INFORMATION TECHNOLOGY AND CLOUD COMPUTING ALTERING THE SEARCHING AND TRAINING OF INVOLVED URBAN PLANNING

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ABSTRACT: Technological change has greatly impacted everyday life. In Finland, for example, 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 global, 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 Consequently, urban planning and the methods for citizen participation in complex urban issues should also be changing. Digital tools invite people to experience urban space in new ways. The massive invasion of IPhone, 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 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.

KEY WORDS: urban planning, smart city, innovation adoption, geographic information systems, information technology system

INTRODUCTION

The field of participatory urban planning has remained surprisingly stable for the past twenty years [1 - 9]. The ethos and methods of participatory planning are widely accepted, but so far poorly used in the daily planning practice. However, the interest of the inhabitants in their environment, is growing fast [10 - 15]. The stakeholders are even

eager to act locally on an ad hoc basis and to channel their activism through the Internet [16 - 25]. The planning professionals appreciate local knowledge, but they are so far unable to use the information in the planning process [25]. The digital tools and the demand for open-access applications for citizen participation do not make the situation easier for the planners [26 - 35]. The situation is equally demanding for the researchers of participatory urban planning [36 - 40]. 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 [41]. Urban Planning dated back its history since the cities have existed [42]. Early city planning was revolved around some vital elements as buildings and fortification and has undergone a massive transformation throughout the centuries [43]. The 20th century has witnessed several audacious ideas that radically changes the course of conventional urban planning [44 - 50]. Therefore, this article is an effort to scrutinize the role of Information Technology development in the chronological transformation of Urban Planning domain using the exploratory research approach [51]. In this research, it is argued that the theoretical and practical understanding of Urban Planning should absorb and integrate the bright outcome of the rise of Information and Technology to foster congruent future urban development [52]. The article addresses the trends of transformation in the urban planning domain through the myopic lens of the expansion of information and communications technology era followed by investigating the key drivers shaping the interaction between modern-day urban planning and information technology considering both the dark and bright sides into account [53]. Digitalization of city and development of ICT has modified the conventional notion of urban space and information and hence the urban planners must adapt to this change concentrating the interdependence of IT and urban planning [54]. The rapid boom of communication and transportation networks has improved cross-boundary accessibility beyond the political as well as geographical boundaries of the cities and the nations [55]. Cross-cultural exchange and the suburbanization has resulted in the cities with heterogeneous global culture with changing nature of spatial order. In the age of globalization, the development of ICT is believed to build virtually a single structure through interconnection among the global cities via communication networks [56]. The subsequent sections will highlight the ground breaking interventions bring into light by the development of ICT and AI sector in the Urban Planning Domain [57]. This is a book about digital tools in participatory urban planning and community development [58]. We argue that technological change is simultaneously a great opportunity and a challenge for participatory urban planning [59]. The practice of ICT-assisted participatory planning is yet sparse and dispersed [60]. The aim of the study 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 [1 - 5] . We bring together, for the first time, the trans-disciplinary expertise of researchers and practitioners who are contributing to the development of ICT-assisted or even participatory e-planning in Finland as a case study [6 - 10] . 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 The book comprises three different approaches to the digital tools [10 - 20]. 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 [20 - 25]. The second approach focuses on tools that enhance the participation of different stakeholders in the planning and community development processes [25 - 30]. 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 begun simultaneously. In 2000, the new Land Use and Planning Act made public participation obligatory in the planning processes. 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 [20 - 40]. Some of the researchers closely collaborated with the Helsinki Neighbourhoods Association, 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 research. Even if all the cases begun with a development project that proceeded in an iterative way, some tools were launched as part of straight forward research and development [40 - 55]. Others took more time, as they were engaged with the co-production by the users. Some of the tools were taken to use, as they were co-developed. They produced information on maps, which the planners and the inhabitants can use later on and some tools were pilots, which could be taken to use immediately [56-60].

RESEARCH METHODOLOGY

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 [17 - 22]. The study begins with an article on the soft GIS method, in which many studies 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 other article, 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 many researches by many anthers 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 [34 - 40]. 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 many researches have 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. Our methods with respect to provide a new perspective to the practice of participatory urban planning [26 - 30]. 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 study closes with the article who describe the web 2.0 tool development as part of a community development process [45-50]. These tools were developed on the local web pages that and provide the background to the conclusions, which claim that the development of ICT-tools will change both the practice and research of participatory urban planning [51 - 60].

CONCLUSION

In this attempt to think together smart cities and innovative clusters we arrived to a certain number of conclusions. First, it really makes sense to link the urban future and the knowledge and innovation economy. From this point of view, thinking the “smart city” is close to a fore- sight exercise: anticipating technological developments and societal changes, preparing for the possible futures, adapting the urbanism and the physical and intellectual infrastructures for all the scenarios under consideration. Implementing numerical solutions is of course part of this project, but certainly not the only aspect to consider. This approach corresponds to the idea of foresight as a strategic management tool. But fore- sight also means creating collectively a set of representations of the future. The French school of prospective has coined the word “FUTURIBLE” to express the idea of “possible and desirable futures” – the latter being collectively constructed, not imposed by the hierarchy. Therefore, the smart city has to consider also social and political

interactions, and procedures for achieving the participation of the inhabitants in the preparation of the future. Returning to the clusters, another important idea is that such innovative ecosystems definitely help to become smarter – not only because they bring new technological solutions, but because they are a way to organize collective creation among a certain set of actors within the urban system. Furthermore, in order to fully contribute to the "smart city" objective, they must be interrelated. From this point of view, the smart city is a meta-cluster (a cluster of clusters). The preceding view should be still improved, because it looks a little too "techno-oriented". It corresponds the concept of Triple Helix (linking firms, research and education, and local governance structures), but we are looking for a "Quadruple Helix" including the users and citizens. The fourth dimension raises specific questions like the right balance of vested interests, or the inclusiveness of governance. We have to check if the numerical and technological smart city is also a city where the inhabitants are happy to live in. A step further in the questioning is to define happiness – or more precisely well-being, because individual and short-term happiness cannot (or must not) be the aim of the urban policy. Being "happy" to live in town means to benefit from convenient and efficient services, but not only. The real aim of the smart policy should be the full-fledged satisfaction of the citizen: being part of the city, an actor of the sys- tem in the long run. In this sense, the concept of smart city must be related to the idea of sustainable collective well-being.

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