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# Urban Hackathon – Alternative Information Based and Participatory Approach to Urban Development

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## Abstract

Although hackathon is generally known and used event-format in the world of software engineering, it has in recent years also been used in other fields, as i.e. participatory urbanism, in US often referred to as civic hackathon. Hackathon in general is an event at which problems are solved in a limited time frame with intense participant collaboration. The focus of a hackathon is usually predefined; however creativity in problem solving is at the forefront of all activities. The paper will describe the specifics of urban hackathon, a derivative form of civic hackathon, which uses similar approach, harnessing the potential of information technologies and stakeholders involvement in the field of urban development and urban renewal. Despite vast amount of information and unprecedented potentials of existing technologies, they are not being used to full potential in the practise of urban development. At the same time, the importance of horizontal integration between different professions, inclusion of stakeholders, communities and researchers is increasingly becoming the central theme in managing the contemporary urban environment.

Through the analysis of existing literature and web sources the paper presents hackathons dealing with urban issues worldwide and their characteristics. Furthermore, thorough the case-study analysis of tools, processes and experiences of three urban hackathons held in Maribor/Slovenia in 2015 as a part of the Actors of urban change program (Living city project), the paper describes the impacts of this approach on public discourse and actions taken in solving the urban renewal problems in the city of Maribor.

*Keywords:* urban hackathon; information technologies; public participation; urban development; Maribor; participatory urbanism.

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The results of the analysis show that urban hackathon event-format used in the case of Maribor is an efficient and innovative approach that has upgraded the original hackathon format with the goal of establishing new practices in participatory urbanism, with the special emphasis on: (1) inclusion of broad circle of stakeholders, (2) establishing the principle of 'direct action', (3) incorporating innovative technology-based tools with intention of generating strategic support framework for urban renewal in the city of Maribor, which include web based information platform and open source wiki page for participatory editing of content, (4) introduction of open data and data analytics to support the decision-making processes, (5) introduction of moderated approach to brainstorming and open discussion. In incorporating different tools in an intensive collaboratory event it was possible to link different stakeholders, to facilitate information and data exchange and to empower broad range of participants to contribute in the tedious process of urban renewal. To successfully implement participatory urbanism, it is important to develop and try out new methods of inclusive urban planning. Urban hackathon is an example of such exploration.

## 1. Introduction

Since the end of the 20th century it is no longer feasible to conduct infrastructure driven urban planning and urban development with classic regulatory and zoning approaches that too often result in not satisfying human need for lively public spaces.

We can observe ineffectiveness of local governments resulting in inability to spark future urban development. Citizen's passiveness (or exclusion) is another major obstacle in this process. Instead of focusing on the processes of implementing small steps for gradual transformation, citizens are often subjected to long periods of waiting for large-scale expensive real estate developments, all because of generally ineffective top-down solutions and city government's inability to efficiently communicate with stakeholders. All described problems lead to considerable socio-economic damage and in public spaces often being subjected to disorder, decay or inadequate use.

Today new alternative approaches to urban planning are emerging, driven by the need for flexibility, usability and openness of urban space, often in the context of urban renewal. Parallel to societal and environmental changes, the influence of emerging information technologies cannot be overestimated. There is an ever-increasing demand from stakeholders for open data and contextual information on urban events and processes, as they can be used in strategic planning as well as in day-to-day operations. All these raise the questions of how to increase information and knowledge exchange, how to connect various stakeholders (public and private sector, NGOs, universities), how to combine local knowledge with expert's opinions, how to surpass bureaucratic obstacles, and how to pour creativity and ingenuity into problem solving, with the common goal of achieving sustainable urban development.

Based on these starting points we postulate the thesis that an alternative form of participation (i.e. urban hackathon) can facilitate and enable effective exchange of information between information sources and stakeholders, resulting in appropriate and effective community response. We can thus find the suitable solutions for many contemporary urban problems faster and make an important step towards the new participatory form of urban planning. The paper will describe a new model of cooperation called urban hackathon, a derivative form of civic hackathon which incorporates all already described perspectives.

The methods used for this paper are analysis of existing literature and web sources that present hackathons dealing with urban issues worldwide. Through the case-study analysis of tools, processes and experiences of three urban hackathons held in Maribor/Slovenia in 2015 as a part of Actors of urban change program [1], the paper describes the impacts on public discourse and the actions taken in solving urban renewal problems in the city of Maribor

## 2. Theoretical background

### 2.1. Hackathon – definition

Hackathon can generally be described as an event at which (a) problems are solved in a limited time frame (i.e. 24-48 h), (b) intense participant collaboration is included, (c) the topic of the hackathon is usually predefined [2]. However, creativity in problem solving is at the forefront of all activities. The word 'hackathon' is a neologism made of two words, 'hack/hacking' and 'marathon', and was for the first time used in 1999 for the purpose of the software engineering event [3]. In general public opinion 'hacking' is considered as predominantly negative activity, although the hacker is one "who seeks and exploits weaknesses in a computer system or computer network" [3] but also "a

person skilled with the use of computers that uses his talents to gain knowledge" [4]. Merriam Webster dictionary describes 'hacking' also as "to manage successfully" [5].

Furthermore, the word 'hacking' has in recent years been extensively applied to non-computer matters, with the meaning of resourceful, creative and 'out of the box' thinking, by using or exploring objects or systems that need improvement or upscaling. An example of such approach was showcased at the BIO 50, the biennale of industrial design in Ljubljana, where one of the working groups named 'Hacking Households' challenged the traditional household appliances created as closed systems, versus 'open source design' with many opportunities of modification, customization or repurposing of existing products [6]. Regardless of scale or focus the idea of 'exploring and opening the source' with intention of its upgrading has in recent years also appeared in the field of urban development as a necessity for a creative and collaborative approach of solving urban problems. The popularity of hacking related topics has been reflected by many authors, such as Freisinger et al. [7], Garrett [8], Zapico et al. [2], etc.

### 2.2. Civic and urban hackathons

Urban hackathon is a derivative form of civic hackathon and uses similar approach in harnessing the potential of information technologies and stakeholders' involvement in the field of urban development and renewal. Civic hackathons when compared to urban hackathons have a longer tradition and were organized for the first time in the USA in 2012 with the first National Day of Civic Hacking [9], although civic hacking events and projects such as Random Hacks of Kindness [10] had been happening for years. Civic hacking means different things to different people, with some authors also referring to tactical urbanism [11] as the civic coding analogue for the built environment. Tauberer defines it as essentially a creative, collaborative, often technological approach to solving civic problems [12]. Accordingly, civic hackers are similarly diverse group of people, ranging from IT specialists, to communicators, community organizers, other specialists and activists, keen to contribute to problem solving [13]. In general, one can notice the emergence of diverse hackathon variations, such as Green hackathons with the focus on environmental sustainability [2]. The changes in all named event formats are slightly different, primarily related to different topics but also approaches. In the urban hackathon concept all these ideas are used, whereas the concept of civic hacking is open to as broad public as possible in order to make participation in this platform even more accessible. The focus is directed exclusively to the problems of urban environment by acknowledging the importance of open data, public participation and community collaboration as the key to successful and effective problem solving in shortest time possible. Therefore, the focus can move away from pure coding and concentrate on decision making, generating public initiatives with concrete proposals, compiling document drafts with solid argumentation based on open data and strategic foresight, etc.

### 2.3. Participation and access to information

Two pillars constitute the backbone of the urban hackathon approach, the first is the art of participation & collaboration and the second is the access to information.

Historically, public participation paved its way in two waves, the first one in the sixties by what Friedmann called 'social mobilization' [14] and the second since the nineties with the focus on environmental protection and sustainability (Agenda 21, 1993; The Aalborg Charter, 1994; The Aarhus convention, 1998). Important changes in discourse on spatial planning also happened as the result of Habermas 'Theory of communicative action' [15], referred also as 'collaborative planning' postulating the principle of bottom-up participation i.e. increasing the active role of citizens [16]. Since then efficient cooperation between different stakeholders and participation of interested public is becoming crucial for successful development of sustainable urban areas, whereas the hackathon format tries to embody these principles. In this context Zapico et al. describe Green hackathons as "important physical social events, that are broadening participation and helping to build a community of interest that bridges different disciplines and that provides face-to-face connections between otherwise distributed or loosely connected individuals" [2]. 'Bridging' social capital and developing inclusive communities is possible "by bringing together diverse groups i.e. such as developers, designers, usability and interaction designers, facilitators, sustainability experts of various kinds, data owners, problem owners, sponsors, jury members and spectators" [2]. User-centric approach has been emphasized in

many recent cases, such as in the case of Ghent Living-Lab framework that also used the hackathon format. Baccarne et al. state that the "rather technological-deterministic point of view (characteristic for first generation Smart City projects) is changing slowly towards a more citizen-centric approach, focusing on smart citizens rather than Smart City as the high-tech solution to urban challenges" [17]. Importantly "user-centric point of view includes increased attention for user innovation, co-creation and collaboration with a wide variety of city stakeholders" [17].

The second pillar of the urban hackathon is harnessing the power of information and broadening the availability of data in the contemporary city. Access to information in society was historically linked to some form of top-down power structure [18]. Data was compiled exclusively by experts and only filtered information was later passed down to the public. In order to facilitate the bottom-up action, new approaches are developing as for instance the open data movement. Furthermore, a broad spectrum of data is being classified as 'information of public interest' and thus public access is mandatory by law ensuring government transparency. Inside the urban hackathon new information and knowledge can be compiled from obtained datasets and passed to civic initiatives, further generating tools for stakeholder empowerment [19, 20].

Nevertheless, problems on technological side remain. Due to the broad variety of sources (municipalities, agencies, private companies, etc.) access to data can still be difficult. At the same time work with large amounts of collected data is still expensive and demands appropriate hardware and software. Available data is thus hardly being used to full potential. Another missing stone are intelligent software tools for enabling communication and education of decision-makers, experts, stakeholders or general participants taking part in the process of urban transformation based on collected data. Existing tools are focused on data management and general interpretation, rather than on process of connecting data with abstract values, emotions or meanings. Ultimately data is not what we long for, knowledge is, or in Einstein's words "Information is not knowledge".

### 2.4. Examples of urban and civic hackathons worldwide

Since the turn of the century handful of hackathons were organized around the world, among them the Hyderabad Urban Hackathon in India that" is called to be the first initiative in India involving people in better urban planning" [21]. Citizens aged between 18 and 35 were called to participate at the event. In the USA the most spread hackathon event is the already mentioned 'National Day of Civic Hacking' with i.e. in the year 2014, 23 events held in 103 cities, including 38 challenges and 129 databases where participants used technology, publicly available data and entrepreneurial thinking to tackle some of the most pressing social challenges such as coordination of homeless shelters or access to fresh, local, affordable food [9]. 'Visualizing neighbourhoods, hackathon for good' was held in Minneapolis in 2013 on the topic of spreading relevant information through creation of visualizations (i.e. bus routes in relationship to population density, an activity and route-focused map, etc.) [22], WearCityHack Hackathon in Berlin was organized in 2015 on urban mobility, urban living and urban sustainability topics [23], and others.

### 2.5. Experiences of three urban hackathons in Maribor

In 2015, as a part of the 'Actors of urban change' pilot program developed by Robert Bosch Foundation, the Maribor team (Living city project) organized 3 urban hackathons related to the renewal of the old city centre of Maribor. The three 2-days events took place in January ('City-toolbox: Revive the city together'), April ('Reviving Koroška street') and October ('Reviving the city centre') of 2015 with 40-60 participants at each event.

The necessity of testing and using the new event format - urban hackathon came from the municipalities' inability to solve problems of economic, physical and social degradation of old Maribor city centre, originating from the early 1980s and continuing till this day. The area still reflects the medieval settlement structure with many old and dilapidated buildings, with degraded inner courtyards and public spaces, streets in need of repair. There are many empty storefronts along the main pedestrian promenades in the old city. Although the city of Maribor bore the title of the European capital of culture 2012, the municipality was not able to improve the conditions of historically important urban space.

All three hackathons were organized with intention to activate, inform and empower those willing to support urban change in the area. There was a conscious attempt to merge different groups of stakeholders. As a consequence, all three hackathons were characterized by a broad variety of participants, ranging from municipal officials, university

researchers (architect and traffic engineers), experts from different fields of urban development, representatives of NGO's, civil initiatives, students and most importantly by local people who were interested in helping solve the problems of their own living environment. The hackathons were structured with presentations, collaborative work, discussions, but also fieldwork. Importantly all events were professionally moderated, a set of methods and tools were used to discuss and elaborate the designated topics. A number of innovative and classic approaches used at the three hackathons are presented (see Fig. 1):

- Central web information platform city-toolbox.net: the webpage has been launched in advance of the hackathon events with an aim to enable an open access to all relevant strategic documents that were produced in the last 20 years for the city of Maribor in the field of urban development and have never before been publicly accessible. The website tried to implement the principle of higher transparency and centralised distribution of information that should normally be organized by the municipality.
- Urban Tags: the participants divided in working groups had the task to find and mark degraded locations in the old city centre and mark them with NFC enabled electronic tags. These were contextually linked to the web content compiled in the wiki-strategy page.
- Open source wiki-strategy: a participatory platform for community based on writing and editing of strategy for urban renewal, with content linked to physical urban spaces through Urban Tags.
- Direct action - urban hacking: small provocative interventions in public space.
- Mapping and tagging: real-time mapping problems with passing pedestrians using coloured pins and big maps of the city centre.
- Traffic monitoring: electronic monitoring of traffic on all streets leading to and from the city centre for evaluation of traffic changes in the time of temporary street closure (European Mobility Week - Open Koroška 2105 [24]).



Fig. 1.: Different methods and tools used at three urban hackathons in Maribor.

## 3. Results and discussions

The three hackathons held in Maribor have been successful in generating broad stakeholders' participation and have largely contributed to better access to information, but also to gradual but tangible problem solving. They have directly or indirectly resulted in numerous concrete actions - such as temporary closing of Koroška Street for car traffic during the European Mobility Week 2015 and the parallel monitoring of traffic-flows [24], 3 written initiatives were sent to municipality promoting participatory approach to tackle spatial problems by establishing open offices for urban renewal, and more than 50 articles were published in local newspaper on related topic. Parallel to hackathons, more than 20 meetings were organised by the 'House!' association with the local community that led to the self-organisation of a civil initiative for Koroška Street, which is regarded as an important step forward in empowerment and activation of citizens.

Finally, results of the analysis show that urban hackathon event-format is proven to be efficient approach which has upgraded the original hackathon format with the goal of establishing new practices in participatory urbanism, with

the special emphasis on: (1) inclusion of broad circle of stakeholders, (2) establishing the principle of "direct action", (3) incorporating innovative technology-based tools with intention of generating strategic support framework for urban renewal in the city of Maribor, which include web based information platform and open source wiki page for participatory editing of content, (4) introduction of open data and data analytics to support the decision-making processes, (5) introduction of moderated approach to brainstorming and open discussion.

Incorporation of different tools in an intensive collaboratory event enabled to link different stakeholders, to facilitate information and data exchange and to empower broad range of participants to contribute in the tedious process of urban renewal. It was "showing results" instead of just "talking about ideas" as also stated by Zapico et al. [2]. Most importantly, the hackathons have triggered a wider public debate. The idea of "activating citizens and transforming them from passive consumers into active participants in decision-making processes and co-creators of urban space" [16] seemed to be proven successful.

## 4. Conclusions

The need for development of alternative participatory and information based models such as urban hackathon that can help initiate urban change or solve urban problems at their core, is more than necessary in times when once established top down approaches for cities development are not successful anymore. New information technologies are here to stay and will empower the stakeholders to influence the decision-making process in the future cities. But maybe even more important it is to focus all the energy into participation, community building and establishing wide collaboration and information exchange. Many problems still remain unsolved, as the participation process demands time for building necessary confidence and trust. It is important to understand that the process of collaboration with the wide variety of different stakeholders is very intense and demanding one. But with the vision of sustainable urban development, participation is becoming a necessary endeavor. To successfully implement participatory urbanism, it is important to search for, develop and explore new methods of inclusive urban planning. Urban hackathon is an example of such exploration.

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