizens living in the area have externalized their local knowledge by using our tools.

WebMapMedia – the web mapping application for contextualized discussions

Electronic democracy or e-democracy may be defined as the use of information and communications technology (ICT) to connect politicians and citizens by means of information, voting, polling or discussion (Grönlund, 2001). ICT can be used to improve the traditional methods of citizens' involvement in urban planning processes by, e.g. enabling asynchronous communication, making participation more flexible in terms of time and location and

supporting new ways of visualization (Westholm, 2002). The Internet as an informal and open medium can provide an efficient means of cooperation and information exchange between the involved parties (Staffans, 2004). The importance of the Internet and particularly the World Wide Web (Web) as a tool of e-democracy has increased significantly over the last years as can be seen in the latest definitions of policy, drawn in the information society strategies of the European Union (EU i2010, 2010). Still, most Web-based applications for supporting participation do not offer citizens the possibility of participating in decision-making, only information (Kingston, 2002).

Even though some researchers have tried to enrich expert knowledge in planners' geographic information systems (GIS) with local knowledge and multimedia, so far only a few experiments have been conducted where local knowledge acquired by Web-based technologies has been applied in the urban planning processes. Talen (2000) has presented the Bottom-Up GIS (BUGIS) concept, in which GIS is placed in the realm of expression and used as a means of expression in participatory urban planning. In Finland, a method called SoftGIS has been proposed with the idea of collecting textual comments from citizens on the quality of their living environment with a map-based Web questionnaire. However, SoftGIS does not enable communication between citizens. According to Steinmann et al. (2005) very few Web technologies oriented toward citizen participation or influence enable map-based discussion. In our experiment, a Web-based mapping application, called WebMapMedia (WMM; Figure 2) was employed to find out, if local knowledge collected from citizens via the Internet could give some additional value to the knowledge creation of the planning process.

Three months before the start of the actual planning work, Web pages informing citizens of the experiment were opened. A free open source software, called WordPress was used as a publishing platform for delivering information and plans, as well as for supporting the discussion and moderation. WMM was embedded in the WordPress platform for acquiring local knowledge in the form of comments and pictures. WMM can be considered a virtual combination of two well-known participation methods: Photovoice and the sticker-map method that enable citizens to mark locations of personal significance by placing colored symbols on the map. The anonymous communication enabled by WMM was expected to encourage new citizen groups to contribute to the discussion. Compared to the conventional sticker-map method, WMM provides more versatile

tools for controlling the map and a more efficient means of acquiring and storing spatial local knowledge. WMM was built on Google Maps, offering JavaScript functions to operate draggable street maps and satellite images.

In the initial stage of the planning process, WMM allowed citizens to place three kinds of markers on the map: red symbolized places that needed to be developed, green places that should have been preserved and yellow other opinions. The whole idea of WMM is the map-based discussion. By clicking a marker on the map, a bubble with a thumbnail of the picture and hyperlink to the discussion about the place opens (Figure 2). In the second stage, sketches of the alternative plans were added to WMM and thereby opened for discussion. For visualization, the perspective drawings of the strategic places were linked on the plans. Finally, at the end of the planning experiment, the final strategic plan of the land use was published in WMM.

Shadow – presenting the plans remotely to the citizens

Most of the existing presentation software, such as the near-ubiquitous Microsoft PowerPoint, is meant to be used at the location. Getting the content to a remote location can be difficult. Shared whiteboard applications do exist, but they are more suited for simple sketching than the presentation of large-scale plans. In addition, with such an application, it can be difficult to point



Figure 2. Local knowledge in WebMapMedia.

out objects of interest, as the applications tend to have a very rudimentary support for it.

Shared Design Whiteboard (Shadew) is a collaborative drawing tool with various tools for each specific design context. These can be added as plugins for new kinds of design. Shadew allows several people to sketch on and modify the same document in real-time over the network. The document size is unlimited, and the view can be zoomed and rotated freely. Each user's mouse pointer is represented to the other users by a growing and moving "tail" that displays the movements of the mouse for the last couple of seconds. This allows the users to point out objects of interest and to make simple gestures with the mouse. Shadew was built using the Java programming language and Piccolo2D zoomable graphics toolkit, originally developed at the University of Maryland (<http://www.cs.umd.edu/hcil/jazz/>).

In the Kuntis case, the tool was used to present the intermediate designs to the clients. The designers sketched their plans on several layers of transparent sketching paper stretched over a large map of the village, and then photographed them. The images were added to the document in Shadew and assembled into a presentation that could be moved around at will.

Experimentations with the technologies

When the urban planning course started and the first field trip to Sevettijärvi was conducted, two phones with the TaS tool were given to the school. During the second day of the visit, two architecture students organized a two-hour workshop with the children. In the workshop, the students explained the goals of our work, and the TaS tool was demonstrated. In the end, a game was organized outside. In the game, the children pinpointed places with personal significance to them. After the first round of places near the school, a second round was played in which children then used the TaS to take photos of significant negative and positive places as well as record stories explaining why those places were significant to them.

After the game, the phones were left with the schoolteachers, who then circulated the phones among the children. During this time, the architecture students used the Google Earth/Maps interface to get access to the location-specific stories uploaded to our web service (Figure 1, right). During the

second field trip, two architecture students organized another session with the children, now focusing on their activities near the living environment and further away. A feedback group discussion on the use of the TaS was also organized. The collected stories were available through the Google Earth/Maps interface for the planners during the whole course.

Citizens were able to comment their living environment in WMM for two months. After this initial stage of local knowledge acquisition, the alternative plans were published in WMM and kept open for discussion for a couple of months. The data for the analysis of the usage of WMM was acquired in three different ways. Statistical data was provided by Google Analytics application. In order to find out the users' background information and their opinions about WMM, optional Web questionnaire forms for both the citizens and the planners were available in the Web pages of the experiment. The public meetings, the meetings of the citizen support group and the planning work of the students were observed in situ. In addition, the comments and pictures collected with WMM were used in the analysis.

Halfway through the course, the plans were presented to the citizens. The plans were projected on a screen using Shadew, with the planners providing commentary over video conferencing tools. Figure 3 shows the test situation from the citizens' point of view.



Figure 3. *Shadew test from the citizens' side (left). View of the document with tail pointer (right).*

Because the tool was still under development and the user interface was rudimentary, we acted as a kind of Wizard of Oz, where the researchers themselves made the initial documents based on the plans and used the application. At the Oulu end, the computer had an additional cordless mouse installed, and the planners used that to point out various areas of interest

in the document. Moving from one area to another inside the document was animated to emphasize the move and to help retain context between various areas. One of the documents in particular was built to represent the plans as higher-detail maps laid on top of a larger map of the overall area of the village. In the corresponding Shadew document, the detail maps were placed in their respective positions on the large map, and when the focus was moved to each detail map, the document was zoomed to display them, going back to the main map between transitions to another area. Figure 3 shows the test situation from the citizens' point of view.

The Shadew version used in the tests did not have a fully synchronized display between the two ends yet. Pointing at objects was synchronized, but moving from one place in the document to another was not. Because of this, at each end, the navigation had to be done manually. The application showed the outline of the other user's view on the screen, and this was used as an indicator for when the screens were properly synched to show the same area. Despite some minor difficulties with the synchronization of the views, the tests were successful.

The results

According to our observations and feedback from the planners, all three technologies led to at least some changes in the designs made by the planners. A road around the schoolyard that some children feared, was rerouted (thanks to a story told with TaS). Based on the number of stories and photos (ca. 90) taken, the usage was also successful. The architecture students, in their initial feedback from the course, suggest that the content produced by the children using TaS was not as important in the planning process. There may be several reasons for this. It may be that the children didn't understand the needs of the architects and were not able to really focus on telling stories that relate to the children's environment in such a way that translates directly to planning. Most of the stories were memories or described feelings of places, creating an atmosphere of how the kids felt about their environment. While important in getting the feel of a place, the stories did not necessarily give direct hints to the planning in this context. It may be that the timing was not correct and the stories should have been available even before the first visit to Sevettijärvi. Maybe the Google Earth/Maps interface for the stories was not so easy to use for the students for them to really delve into many stories. There were some technical problems, when

stories started to emerge with the Google Earth interface with the content. It could be that the initial technical problems drove the students away and they didn't come back to listen for more later on.

In total, 80 comments about Sevettijärvi as a living environment and 83 comments about the alternative plans were posted in WebMapMedia in three months. Taking into account the size—350 inhabitants—and the nature—mostly elderly people—of the population of Sevettijärvi, this can be considered a fairly good result. WMM increased the size of the active participant group and made it more heterogeneous: former inhabitants of Sevettijärvi posted a considerable number of the comments. The map-based discussion forum of the WMM fuelled innovative brainstorming: more than 80 percent of the places marked on the map were commented on further. WMM also provided the planners access to viewpoints different from the ones brought out in the meetings of the citizen support group. The members of the support group felt that the use of WMM made it easier to work in the group, and thus, WMM supported cooperation between the planners and the support group. In addition, the planners participated in the discussion on the WMM forums, so the communication was truly two-way. As Steinmann, Krek and Blaschke (2005) address in their paper, many GIS- or Web mapping applications on the Internet lack two-way communication and do not allow the users of the application to comment on specific decisions or suggestions presented online on a map. This means that the users are able to observe different planning scenarios, but they are not able to make comments on them as citizens in Sevettijärvi did with WebMapMedia.

During the Shadew test, there was a reasonable amount of discussion between the clients and the planners. While the actual communication obviously happened over the video conferencing system, the video itself was barely used because of the low quality. Any advantages over a voice-only line were nominal at best. The Shadew tool was used fairly effectively once the minor navigation and synchronization problems had been overcome, and in many cases, the clients wanted the designers to show some portions of the plans again to focus the discussion. Further development for Shadew will include a fully synchronized presentation mode, improved indicators for showing attention level from other users, bookmarks that help moving from one area in the document to another and an improved user interface.

There have been some attempts in integration of these three technologies, but there are still many unused possibilities. For example, the stories told

with TaS could also be available through WMM and could be used to annotate plans drawn with Shadew. While in the field, TaS could also be used to access comments and photos entered through WMM. The problem of timing the usage of the technologies is critical and clearly visible, observed in earlier course implementations. We need to carefully plan the timing of the course in relation to the technologies used in future trials. Care should also be taken that planners become acquainted with the technology so that it can be fully integrated in the planning process. This also means changes to the process itself.

The three systems presented in this paper form a basis for a two-way communication system between citizens and planners. TaS and WMM allow citizens to record and store their knowledge and suggestions contextually. WMM also allows planners to participate in an ongoing discussion about the development needs in the area. Shadew can be used to present the actual plans to citizens even over great distances.

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THE USERS AS CO-PRODUCERS ON A NEIGHBOURHOOD WEBSITE – THE LOCAL PERSPECTIVE TO ICT-TOOLS AND URBAN PLANNING

ANNA KANERVO

Abstract

The purpose of the chapter is to describe how the local website can create circumstances, where different actors have equal opportunities to participate in the development of the neighbourhood, according to their own intentions, resources and skills. The work with the local websites has been conducted for more than a decade in the neighbourhoods of Helsinki. As the content production is based on voluntary work, the participatory processes have acquired some special characteristics. I argue that the local website is a service and participatory platform, as well as an important interface, on the one hand, between the resident or stakeholder groups and the neighbourhood, on the other hand, between the local and global issues.

Introduction

Different kind of spaces and places are important to people. They are needed as meeting places, where people can get to know each other, change and share information, build common understanding and develop shared interests in their neighbourhoods. Besides physical meeting places, also digital and virtual places have nowadays a relevant role in the enhancement of interaction among residents. A local website, organized and administered

by people living or working in the neighbourhood, is the virtual version of the physical meeting place, such as the community house or local library. The virtual place does not have to be separated from the physical world, as it can act as a channel for people to find and identify themselves also in the physical environment.

According to Rantanen (2004) the local website can have several roles, according to the interests and intentions of the community. Maybe the most obvious one is *the informative role*. News, articles, happenings, announcements and columns are a central part of the content of the website. *The archivist role* of the local website comprises chronicles and stories about the history of the neighbourhood or a photo gallery that includes images from the present days or history. It can also be a storage for documents, such as memos. *The discursive role* is one in which the site seeks to arouse and coordinate discussions concerning the neighbourhood. The traditional discussion board is one option, but discussions can also be connected to articles with commenting tools. In general, a site in this role has many discussion fora and chats, as well as auction tools. *The service role* means that the local and also other services are linked together. Collaboration between public, private and people partners is frequent. This requires coordinated updating. Easy accesses to all relevant information channels or data-bases available in the Internet can be created. The role of making connections between different independent databases is getting more and more important all the time, as the amount of relevant information is getting bigger. However, simultaneously it is more difficult for people to find a suitable source of information in relation to their needs.

The two final roles of the local website are *the association-based role* for the local website and *the role of a manifesting community*. As small, voluntary societies often lack resources, the local website can offer valuable tools, such as open or closed intranets for different groups or ready-to-use (or ready-to-adapt) templates for different uses. Open source solutions are a good option for NGOs, due to their cheap price and flexible adapting systems. It can be impossible for small societies to create contracts with big software companies. The role of the manifesting community is closely connected to the informatory one. As long as the content production on the site is based on self-organization, the voluntary work and bottom-up approach have a mandate to support different kinds of local voices. The site can act as a mobilizing force, when something crucial is happening in the area and the

attention of residents is quickly needed. This role demands many activists to update the site, as several use levels are in action.

Currently, some 40 neighbourhoods have a local website in Helsinki that is being administered by active, voluntary people in the neighbourhoods. The aim of the local site is usually to gather as many different groups of local actors as possible. For instance, schools, libraries, city planning departments, congregations, various local associations (e.g. sport clubs, scouts...) and local entrepreneurs are thus activated. The variety guarantees an equal and diverse communication between different actors. People in the neighbourhoods “own” the pages, and they are also responsible for the content. Thus the local website can be seen as a virtual tool of participation on the local level.

This chapter tells the story of the local websites in the capital region of Finland. The sites are an example of the bottom-up approach in which the inhabitants have taken the responsibility for their own wellbeing. For this purpose, a techno-social system and a communication structure have been created that enhance interaction among the local actors, as well as between the actors and the surrounding world.

The aim of the chapter is to describe with examples, how the local website can function as a glocal interface among the inhabitants, and between the neighbourhood and the surrounding world. This includes the elaboration of the concept “users as co-producers” in the context of the local website. I will first describe some of the characteristics of the local websites and concentrate then on the functions of Helka and the tools that it has created. Finally, I discuss the ways and meaning of users as co-producers with small resources.

Characteristics of the local websites in Finland

Examples of local websites and digital citizen media can be found in different cities in Finland. Two examples, Tampere and Vantaa, are described here. The starting point for the local websites in Tampere, like in Helsinki too, was a project led by a university, at the end of 1990's. The project, Mansetori (www.mansetori.fi), started with three pilot areas. Mansetori is currently coordinated and financed by the City of Tampere, although local people can produce information on the pages. The idea is to give a voice to local reporters and to such small scale topics that otherwise would not get space in public media. Mansetori is based on the same kind of content

management system (CMS) as in Helsinki. The biggest difference is the administration and coordination of the system: In Helsinki the system is coordinated by the Helsinki Neighbourhoods Association (Helka), which is an NGO. The content production is, however, 100 % based on voluntary work in the neighbourhoods. In Tampere, the City has a stronger role both in the coordination and in the content production. On the one hand, the connection to the City gives a more secure base for the continuation of the work. It can also give better resources for the development of the system and the training of people. On the other hand, independence from the City administration guarantees freer hands for the voluntary activists. They are also responsible for the website as nobody tells them what to do or how to do it. The success and popularity of the website is in their own hands, and they feel that they own the website.

The situation is a slightly different in Vantaa, compared to Helsinki. The City of Vantaa coordinates the local portals, which are meant to be informative and activating, as they provide discussion forums about local issues. Inhabitants and local actors can suggest topics about articles and publish events, but all proposals are checked in advance. This means that the City administrates and coordinates the content. Another difference compared to Helsinki is that each portal covers an area of several neighbourhoods. In Helsinki (and also in Tampere) one local website covers only one neighbourhood.

Table 1. A Comparison of the local websites in Tampere, Vantaa and Helsinki.

	Tampere	Vantaa	Helsinki
Coordination and administration	City of Tampere	City of Vantaa	Helsinki Neighbourhoods Association (Helka), an NGO
Content management and production	Inhabitants and city officials	City officials and suggestions from inhabitants	Voluntary inhabitants
Areal coverage	One website covers one neighbourhood	One website covers several neighbourhoods	One website covers one neighbourhood
Links	www.mansetori.fi	www.vantaa.fi/i_alaetusivu.asp?path=1;10757	kaupunginosat.net

Helka, a mediating organization in Helsinki

The coordinating and administrating system of local websites in Helsinki differs from the rest of the cases. The fundamental difference lies in the structure behind the website administration and coordination, as the system in Helsinki is more distinctly independent from the control of the City administration.

Helka has a special role in Helsinki in terms of the inhabitant participation. Helka was founded in 1964, when four neighbourhood associations joined “to be heard” and to take more part in city planning decisions (Helka, 2010).

In the first years, the role of Helka was to support the self-organizing inhabitant associations that were emerging all over the city. In those years the City of Helsinki acquired vast rural areas from the surroundings. The residents in the newer parts of Helsinki were eager to strengthen their neighbourhood identity by forming a resident association. This strengthened a protective ethos for the surroundings, as the associations shared a justifiable suspicion for the “big city and its distant offices”, which also led to neighbourhood action. It can be stated that both the “official City” and the residents themselves have gained from the spread of the organized activity in the neighbourhoods.

The role of Helka as the coordinator of special-interest groups has diminished during the years. Helka, as a dialogue builder, has taken the role of a mediating body between the City administration and the inhabitants. Helka is a generalist. It is concerned over the overall quality of the built environment, which includes all aspects of sustainable life in the City: the ecological, social, cultural and economic. Helka, as a central organization, provides a platform for the city-wide residential networking and the development of a sense of community. The main goal is to enhance citizen involvement in governance processes and to collect and provide place-based knowledge (via local internet forums and other tools, see Staffans et al. in this publication). It also seeks to find ways to feed the information to the strategic policy making and urban planning processes of Helsinki. The objective is also to reduce conflicts of interest between the city government and the local residents and other actors. This is accomplished partly through the involvement in methodological development work and provision of trainings seminars. The main approach, though, is the application of ICTs in the enhancement of public participation and citizen empowerment.

Helka is funded 60 % by the City of Helsinki and the rest comes from various public and private projects. The City of Helsinki gives annual funding to Helka for two missions. The basic fund is meant for work with member associations. The other part of the fund goes to the administration and coordination of the local website system (called Kotikatu). The assignment connected to Kotikatu is to provide opportunities for active people in the neighbourhoods of Helsinki to found a shared local website in the neighbourhood. The website is not meant to be a home page of any certain actor but a common platform for everyone in the area, where residents can find information, meet other people and discuss. The local website system is the virtual and local version of Helka itself, as the aim of the local website is to connect people and create and channel discussion around different topics that people are interested in. The role of Helka is to mobilize and empower people to act for the sake of their neighbourhood for which the local website is a useful tool.

The Kotikatu system – Local websites in Helsinki

The original idea of Kotikatu emerged from the pre-concept of Helka which wanted to collect local knowledge in one place, where it could be easily accessible to anyone living in the neighbourhood. This would also include information about local governance, i.e. contact and other information about various City offices and officials in charge of different services in the neighbourhoods of Helsinki. The first idea was to collect the local information in a physical folder that were placed in local libraries. A great coincidence at the time was the rapid emergence of the Internet. It was soon obvious that the local folders should be placed in the virtual space, in the Internet, where even a wider amount of people could reach them, regardless of time and place. Helka and the Kotikatu developing team soon realized also the other possibilities that this new medium provided them. From that moment on Kotikatu has been on a steady development curve upwards.

The work with the Internet started in 1997 as a research project with one pilot website. During the years the project has established its position as a stable activity in Helka. Today approximately 40 neighbourhoods in Helsinki has its own website. In the beginning of the project websites were built using a traditional html-editor, but in 2004 Helka started to use Content Management System (CMS). This change had an important effect on content production and popularity of websites. CMS made it remarkably easier to

update the website. As the Kotikatu system is based on non-professional, voluntary peoples' venture such things as usability of the system and simple user instructions have great significance on participants motivation.

Each local level local website is coordinated by a group of active, voluntary people who constitute the editorial team (approximately 2–10 people per neighbourhood). The team is responsible for the content. They also take care of the quality control at the discussion board. The system technically enables anyone to suggest articles, news or events on the website, an option which is in use on many sites. However, the editorial team pre-checks the material before it is published. The editorial teams consist of ordinary inhabitants, but in some cases also the local city officials (e.g. teachers, people from the local library or parish) are part of the team. Even if the editorial team is small, the team members encourage other local actors to write articles or to send announcements of happenings to them. The team then uploads the material on the website. As the team has a wider perspective of and connections to the local activities, it has better opportunities to produce wide-ranging content on the site.

The role of Helka is to administer and maintain the technical platform, educate local people how to use the system and to provide help desk service to the local administrators and content producers. A big task is also to further develop the system in co-operation with different actors. Active local website administrators have, of course, an essential role in giving feedback and ideas. However, part of the development suggestions come from different stakeholders outside Helka or the neighbourhoods. An increasing interest in the development of social media solutions and joint service approaches has made the Kotikatu system and Helka an interesting partner to many actors, such as the City of Helsinki and other service providers who focus on digital services. Co-operation has been done also with universities and different experimental networks.

Helka has consciously kept itself away from the production of content. This guarantees that the website will develop and stay alive on the basis of local activism. It is not the role of Helka to keep the websites alive artificially. The local energy makes the websites differ from one another, as people in the neighbourhoods can decide over the structure and content of the site. Teams are strongly self-organized and empowered. If needed, Helka can give advice, but the basic principle is that the website should look like the neighbourhood that it is embodying.

The total freedom in content planning also means that the the editorial teams take the complete responsibility for the content production. The editor-in-chief is chosen from the team. She or he has the final responsibility, but it is based on co-management. The chosen model of production and administration behind the local websites is meant to encourage *bottom-up* or even *from-center-to-sides* practices, instead of a *top-down* approach.

The basic idea is that the local editorial teams consist of voluntary people who are interested in their neighbours and in the development of their surroundings. That is the basic motivation instead of, for instance, money. In some neighbourhoods there might be one technical person, who gets a minimal refund, but that is rather unusual. The technical tasks are then usually separated from the content production. The technical help is bought from a person, who is somehow an outsider from the neighbourhood or from the rest of the editorial team.

It takes a long time before the local website becomes an active and functional communication channel in the area. The fact that everything is voluntary-based makes it both vulnerable and simultaneously authentic. If people do not want to invest energy in their local website, nothing will happen. But when they act, it can be a powerful tool in the development of activities and synergy in the neighborhood.

The content of a local website can be:

- local news
- announcements of local events
- a discussion forum
- a photo gallery
- information about local services
- RSS news feeds coming e.g. from the City of Helsinki or from organizations or even some commercial news channels in the capital region
- an introduction to or description of the neighbourhood (e.g. history, basic facts...)
- an archive of local processes (e.g. memos of local meetings and events)

Lately, Helka has strived to develop the platform towards a more interactive direction, while creating local service desks. However, the local administrators and editors can decide, how much freedom they want to give local people and how much they want to keep the duties themselves.

Limited resources as a challenge and an opportunity

The Kotikatu system, like many other innovative projects, suffers from limited resources. The annual fund rests the same, although the amount of websites is constantly growing. Also the need to co-operate in order to create better services for the inhabitants in Helsinki, is growing. Requests come from many different directions. The local websites are seen as a potential platform to reach ordinary people. Limited resources constrain the implementation of the ideas and increase the dependence on exterior project money. The resources have to be collected from several different sources, which takes a lot of time and resource from the personnel. The fundraising is always away from the essential work, such as training and help desk support. That might imply a risk to loose the motivation of involved voluntary people if their expectations are not met.

Another risk connected to the limited resources is that as Helka cannot accept all co-operation requests, the interest toward Kotikatu can diminish. The question, whose needs should be first fulfilled, is a crucial one. The involved and motivated co-producers and users, who are the soul and backbone of the system, or the development partners, who might give the needed power and energy that enables the continuation and keeps the system up to date?

On the other hand, the current situation forces the system to develop step by step, as plans are made and accomplished in small steps. Thus, there is the possibility to follow the latest innovations, as the time scale of development is rather short. This gives a special role to the talented website administrators, who can give their input through brainstorming and developing the system. At best that can increase their motivation.

Instead of creating expensive applications and databases the development is concentrated on the building of connections between the existing external systems. For example, the automatic connections between the service map of the City of Helsinki (<http://www.hel.fi/palvelukartta>) and the service help desk of the Kotikatu system. Besides being rather inexpensive, it is more relevant to use the existing data and services than to create new databases or solutions. Also other actors, such as partners from the City administration are willing to follow this trend, instead of making everything themselves. This reduces costs for everybody and channels the user streams.

The local website system has brought the inhabitants, who are end-users from the business perspective, to the same table with other sectors of society.

It is a relatively new trend that different actors can sit as equal partners around the same table and be part of a shared development project.

An empowering user interface based on coproduction

The local website is both a technical and social interface in and to the neighbourhood. It is a technical solution for inhabitants, which enables them to be in touch with their neighbours and other stake holders in the neighbourhood. It is also a communication channel between the neighbourhood and the rest of the world. The technical development of the system is based on the objective to create an open, easy-to-use, self-organizing system that can be available to everyone regardless of their IT skills or equipment.

The technical and social interface hand in hand

The decision to use the content management system (CMS) was an important step. The CMS enables a group of amateurs instead of one professional IT expert to share the updating and administration of the system. This is essential, if the system is meant to be used by everybody.

Besides the decision to use the CMS, the open source has also had an effect on the Kotikatu system. The whole system is based on open source solutions that are free to be shared, studied and modified by the community of users. This kind of technical openness is in line with the overall philosophy of local websites. The latter should be open both socially and technically to everyone. Every local actor should have equal opportunities to participate either in content production or even in the technical development of the site. Today, the local people can develop the site, as they wish. New applications can be added or old ones can be modified. Local talented people can be used as a voluntary development resource! If in some neighbourhood a new application is being developed, it will be available to every other neighbourhood too. It is not the target of Helka or anybody else to earn money from supplying the rights of use or modifying the system. The target of local websites is to develop discussion and communication, to change information. If the local people have the talent to develop the site in such a way, it is also good for the society.

Questions concerning the technical interfaces are more or less practical. A variety of technical needs can be fulfilled, if there are resources available. The challenge is to create and develop the local website so that it is a functional social interface among all kind of local actors or between the neighbourhood and the surrounding world. On the one hand, technical solutions can create the basis for social behavior, as described above, but even if the technical solutions support the social interaction, it is not guaranteed that it will take place. The social interface is strongly connected to people's attitudes, motivations and will. When the target is to develop communication between people, technical issues are not what matter most.

The term social interface refers to a process and behavior of how people want to be in touch with each other. Then they wish to know, what kind of communication methods and tools are suitable and relevant in the neighbourhood context. It is usually said that the Internet is a good tool, when connection cannot be based on location. Creating connection through the Internet is independent from time and place; people from the opposite side of the world can have a strong link through the Internet. In the neighbourhood context, location is actually clearly defined and limited, and local communication is usually thought to be based on more traditional channels, such as local news papers, face-to-face meetings and local happenings. However, the local websites have turned out to complement the local communication combo. For instance, they connect different age groups and social classes around "the same table". The threshold to participate in discussions about local development can be rather small on the local website compared to the participation in inhabitant evenings. Participation in the Internet does not require that much effort. In addition, it can be done anonymously or shortly. Also people from outside the neighbourhood, even from another country, can easily give their input to the discussion or find information about local issues via the local sites. There are no limits to the scale of discussion or stakeholders.

The Internet has made it possible to create a new culture of participation. For instance, the traditional way to participate in local development and governance, such as urban planning processes, and to interact with e.g. City administrators, has taken place through local associations, as they are often regarded as the concrete stakeholders of the neighbourhood. Statement requests have been sent to them, not to single inhabitants. This has meant that the individual inhabitant must be an active member of an association

to get her or his opinion heard. The associations are often ruled in a rather traditional way, which means that there are strict NGO rules that can make the activities inflexible. The direction of involvement has traditionally been top-down, as it has been either the City official who decides, when people can participate (= by sending statement requests or questionnaires) or the association has created a framework in which one inhabitant participates as a representative of the neighbourhood. This is not attractive to modern inhabitants. People are not willing to strongly commit themselves. They want to decide when, on which topic and how to participate.

The local websites offer the freedom to choose. The selected procedure or philosophy behind the system supports proactive and initiative participation that is free from control of administration. The inhabitants create, develop, update and administer the service, and thus they have control over participation. This does not mean that the initiatives or requests coming from e.g. the City administration, would not have a role anymore, but these are just one option among others to express opinions. They can, for instance, be presented on a local website connected to discussions raised among or articles written by the inhabitants. The local website can act as an interpreter of official information as it is not controlled by the administration. It is controlled by the people themselves. The local website is also a social and technical interface to participation:

In the Maunula neighbourhood, in Helsinki, a long-term planning process of the local center and shopping district has been documented in the local website in detail. The inhabitants started to collect material from many sectors and experts. During the years, they also sent questionnaires to the inhabitants and urged people to discuss the topic. All the material, both official and unofficial, connected to the planning process has been reported in a chronological order on the local site. Thus it is available to anybody interested in the issue. A complicated, official planning process is being interpreted and presented in a simple and understandable language.
<http://kaupunginosat.net/maunula/ostari/prosessi.htm>

Distribution and combination of information streams

The local website acts as a mediator between people and actors inside the neighbourhood, or between the neighbourhood and the rest of the world. Technically, the local websites are still rather traditional homepages, but the direction is towards more interactive portals. The idea is that the local website

can be a node or a hub between different existing data bases and portals. This means that it is not desirable to get all information *inside* the local website, but it should provide easy access to relevant data concerning the neighbourhood. A huge amount of interesting and important information already exists on the Internet, but the problem from the user perspective is that it is difficult to find the right channel. The local website can mediate, collect, distribute and represent different information streams that come from many directions, and interpret them in a language that can be understood by ordinary citizens.

The local website can also be a place for creating and showing mash ups of different databases. The first example is the local service desk, which shows location-based information about services in the same view. The information comes from two different sources: from the service map of the City of Helsinki and the service database administered by the local websites themselves. This is so far the first solution of its kind, but it will be the central direction in the development of the system in the future.

In comparison to other participatory ICT-tools, the local website can be a channel to the inhabitant to find a relevant tool with which to give an opinion or an idea in the discussion about the neighbourhood. Besides creating participatory practices and a culture on the neighbourhood level, the website can also support other existing ICT-tools so that the target groups will find them.

Users as co-producers

The local website is open to the inhabitants, City official, politicians, local networks and companies. The different sectors are standing on the same line. The local website is open in two directions. It enables the search for information and the creation of content. Anybody in the neighbourhood can become a local reporter and give her or his energy to the development of local communication. That is the basic rule that Helka has set to local editorial teams. The website must be open to every actor in the neighbourhood. It must not be dominated by some specific stakeholder. In the neighbourhoods, where this principle works well, different actors with a variety of practices have a collaborative way to coordinate their common website. The chosen philosophy of openness compels the local actors to co-operate, if they want to be part of the editorial team.

However, that is not the case in every neighbourhood. The principle is simultaneously time consuming. As the system is based on voluntarism, it means that those who are not satisfied with the co-operation will either leave the team or try to change the culture. People are willing to give their free time to voluntary work, if they enjoy it and if they can commit themselves to the target of the voluntary work. According to Yeung (1999), people will be committed, if they feel that they belong to a group and that they can impact something that is important to them. The same principles also work with the local websites. If there are conflicts concerning the way, how to take care of the website or about the editorial principles, some of the participants will leave. Nobody wants to continue voluntary work, if it is not satisfying and pleasant. This means that the culture of voluntary based networking will easily repeat itself, especially if the network does not want to recognize its special characters.

Co-production requires belief in the power of co-operation, openness and transparency. The principles of ownership do not fit this system. This might be difficult to adopt, as ownership is traditionally regarded as a basic right. Activism around the local website can cause problems in the co-operational culture of the neighbourhood that might otherwise stay hidden. If the members of this community are eager to develop themselves, they can learn from these challenges and renew the network culture. If they are not ready to take the chance and change their habits, activism around the local website (or any other subject that is the target of co-operation) will be coordinated by a small, unrepresentative group of actors. In that case the basic principle of open co-production will not be implemented.

The process of creating understanding in the neighbourhood with local websites requires only light coordination compared with official channels of information, such as the websites of the City administration. Even the strategy behind the process is usually light. It will be developed and implemented by those who are active in that moment. The network of active content producers is dynamic: people come and go. There are those who produce material regularly and those who come with an idea only every now and then. The local website looks, tastes and smells like its users. The site will be developed with small steps without long term plans. Also the changes in the surrounding environment can easily be taken into account, as the system and the process are basically so flexible.

Towards active interaction and co-operation

Although the local websites have an increasing number of users, the real takeoff is dependent on the local activism of the next generation. Currently, the voluntary neighbourhood work is more or less in the hands of elderly people. The latter are more attached to places and they have more free time. The younger generations are more familiar with the web services and communication on the Internet in an informal way. The local websites can, however, offer them a fresh way to be part of their neighbourhood community. The web enables participation on many levels and in many ways, but at the same time it allows a light way to interact with formal structures, if one wants to be active. For instance, in the Arabianranta neighbourhood of Helsinki, the neighbourhood association has actively used the local website in a modern and innovative way, which has attracted new young people to join the neighbourhood association and its activities in the real world too (Kareinen, 2010).

There can be seen a slight change in the culture of the neighbourhood associations. The direction is from complaining towards discussion, from being reactive to being proactive. This trend is coherent with the idea of local websites. The web can easily be used as tool to create a modern communication and interaction culture among local actors. The open and co-operative character of the web can easily be harnessed to the use of those communities and networks, who believe in the principles above, as the basis of interaction and communication. Helka seeks to support its member associations to adopt a modern association culture.

The development of technologies is an opportunity and a challenge at the same time. It is important to think, how to use minimal resources so that the system is up to date to the satisfaction of the users. On the other hand, the general level of IT skills of administrators is improving all the time, which creates more opportunities to deploy user knowledge in the development of the system. It might mean that the role of external funding can decrease in the future. In the vision of Helka, the Kotikatu system will be more in the hands of the community of users, while Helka can focus its resources on training, help desk tasks and on general coordination.

The strategic program of the City of Helsinki for the years 2009–2012 states that the focus must be on the development of user oriented services. At the same time, in the Helsinki metropolitan area and all over Finland, there is

a growing tendency towards bigger entities, for instance in the administrative structures. This development encourages to find new channels and communication models that are close to the inhabitants and are locally-based. The local websites represent modern co-operational interaction in which the inhabitants are acting on their own initiative. Hopefully, the existing network of inhabitants that is already actively involved in the development of the City through the websites, can be seen as a resource for the whole society in the future.

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DEVELOPING A NEW APPROACH TO E-PLANNING WITHIN COMMUNITY DEVELOPMENT

– THE CASE OF UBIQUITOUS HELSINKI

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Abstract

As e-planning takes place in a complex and dynamic context, consisting of many stakeholders with a diversity of interests, it benefits from a new approach that both expands the scope of traditional urban planning towards community development and also provides opportunities to anticipate the future and to get feedback of the progress on-line. The new approach comprises a framework and a set of tools for the contextual analysis, mobilisation and nurturing of partnerships for collective action, in addition to an on-going monitoring and evaluation system. The aim of this chapter is to present and discuss the methodology of the new approach to e-planning within community development. At the same time, it provides insight in a case study on the development, application and embedding of new technologies in a neighbourhood of Helsinki, Finland.

Introduction

The emergence of network, information and knowledge societies in the last decades of the twentieth century has created great expectations for the revitalisation of cities and its neighbourhoods due to the availability of

information and communication technology (ICT). However, the history of the early shaping of urban internet space discloses that the hope and hype of ICT have not been fulfilled (Kasvio & Anttiroiko, 2005). The assumed digital cities in Europe in the 1990s were nothing more than electronic brochures, except for a few holistic digital experiments (Aurigi, 2005).

Nevertheless, from the beginning of the 21st century a digital citizenship has started to emerge. According to Karen Mossberg (2008, pp.1–2), “digital citizenship is the ability to participate in society online... It represents the capacity, belonging and potential for political and economic engagement in society in the information age”. Also the application of urban and community informatics ¹ and the appropriation of ubiquitous computing have begun to turn some places into real-time cities in which amateurs become urban planners (Foth, 2009). *Ubiquitous computing* means in its idealised form that ICT is present anywhere and anytime serving people through embedded electronic devices, programmes and sensory networks. It is envisioned that environments become intelligent and cities function online and in real time. The future ubiquitous society also promises to enhance the management of global issues on the local level and vice versa. On the other hand, Mika Mannermaa (2008) alerts that all people, as private citizens, public authority or as entrepreneurs, will continuously monitor and will be monitored. “Some brother” will always oversee, know and does not forget.

Even though a great variety of web-based examples of e-planning currently exists, it is the socio-cultural and political context that conditions and shapes the appropriation of ICT and its eventual benefits. For example, Denmark which scored number one in the United Nations E-Government Readiness Survey (2008), has had a long tradition of participation in most sectors of society. In contrast, Finland, which is technologically well advanced, but culturally lagging in participatory efforts, was placed number 45 in the section of the same survey that tapped citizen participation in the co-production of services. Nevertheless, some Finnish communities tend to be islands of internet-assisted cultures. For example, the web-site of Helsinki scored third out of 100 cities in the worldwide Digital Governance in Municipalities Survey, by Holzer & Seang-Tae (2008). Seoul is the leading city in the application and appropriation of digital technology. Also the USA has many technology-led experiments, especially with wireless community networks, but they tend to enhance the so called networked individualism (Foth et al.,

2008) instead of collective action, due to the weakness of American public sector in local communities.

Recent developments around the social media or web 2.0 have provided new opportunities for participatory e-planning and the development of local communities. Characteristic of the e-planning experiments is that they take place in a complex context comprising many actors with different interests. The goals and foci of action vary in terms of level, scope, depth and temporal regime. Conflicts often arise between aspirations towards networked individualism and collective action. Also the imbalance between technological determinism versus the social shaping of technology may hinder the progress of the endeavour. In addition, the fuzziness of digital terminology, which is still under construction (Medaglia, 2007), may increase difficulties, such as the confusion between e-planning, e-participation and e-governance.

Consequently, there is a demand for methodologies that can advance the process of e-planning and that can provide some coordination of the fragmented bits and modules. For this purpose, we have created a new approach to e-planning within community development. It comprises a framework and a set of tools for the contextual analysis and mobilisation of partnerships for collective action, in addition to an anticipatory monitoring and evaluation system (Horelli & Wallin, 2010). The aim of this chapter is to present and discuss the methodology of the new approach to e-planning and its application in a case study on community development that took place in a neighbourhood of Helsinki, Finland.

We argue that e-planning, which usually deals with complex and multilevel issues, benefits from an approach that is based on an expanded version of urban planning towards community development. It also comprises multidimensional monitoring and evaluation system that enables both anticipation of the outcomes and feedback of the progress during the planning and implementation. *The research questions* in this chapter concern the ways in which the new approach may enhance the e-planning of services and its role in the overall process of community development?

The chapter starts by putting e-planning in the context of other e-activities after which the methodological framework of the approach is described. The approach will then be applied in a case study, called Ubiquitous Helsinki. Finally, the methodology and future trends will be discussed.

E-planning within e-governance

Given that in many countries, the public has lost trust in the functioning of its governmental institutions, e-government and e-governance have been suggested as a means to improve or at least to complement governmental activities (Tolbert & Mossberger, 2006). The European Union and the United Nations have both recommended a renewal of the interactions between governments and citizens (Chadwick & May, 2003), by increasing opportunities for e-government and changing the orientation from government to governance. Governance refers to the processes and mechanisms that need to be followed to reproduce a successful community or a region (Thesaurus, 2009).

According to the OECD (2002), e-government provides opportunities to develop a new relationship between governments, citizens, service users and businesses, by using ICT for the purpose of service delivery, decision making and accountability. It is closely tied with e-democracy, e-participation, e-governance and even with e-planning, although the latter is not usually included in the e-family (Medaglia, 2007). However, as the research community lacks consensus on the core concepts and definitions of digital activities, we define them here from the perspective of e-planning, which we insert at the centre, between e-government and e-governance (see also Anttiroiko, 2003; Pessala, 2008).

E-government and e-governance are closely related to the digital administrative processes (*e-administration*), the organisation and delivery of services (*e-services*), democratic processes (e-democracy and e-participation), as well as e-planning.

If *e-government* refers to the totality of the political and administrative activities and processes of public bodies, assisted by ICT, *e-governance* is the practical management and development of those processes in the context of the four Ps – public, private, people-partnerships. According to Kickert et al. (1997), the policy networks, through which governance takes place, are stable patterns of social relations between interdependent actors which take shape around policy problems and programs. The same also applies to e-governance in its largest form.

E-democracy is a broad inclusive term that comprises all sectors of democracy (legislature, executive), all democratic institutions (legislative, consultative,

civil society) and levels of government (local, regional, national). It also impinges all kinds of participants (West, 2000; Norris, 2001; Vegh, 2003; Buchsbaum, 2008). In practice, it means the linking of citizens to the democratic processes and decision making via traditional and new, digital means. *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).

E-planning, especially participatory e-planning, can be an important instrument of both e-democracy and e-governance. E-planning services are increasingly being offered in the UK, Australia, USA and India in order to help the planning system deliver more efficient and accessible services and information. The problem is that the digitalisation of planning processes has so far been based on the traditional top-down approach which hinders the development of new approaches and methods (Kingston, 2008; Wallin & Horelli, in press). Therefore, we are focusing on the participatory and evaluative forms of e-planning in which the internet and other digital means reinforce and enhance the participation of all kinds of stakeholders in planning and community development. We define *participatory e-planning within community development*, as a socio-cultural, ethical, and political practice in which women and men, young and older people take part online and offline in the overlapping phases of the planning and decision-making cycle. It can take place via the internet or other digital and non-digital means (see Horelli 2002; Figure 3). Consequently, e-planning requires the understanding and appropriation of both process and content theories of planning (Taylor, 1998).

The framework of the new approach to e-planning within community development

The new approach to e-planning within community development is anticipatory, formative and action-oriented. Its *framework* assists in the interpretation of the mechanism of change during the planning and implementation phases, by providing concepts for understanding the context, process and outcomes of planning. The framework consists of future research, the co-production of ubiquitous technology and participatory planning.

Future Studies

Future research, foresight or future studies are an interdisciplinary field that tries to open up and expand the number of choices and their meaning in terms of the future. Part of the discipline seeks a systematic understanding of the past and present, and tries to determine the likelihood of future events and trends (Inayatullah, 2007). A recent finding by Mika Aaltonen (2007a) is the recognition of the importance of multi-ontology for decision-making and the consequent choice of methods of implementation and interventions. Multi-ontology means that stakeholders live in different systems of realities or strategic landscapes (linear, disruptive or visionary) which imply different causal assumptions (Figure 1; Aaltonen, 2007a).

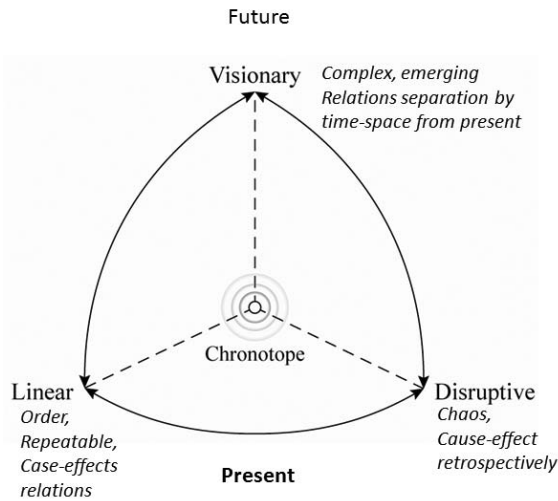


Figure 1. A Chronotope in the chronotopic landscape of different systems of causality. (adapted with permission from Mika Aaltonen, 2007a)

In the linear system cause and effect relationships are discoverable and repeatable, whereas in the chaotic disruptive system causal relations are only found retrospectively or they are not at all coherent. In the visionary system, the relations are separated by time and space from the present moment and they are often quite complex. The strategic landscapes can be assessed by the concept of chronotope (a place in time) that allows a reflection on the complex tradeoffs between the particular time frame (present or future) and the properties of the landscape. For example, moving from orderly towards chaotic circumstances means moving from known strategic landscapes, where the means and resources are more or less fixed, towards more

un-predictable landscapes characterised by discontinuity. Also moving from the near future to more distant time horizons means a step from tactical or operational to visionary measures and management. In the linear state where the cause and effect relationships are clearly repeatable, it is possible to apply methods, such as road-mapping and forecasting², whereas the visionary landscape might benefit from interactive scenarios, Delphi or weak signals³. The disruptive, chaotic state is of course the most difficult one. It can be approached through action research, pattern recognition and risk analysis (Figure 2; Aaltonen, 2007b).

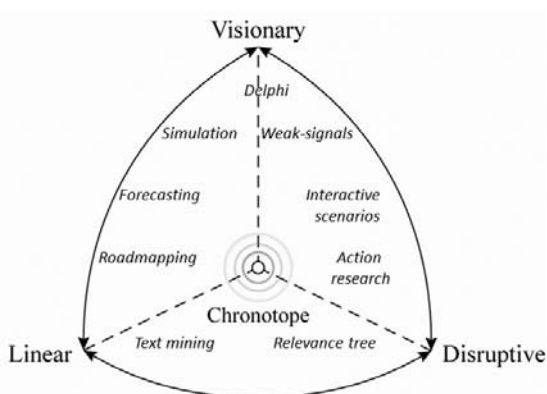


Figure 2. *Examples of the methods of sense-making in the chronotopic landscapes.* (adapted with permission from Aaltonen, 2007b)

As the future is not an extrapolation of the present, it is important to seek approaches that allow to see and influence the future by responding to and influencing what is emerging. According to Aaltonen (2007c), the future is story-driven. Good stories are able to express both the causal and temporal sequence of events. One of the tasks in the new approach is to analyse the ontological status of the planning and community development by assessing the chronotopic landscapes and the choice of tools for sense-making and storytelling (see also Sandercock, 2003).

Co-production of ubiquitous technology

Ubiquitous computing deals with information processing that envisions a thorough integration of everyday objects, activities and environments. It means that many computational devices and systems are simultaneously engaged in the course of ordinary activities. Ubiquitous technology, urban and community informatics included, can be accessed and distributed via

many channels and e-devices, such as sensory networks, radio-frequency identification tags, interactive whiteboards and above all mobile phones and the internet. The co-ordination and interactivity of the devices make the environment intelligent.

On top of the centralised infrastructure of informatics in the 20th century, layers of tools and modular platforms have been juxtaposed which enable material sensing, as well as decentralised participation and cooperation among groups and communities (Townsend, 2009). Urban informatics will also allow users to understand the larger impacts of their everyday decisions. People will be able to appropriate not only the particularities of the local but also connections between cities, and to engage with broader global networks (Williams et al., 2009). Consequently, users will become actors who are embedded in the *glocal networks* of mobile people, goods and information. Glocal means 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.

Social networking is enhanced by the so called social media (web 2.0). It refers to the new interactive, social tools that enable shared and user generated content in the internet (Bouton, 2009). Social networking services, such as MySpace and Facebook, have exploded the use of internet. From the perspective of e-planning, we are interested in the kind of social networking that provides e-services for the re-vitalisation of local communities. For example, the US-based, but globally disseminated Craigslist (www.craigslist.com) and Meetup-service (www.meetup.com) provide glocal services and enhance the building of online communities of interest for people who also share the same locality. They can even be accessed in Europe, but they have not been well embedded and appropriated in Helsinki, nor in Stockholm.

Although a great deal of hype exists around ubiquitous computing, the real-time city is already with us in part. The so called mobility tools, such as cars, cycles, public transport, the internet and mobile phones, as well as the simultaneous reduction in travel and communication costs have increased the geographies of social networks and the consequent activity space of people (the geography of locations known to a person; Larsen, Axhausen & Urry 2006). Internet and mobile technologies also affect the way people make use of urban space in work and leisure time (Jovero & Horelli, 2002; Forlano, 2009). In addition, the mobile phone allows us to map the city-dynamics and to transmit information about air pollution, street repair or cultural events to

city administrators. Thus we might say that the city is gradually re-engineered or re-designed through many small-scale relationships (Townsend, 2009).

According to the translation model of Bruno Latour (1987), technology is not a stable and independent entity, but part of the organisation, implementation and used processes. Technology may then be approached as a network of human and non-human elements which are constituted and shaped in network relations. The interaction of humans with technology generates change, which can be regarded as a co-production process of technology and its context. This also means that the transferring of different technologies from one place to another requires the rebuilding of the whole hybrid, namely the technology and its network.

Akrich (1995) and also Parker and Heapy (2006) describe the development of technologies and the services around them by using the concept of *script*. The latter is a scenario that defines, how an innovation or a service should be deployed and organised, as well as what roles should be taken and by whom. The script defines the socio-material network, but the actors perform and co-produce the technology and its organisation (see Koivisto, 2008).

Consequently, another task in the approach is to assess, envision and co-ordinate the co-development process; that is the mobilisation and organisation of necessary resources in the form of people, activities, material and money that are needed for a successful application. The results will then be incorporated in the improved script of the technology and its services.

Participatory planning

The framework also encompasses a special version of participatory planning, called the Learning-based network approach to planning (Lena). It is both a method and a set of tools to analyse, plan, implement, monitor and evaluate planning and community development. It was originally shaped within participatory projects with young people and women, and later on applied in the context of time policy and time planning. (Figure 3; Horelli, 2002; 2006; Horelli & Wallin, 2006). Lena is based on communicative and post structural planning theories (Booher & Innes, 2002; Hillier, 2008), as well as on the theory of *complex coevolving systems* (Mitleton-Kelly, 2003). The latter implies the parallel existence of tensions, created by order and chaos, the emergence of phenomena and processes, the self-organisation of different stakeholders, and their co-creation of products and systems.

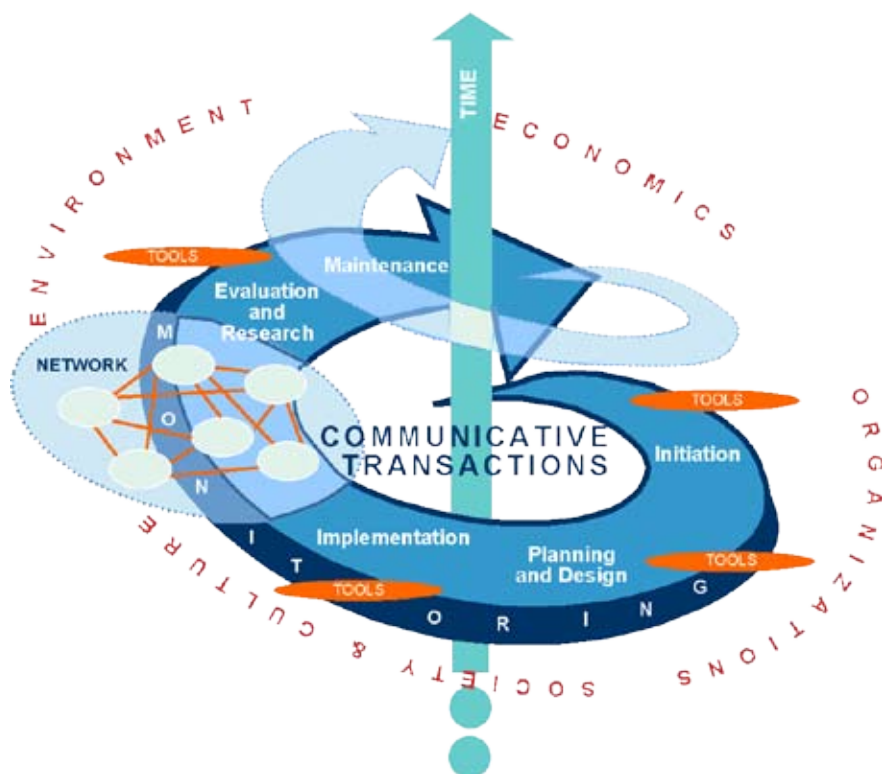


Figure 3. A schema of the methodological approach to participatory e-planning and community development.

The purpose of planning is to support the communicative transactions of the participants that take place in a specific environmental, organisational, economic, cultural, political and temporal context. Therefore, the transactions are enhanced by a variety of culturally sensitive enabling tools during the overlapping and iterative phases of the planning and development process (Figure 3). The tools are both enabling methods (consensus building instruments and other heuristics, e-techniques included), as well as traditional research methods. An on-going monitoring and self-evaluation provides the participants with feedback on the quality of the change process and its results.

The process of design and planning is iterative and recursive by nature. The designer or planner goes back and forth between the problem definition and its solution, between the material and the symbolic levels of subjective and socio-cultural awareness building. According to Zeisel (1981), two types of information are used in this creative process. On the one hand, synthetic image information, such as models or designs, provides a general

understanding of important issues or the physical ideas pertinent to their resolution. Analytic test information, on the other hand, is necessary for evaluating the good and bad points of a given hypothesis in design. Even if it is an oversimplification to speak about the various phases in planning, it is evident that different kinds of knowledge are required in these stages of the planning process (Siemens, 2006). The projects usually start with an analysis and sense-making of the context with partners. The initial phase also includes the preliminary visioning of the future, for example imagining the spread of accessible e-services.

Citizen groups tend to see participatory planning and community development as a form of empowerment, if it is fairly organized. However, Booher and Innes (2002) indicate that only the network approach to planning provides an authentic situation for participation. As networks cannot be commanded, but only nurtured, they require just a few, core principles or strategies of implementation and embedding. Embedding refers to the collective capacity building, learning and coordination process of the stakeholders and key actors, supported by different techniques (see Siemens 2006).

The strategies of planning within community development might comprise the creation of meaningful events (buzz), participatory networking, capacity building, application of ICT, informing and marketing with all interventions, application of art and creative methods, as well as the co-production of on-going monitoring and evaluation (Horelli, 2003). Thus, the chosen strategies will hopefully mobilise the stakeholders to create and reproduce the nodes and connections of networks that eventually provide the supportive infrastructure of everyday life and eventual social capital (Engeström, 2008).

According to the Finnish experiences (Horelli, 2006; Horelli & Wallin, 2006), gender-, age- and ethnically sensitive coordination is of utmost importance in Lena. It is not about enforcement, but about constant negotiating and interacting with different partners. This presupposes that special attention is paid both to the variety of temporalities (Bryson, 2007) and to the gendered necessities and contingencies of everyday life.

A third task of the approach is to anticipate, monitor and provide feedback of the evolving process and expected or unexpected impact by enhancing the co-creation and integration of a multi-level and multi-dimensional evaluation system in the planning and community development.

An example of the new approach to e-planning – case ubiquitous Helsinki

The new approach to e-planning was applied in the Ubiquitous Helsinki-project (2007–2009), funded by the Finnish Funding Agency for Technology and Innovation (Tekes). The consortium was a private, public, people-partnership. It comprised several companies, University of Technology (HUT), Technical Research Centre of Finland (VTT) and the Helsinki Neighbourhoods Association (Helka). Their representatives formed the core group of the stakeholders. We will describe the main features of the project, the evaluation strategy and the assessment of the process and outcomes.

The project

The goal of the project was to plan and co-produce ubiquitous services of everyday life and events, in the context of community development of two Helsinki neighbourhoods. The project consisted of action research and a living lab test of digitally provided local services. The living lab was a real-life iterative experiment of co-production and e-planning in the neighbourhood.

The resources consisted of the budget and the evolving network. Two thirds of the total budget, 1 250 000 euros, was targeted at the development of two software tools, the 'recommendation machine' and the 'meeting point' which will be described later. The rest of the budget was used for the service pilot, management and mobilisation of the network. It also financed the purchasing of other programmes and technical applications, such as GIS (geography informatics system)-based navigation data, web 2.0 tools and service data.

The network of participants consisted of fifteen different organisations. The number of network members varied between 60–100 people, depending on the purpose and intensity of involvement. The network comprised enablers, users and end-users. There were

- 1) representatives of the enablers who stood for the technology, management and research, as well as the service providers, who were the main contributors to accessible services in practice
- 2) providers of local content information and services, the local forum group, the community house, libraries, child care-centres, local enterprises and business to business (b-to-b) organisations

3) end-users, such as inhabitants and local workers.

There were as many women involved as men, however, some gender differences were conspicuous. The majority of women participated in the management and service provision, as well as in the building of the portal while men co-created most of the technical applications. This horizontal gender gap is mirrored generally in Finland, where men work with technical and operational tasks, and women in public services and administration. The digital gap is low in Finland, according to international comparisons (Pessala, 2008). The majority of working people has access to broadband internet connections and also know-how to behave in the mobile and PC environments.

The implementation of the project meant constant iteration between the developers and users. The Helsinki Neighbourhoods Association (Helka) implemented the living lab test. It worked to enhance the collective capacity and social capital of its 56 neighborhoods by developing their local web-sites, called Kotikatu (Home street). The lab test took place by co-creating *a locally based service and partnership platform* that could be accessed by the cellular phone, PC and TV screens in public space. Helka steered not only the objectives of the ICT-tools, but also formulated the technical requirements of web and mobile applications, which is unusual among non-ICT-related NGOs. The HUT-research group (which included the authors) supported Helka both financially and with practical know-how. In addition, the VTT research group, which was responsible for the management of the project, provided mobile and semantic web tools that were co-produced with ICT-enterprises.

Monitoring and evaluation covered the whole life cycle of the project. The HUT research group was responsible for the evaluation design, though the data was gathered in conjunction with the stakeholders (see Horelli & Wallin, 2010). The evaluation questions focused on several operational areas with the main question exploring the role of ubiquitous technology and e-planning within community development. The choice of criteria and measurable indicators were negotiated in the core group. The criteria were influenced by the aim, object and context of the evaluation, as well as by the framework, described at the beginning of this chapter (see Figure 4). The evaluation design consisted of the following set of intertwined assessment activities:

1. assessment of the chronotopic diagnosis (ontological perspective),
2. monitoring of the operational level (socio-technical perspective),
3. collective appraisals of the cycles of planning and development (project perspective),
4. thematic evaluations (institutional or systemic perspective).

The methods and instruments of research and evaluation that were applied, included questionnaires and interviews, analysis of documents, usability studies and, above all, timely dialogues in different focus groups, meetings, seminars and workshops.

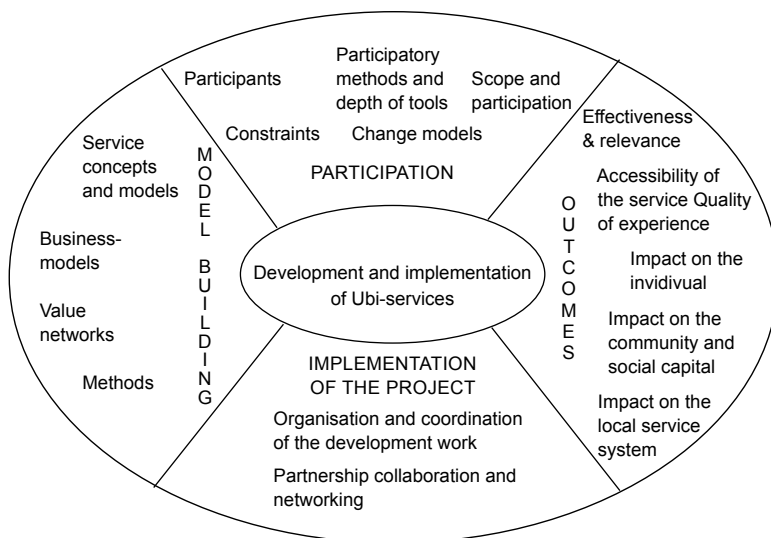


Figure 4. *The ellipse of the monitoring and evaluation criteria of the Ubiquitous Helsinki-project.*

Evaluation of the process

Assessment of the chronotopic landscape of the project was conducted by the researchers with core stakeholders (Figure 1; Aaltonen, 2007a). It was an assessment from the ontological perspective that took place alongside the contextual analysis of the initial conditions and policy context of the project. On the basis of this assessment, appropriate visionary techniques and road mapping were applied (Figure 2). Inspired by the Metaverse scenarios (2007) the guiding vision was constructed on the basis of two continua: the spectrum of technologies and applications ranging from augmentation to simulation and the spectrum ranging from external, world-focused to a shared one in

the virtual world. The continua bring forth four different types of future scenarios, which are already emerging (Figure 5). In *Augmented Reality*, the use of location-aware systems and interfaces enhance the external physical world for the individual, for example tags in the hotel lobbies or packaged goods that can be read using the mobile phone. *Life Logging* describes the capture, storage and distribution of everyday experiences and information. It serves as a means of providing useful historical, as well as current status information that can be shared with others by sending on-line messages via the web or mobile phone, linked to pictures and personal experiences, as in social networking sites, such as Facebook. *Mirror Worlds* are informationally enhanced virtual models or maps of the world around us that can be annotated, such as Google Earth. They help people orient in their environment. *Virtual Worlds* augment the economic and social life of physical world communities. A key component of this Virtual World scenario is the avatar. It is the user's personification in the Virtual World, which can learn new skills and competencies, for example in Second Life.

The vision was discussed by the core group who partly operationalised it into a roadmap that showed the partners what their goals were in terms of time, space and outcomes. The road-map formed the preliminary version of the script (Akrich, 1995) that defined, what should be developed and how the services should be deployed and organised. In practice, it implied the co-creation of new software for mobile, internet and urban TV screen

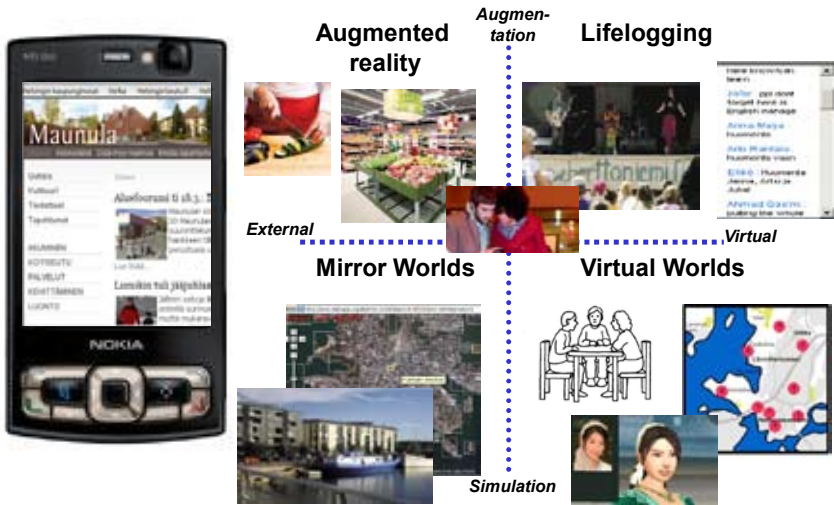


Figure 5. The vision of the Ubiquitous Helsinki-project (adapted from Metaverse, 2007).

transmission, as well as appropriate service contents for the multi-channel environment, such as the local calendar and Help Desk services which will be described in the next paragraphs.

The script took the form of a state of the art report (Horelli et al., 2008) which described the possibilities of living lab testing with new technologies, service contents and e-planning. The road-map and the report were part of the *thematic evaluations* which were conducted from the systemic or institutional perspective. The report positioned the partners in the network and enabled them to further elaborate their own goals in relation to the project.

From the end of 2006 to the end of 2008, the project progressed from the initial visions to the first co-produced software applications. *The monitoring of the operational level*, (the socio-technical perspective), took place among others by testing the applications in a festival of seven events. Later on the applications were tested in contexts where the local inhabitants could use the software in order to get public, private and NGO services in their neighbourhoods. The usability of the applications, as well as the contents were co-developed according to the feedback and individual wiki-corrections during the testing.

The consortium partners met in a large assembly every four months. In addition, smaller task meetings or 'timely dialogues' were organised several times a month. The possible outcomes were sketched meeting by meeting, negotiation after negotiation. Gradually, the interpretations of the goals started to change from purely technological ones towards socially-oriented aspirations. The dialogues were monitored and facilitated by the HUT research group. HUT also arranged special workshops in which partners could give feedback and assess the total value of networking. *The collective appraisals of the cycles of planning and development* (the project perspective) took place in these sessions.

The planning and development process was time-consuming and at times quite strenuous. The biggest problem was the lack of socially sensitive management. The responsible organisation for the latter was mainly focusing on the technological goals, ignoring the embedding and appropriation of the artefacts. It took one year before a common language was found during which some business partners quit the project. This also negatively impacted the formation of value networks and new business models. Gradually the rest of the partners learned how to collaborate smoothly, at least in part, due to the FMA-approach.

Evaluation of the outcomes

The outcomes of the project were assessed according to the chosen criteria, such as effectiveness and relevance (Figure 4). Several of the concrete goals were achieved, such as developing *product innovations* like the *Recommendation engine*. The latter is a simple semantic web tool that selects and combines information from different web pages⁴. Another innovation was the new semantic application, the *Meeting point-tool*, which can be deployed via the internet and the mobile phone. It enables people to invite their friends to a certain event, fix the time and place of the meeting and follow the journey of their friends in the city region.

The *service innovations*, such as the web-based calendar programmes, RSS-feeds and other sophisticated links, made it possible to create digital service and community portals or shared web spaces, where people can communicate and link the sites with real-life places. The expansion of the former service help desk into *Everyday life-services* allowed people to reach a variety of local services, make orders and monitor the accessibility and availability of services, such as child care, cleaning, repairing etc.

These tools and services have transformed the local neighbourhood web-site into a *local service and partnership platform*. The latter refers to the technical and social construction of the web and mobile devices and services by the stakeholders. This platform enables local interest groups and individuals to share their knowledge about events, services or local news. This way a larger audience is reached than through individual web sites. Consequently, the platform allows local inhabitants to see, what is going on in the area. They can call their friends and neighbours to join the events. Some context aware content, such as weather, transportation time tables, event locations and details, are also available as a mobile service. Thus, three of the scenarios in the initial vision (Figure 5), the Augmented Reality, Mirror World and Life Logging, have been partly realized, although not yet appropriated by large groups of people.

Evaluation from the socio-technical perspective revealed that the end-users found the chosen software applications useful. According to the test group interviews and usability studies, people wanted to have new tools and contents which would enable a smoother and faster use of the web.

The digital information and services were not the only amenities in the portal. The service and partnership platform enables informal capacity building, as

people get acquainted with planning and development issues and take action in local politics, or co-produce new services. The estimated number of users for these services in Helsinki is from a few dozens to over 500 000 people depending on the service. It is likely that the new applications will improve the accessibility of the current services and provide some new ones. This might strengthen the infrastructure of everyday life of the neighbourhoods. In addition, the public, private, people-partnership has strengthened the informal e-governance, as the local work groups and the local forum have been intensively involved in the co-planning of the web-site.

The traditional innovation process was turned around in the project. The users were drawn to the same operative level with enterprises and enablers. The applied approach had an important broker role in the networking, mobilisation and capacity building of the project stakeholders (Kao, 2009). The local network of NGOs and SMEs were connected to the city administration and big enterprises, to funding bodies and to technology policy, which in turn provided resources to the local level. In conventional working such networking would have been difficult without mediation and the project management less competent.

The co-production of the local service and partnership platform has gradually begun to transform the pilot neighbourhoods to collective digital spaces. At this stage, it is not possible to assess the impact of the project, as it will take more time to see the effect on the networking of the stakeholders and the consequences for individuals and the community.

To answer the evaluation question about the role of ubiquitous technology in the enhancement of services within community development, one has first to define what ubiquitous technology signified in this project. In practice, it meant a set of new mash-ups and software applications that are suitable for multi-channel delivery through PC and mobile environments, as well as through urban screens. When co-ordinated, they make a hybrid infrastructure of communication for the real-time city (Saad-Sulonen, 2005; Aurigi & de Cindio, 2008). Ubiquitous technology, like ICT in general, is not deterministic, but seems to have a catalytic role that inspires and engages the stakeholders to take action for the community (see also Rettie, 2008).

The question concerning the role of the new approach to e-planning within community development revealed that the role implied several functions. It comprised provision of assistance to the core participants in the choice

of both visionary and operational objectives. It also meant enhancement of connections between the three Ps in the co-production of services. Above all, it included the provision of multi-layer feedback of the conditions, structure and content of desirable digital services.

Conclusions and discussion

We have argued in this chapter that, as e-planning takes place in a complex and dynamic context, consisting of many stakeholders with diverse interests, it benefits from a new approach within community development. It requires a transdisciplinary framework. In this particular example it consisted of future studies, the co-production of ubiquitous computing and participatory planning. Other disciplines can also be adopted according to the context.

We will now discuss the ways in which the new approach may enhance the e-planning of services and its role in the overall process of community development.

The new approach to e-planning as speeding the embedding of outcomes

E-planning within community development was defined in this chapter as a socio-cultural, ethical, and political practice in which women and men, young and older people take part online and offline in the overlapping phases of the planning and decision-making cycle. Participation can take place via the internet or other digital and non-digital means. E-planning implied in our case study the planning and co-production of web-based tools, as well as a service and partnership platform in the local web-site. Embedding the e-planning in community development assisted the co-creation of the platform, which was at least partly appropriated by a network of stakeholders inside and outside the community. The stakeholders represented women and men in diverse roles, such as professionals, politicians, enablers, service providers and end-users. Thus, the animated and embedded local web-site became the outcome of the development process and eventually a real instrument of urban planning (see Staffans et al. in this book).

When the web-tools of the case study are examined closer and compared to the glocal Meetup-service and the Craig list, the new Meeting point and Everyday life-services, co-created in the project, were better tailored to and

embedded in the local context than the American exemplars. This happened at the cost of losing the global dimension. This is a serious problem, as the aim of the Ubiquitous Helsinki was to spread the tools and the service and partnership platform in the capital city area and beyond to other cities. According to Bruno Latour (1987), technology cannot be transferred without taking into consideration its context; i.e. the network in which it has been co-produced, implemented and embedded. Hopefully, the new approach to e-planning and the social construction of technology will assist in the future efforts to transfer the results. The glocal dimension can be further enhanced through both networked individualism and collective community action (Horelli & Wallin, forthcoming; Foth et al., 2008) around the local web site with themes, such as climate change, environmental protection, etc.

The new approach as co-creation and script enactment in context

In the Ubiquitous Helsinki-case the scope and level of goals extended from tools and platforms to the local web-site with the potential to become instruments of urban and e-planning. Usually the outcomes have to be explained by a change theory or a change mechanism. According to Aaltonen (2007c), change can be explained by examining the interplay of three forces: sensitivity to initial conditions, the final cause and circular cause. In complex contexts, the challenge is to identify and influence the system's initial conditions, as they are emerging. *Sensitivity to initial conditions* took place in this case study by encouraging the stakeholders to conduct a contextual and chronotopic analysis. It resulted in the strategic envisioning of the future and an operational roadmap with concrete goals. Thus, it set the scene for *the final cause*; i.e. the goals. It also meant the beginning of the collective script-writing that was enacted by the stakeholders during the project and even after it. *Circular causality* works in loops and circles. Activities on the micro-level may give rise to effects that can be identified on the macro-level and vice versa. Emergence can be explained by the great amount of small causes interacting all the time. Therefore, it is important to carefully nurture the emerging network of participants and its nodes and relations (Horelli, 2009).

As connectivity and feedback influence the evolution of the development process, the new approach to e-planning applied a whole set of orchestration tools: spaces for deliberation and negotiation, networking and knotworking

(Engeström, 2008), capacity building, and interpretation of terminology and statements. It also implied a self-critical and reflexive approach in which sensitivity to gender, age and culture are seminal. The recognition of multiplex causality and the application of appropriate intervention and assessment methods seem to be important for the balancing of the desired degree of chaos and control, during the various cycles of e-planning. This was not sufficiently well done in our case, as some important business partners left the project.

In practice, the new approach seems to have the potential to enhance e-planning within community development, first, by assisting in the choice and clarification of both visionary and operational objectives leading to the script of the planning and development. Second, by connecting the three Ps, private, public, people, to the co-production and embedding of services. Thirdly, by providing multi-layer, anticipatory monitoring and assessment of the conditions, structure and content of desirable outcomes. In addition, the approach also implies the mediation of the connections between the operational, strategic and policy-making levels. Thus, it makes the necessary feed-back loops between and within levels shorter. This is important, since e-planning seems to deal with a design that requires the creation of rapid feed-back loops. Issues at stake also presuppose a short path between policy making and the day to day activities.

The planning, implementation and embedding of the digital infrastructure are vital components of community life. We agree with Harvey (2007) that e-planning and ICT-assisted community development do not just take place by designing web-sites but by providing the necessary infrastructure and resources through the co-creation, appropriation and evaluation of community portals. This kind of process will drive foot traffic to local businesses, neighbourhood organisations and community events. Eventually, it might revitalise the community. The future trends will imply a strengthening of community informatics, meaning that ICT, will increasingly be applied for the empowerment of communities. In this trend, the new approach will have an important role to play.

The side effect of the co-production of digital devices, and e-planning in general, is that they gradually transform the context of local communities into digital urban or even rural space. Digitisation of the environment means that the whole set of urban and community informatics, such as interactive screens and wireless networks, becomes part of the e-planning network.

As the new approach relies on the networking and negotiations of a great number of diverse stakeholders, it provides capacity to anticipate the positive and negative impacts of the digitised future on the experience and behaviour of citizens. Thus, it is important to continue to study the question whether e-planning, with the increasing palette of mobility, social and digital tools, will enhance the opportunities to master everyday life in the glocal context.

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Endnotes

¹ Community informatics (CI) means the application of information and communications technology (ICT) to enable and empower community processes (Gurstein, 2007, p.11).

² Forecasting is the process of estimation in unknown situations based on time series, cross-sectional or longitudinal data (Glenn & Gordon, 2003).

³ A weak signal is a factor for change hardly perceptible at present, but which will constitute a strong trend in the future.

⁴ The Recommendation engine (RE) was introduced to all sorts of local web pages, such as the sites of public institutions, private enterprises and individual persons. It gathers and combines information according to chosen attributes, for example, from certain genres of art, local typologies or schedules of events and services. The RE requires that cookies are allowed in the computer. The cookies tell the RE which pages have been browsed on the basis of which it makes the recommendations. The cookies enable the tool to be used without sign-in protocols and profilations of the user. They also ease the privacy preserving issues both for the users and the web pages that provide the information for the RE. which may open a door to a new way of perceiving and knowing in localities. As knowledge and learning even in planning and community development are very much dependent on their ecology, we should seek to build such knowledge ecologies that enable communication, knowledge creation and dissemination through many interdependent and connecting elements (conduits). Connections change the content of knowledge. Urban planning craves content that is current, relevant and contextually appropriate.

Therefore, the great challenge is, how to transform the Finnish planning system to recognize the seminal role of the ecologies of digital tools and knowledge, as well as the hybrid infrastructure of communication in the participatory e-planning and community development.

CONCLUSIONS

– TOWARDS AN ECOLOGY OF DIGITAL TOOLS AS EMBEDDED IN PARTICIPATORY E-PLANNING

SIRKKU WALLIN
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The articles in this book give an overview of the variety of digital tools that have been developed and used in Finland in order to support participatory urban planning and community development. Although many of the tools and their development processes have been entwined, at some point or another, they have so far remained dispersed and independent initiatives. By bringing the different experiences together, we hope to open an investigation on the ways the different tools and approaches can complement each other.

Each article provides insight into the different ways through which ICTs have been applied in urban planning and in citizen participation on the neighbourhood level. All the examples presented in the book highlight the fact that ICTs have the potential to facilitate citizen participation. They also seem to transform the methodology of participation, as well as the process of urban planning itself.

An ecology of tools

The Finnish urban planning system crystallizes in an individual planning case. Participation takes place inside the planning phase. The initiation and the aim of the planning have been defined by the administration and the owner of the land. Inhabitants and NGOs have only been involved

after the decision to start planning has been made. Planning surveys and ex-ante impact assessments have been simultaneously conducted with the participatory procedure. The core structure is the same in the regional, master and detail plans. This limited and overloaded procedure of planning has received a great deal of criticism. Some critics claim it as a failure of participation itself. Some cry for an improved procedure in which the compulsory steps could be optional.

In spite of the dispersed development of digital tools, the research and practice should advocate for a more holistic span of methodologies in participatory urban planning. None of the tools, described in the articles, is sufficient by itself. It is important therefore to consider the wider constellation of tools that can be harnessed for participatory urban planning purposes. Many of the articles have mentioned, in addition to the Web 2.0 or social media, also the importance of the non-digital communication tools (flyers, posters, newspaper advertisements).

The advantage of the tools lies in the diverse nature and the possibility to use them in the different phases of the planning process as individual operators. The softGIS tool is a sophisticated research instrument that also offers useful information for planning projects and has been developed in close cooperation with various actors. In the early cases softGIS information didn't, however, merge well enough into the actual planning processes. Therefore, the current development work of softGIS concentrates enhancing the participative approach throughout the planning process.

The examples of the commentary tool, such as the Urban Mediator, require a context in which the sharing and use of the collected information can be transferred to support planning processes. In the case of the Espoo Forum, the required arena was founded, but it was tightly connected to the planning cases and to a channeling of planning knowledge that might not be part of the core interests of inhabitants. Thus, the Espoo Forum is not yet agile and adaptive enough to tap multi-sectoral issues, which the planning processes must face today. On the other hand, the neighbourhood websites, provided by Helka, enhance participatory processes in urban planning and community development, although they are not urban planning tools per se.

The Urban Mediator and the mobile tool developed in Oulu are useful in triggering residents to engage in the urban planning process, at its beginning, before any plans are made. In an ideal world, these tools should be combined and offer a new interface to the other tools, such as the softGIS for data

analysis purposes, or the Espoo forums and Kotikatu, for distribution and collective archiving purposes. Moreover, the different methods used in the different cases can also be combined or can complement each other.

The collaborative design approach presented by Saad-Sulonen and Botero, ensures that the development of the tools is done in collaboration with citizens and urban planners, and that the tools can be designed in such a way that they can be further co-developed through their use by the interested stakeholders. This approach could, however, benefit from being embedded in the action research approach illustrated by Wallin and Horelli. Then the nurturing of the interaction with the local stakeholders is of primary importance, and the Public-Private-People-Partnership model ensures interaction possibilities with many stakeholders. The softGIS methodology is in itself useful for all the projects, because it provides a reliable analysis of the location data gathered, and translates it into a format that can be easily appropriated by planners and decision makers. The lack of such an analysis in the Urban Mediator and in the Espoo Forum meant that a great deal of the gathered information was left unexploited.

When thinking in terms of an ecology of participation (Salgado, 2009) or a communicative ecology (Foth & Hearn, 2007), citizens and planners are not compelled to use only one tool or one system, but they can choose the tool that will best support their everyday practices. Moreover, the concept of communicative ecology adds to the online/offline dimension, also the local/global and the collective/networked dimensions (Foth & Hearn, 2007). Thus, the dispersed tools can be seen to form an ecology in the sense that the different types of tools, both digital and non-digital, as well as their organization and interdependences, can complement one another in the participatory planning context. Salgado (2009) uses the 'ecology of participation' as a conceptual tool that assists in understanding the specific mechanisms at play when designing for participation. The elements involved in the ecology are the community, interactive pieces, the places and practices. The context of Salgado is the museum, whereas ours is participatory urban planning and community development.

Future challenges – expanding urban planning

Without a wider context of the urban planning process, the digital tools will remain detached from the main substance of planning. When expanding

urban planning to community development, it will need support from participatory e-planning. According to Horelli and Wallin in this book, participatory e-planning can be defined as a socio-cultural, ethical, and political practice in which women and men, young and old people take part online and offline in the overlapping phases of the planning and decision-making cycle.

Thus, participatory e-planning means an expanded version of planning as such. Wallin and Horelli (2009) have proposed in an earlier article of the Finnish Evaluation Society that urban planning should be both horizontally and vertically expanded. The horizontal expansion of participatory urban planning means that the planning process is seen to be embedded in community development and co-governance, aided by a variety of tools (Figure 1). This brings forth the substance of participation.



Figure 1. *The horizontal expansion of urban planning.*

The vertical expansion means that the process of urban planning has a preceding phase in the form of strategic planning and a concluding phase in the form of ex-post evaluation of the implemented plan and occupied settings (Figure 2). In the phase of strategic planning, open discussions about the objectives and purpose of planning can be dealt with. Evaluation information could provide important knowledge for anticipation and

decision-making. The use of new participatory planning tools, such as the Kotikatu pages and many ad hoc surveys, conducted by the Urban Mediator, could enhance this renewal. After the initiation of the planning case, the forums, such as the Espoo Forum, could provide powerful elements to the ecology of knowledge and learning for the planners to use. After the plan has been implemented and the construction work done, the Soft GIS could provide important information concerning the experiences of the living environment and assist in the analyses that enable the anticipation and forecasting of the strategic planning. At the moment, all these tools are used only at the phase of statutory land-use planning.

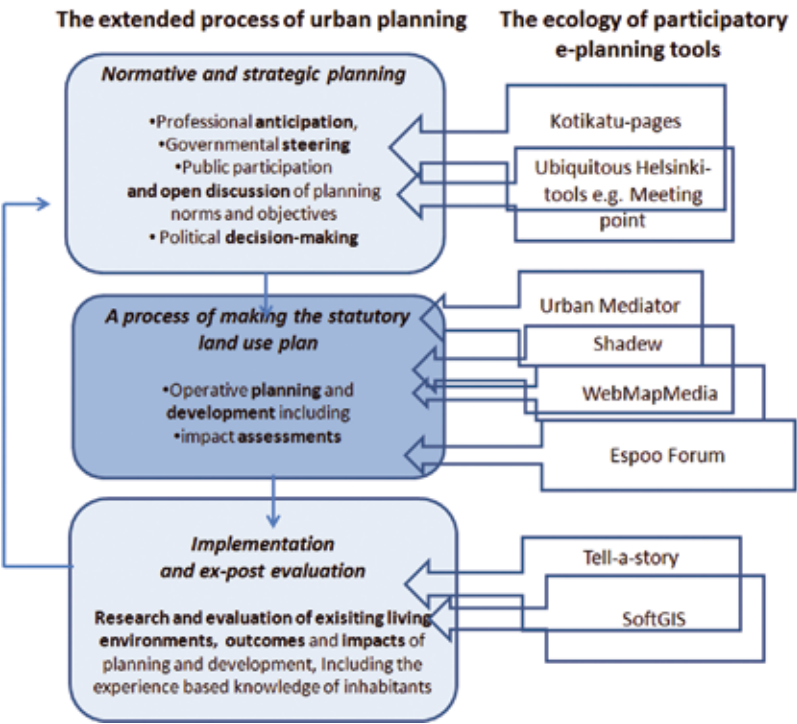


Figure 2. The vertical expansion of urban planning as the context of e-planning tools (Wallin & Horelli, 2010).

The future developments in participatory e-planning and community development include both planning and infrastructural challenges. In terms of planning, the Finnish Building and Land Use act of 2000 is not enough for pushing the development of more participatory and collaborative planning practices. It focuses on ensuring the possibility for residents and

other stakeholders to comment the plans that have already been drafted by the city planners. The chapters by Kanervo, as well as Staffans, Rantanen and Nummi show that the local online sites can help to provide citizens a shared platform, where their own initiatives can gain momentum. However, it is still the task of citizens to influence the official planning processes. Saad-Sulonen and Botero's article indicates that planners themselves can benefit from consultations with citizens, before they start drafting their plans.

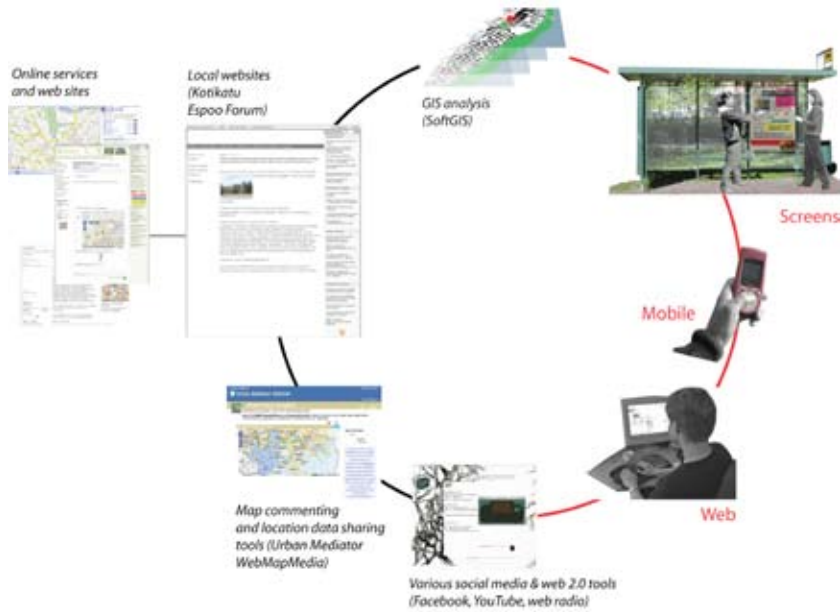


Figure 3. The hybrid infrastructure of communication is the way to organize and use the ecology of tools in a specific context of participatory e-planning (adapted from Saad-Sulonen, 2005).

Another important challenge lies in the provision and maintenance of a hybrid infrastructure of communication which is the way to organize and use the ecology of tools in the specific context of participatory e-planning (see Figure 3).

ICTs make asynchronous communication possible, thus liberating citizens from the constraints of time and place. They make it possible for people to voice their opinions or give feedback, anywhere, at any time. The success of tools that make use of online maps indicates that location-based information

is relevant for both citizens and planners (softGIS, Urban Mediator, WebMapMedia, Meeting Points). Moreover, the fact that mobile phones are currently equipped with GPS receivers, makes it possible to contribute to and retrieve location-based information in-situ (Tell a Story). The potential of using urban screens is also relevant to the displaying of local information (Ubiquitous Helsinki) and to acting as an interactive platform (Ojala et al. 2010).

Whereas computers and mobile phones are ubiquitous in Finland, it is interesting to note that the urban digital screens exemplify a physical infrastructural challenge: Who could be willing to provide urban screens for local use? Who could provide and maintain a hybrid infrastructure of communication? Mediators, such as Helka in Helsinki, are good candidates for such a role. Helka supports communities through the provision of infrastructures, but does not interfere in the provision of content, which is created by the community itself. However, resourcing remains a problem, but it might be addressed through the PPPP-model tested in the Ubiquitous Helsinki-project. The role and the relevance of Open Source-tools have also been addressed. All tools presented in this book, except the softGIS, are Open Source tools. Therefore, they can be developed further by other developers, either in the local or in the wider global context.

The purpose of the hybrid infrastructure of communication is to assist in building and disseminating knowledge concerning the local context, intentions of the users and the planning process. According to George Siemens (2006), the conceptual view of knowledge has changed from static to dynamic and multi-faceted. Knowledge can be seen as consisting of different states along a fluid continuum. Hard knowledge is crystallised into articles or books. It occurs in fields, where change is slow, such as constructs, concepts and regulations. Soft knowledge is volative and emerging (tacit, insights, ideas). The chapter by Staffans et al. illustrates, how the managing of hard and soft knowledge as a continuum requires different processes and tools, even in urban planning.

Instead of dealing with knowledge through categorisation and hierarchies, the focus should, according to Siemens (2006), be on networks and ecologies of knowledge. The hybrid infrastructure of communication can thus also be seen as sustaining an important knowledge and learning ecology which may open a door to a new way of perceiving and knowing in localities. As knowledge and learning even in planning and community development

are very much dependent on their ecology, we should seek to build such knowledge ecologies that enable communication, knowledge creation and dissemination through many interdependent and connecting elements (conduits). Connections change the content of knowledge. Urban planning craves content that is current, relevant and contextually appropriate.

Therefore, the great challenge is, how to transform the Finnish planning system to recognize the seminal role of the ecologies of digital tools and knowledge, as well as the hybrid infrastructure of communication in the participatory e-planning and community development.

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