Rrona Berisha, Matevž Juvančič: ODPRTOKODNI URBANIZEM – PREVOD NAČEL IN KRITERIJEV ODPRTOKODNE PROGRAMSKE OPREME NA PODROČJE URBANIZMA

OPEN SOURCE URBANISM – ADAPTING PRINCIPLES AND CRITERIA OF OPEN SOURCE SOFTWARE TO URBANISM

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1.02 Pregledni znanstveni članek / Review Article

POVZETEK

Zamisel o odprtokodnosti, ki primarno izvira iz področja razvoja programske opreme, je uporabna na različnih področjih, vključno z urbanizmom, kjer jo poznamo pod angleškim terminom Open Source Urbanism (OSU) oziroma slovenskim odprtokodnim urbanizmom. Ta pristop spodbuja transparenten, demokratičen proces, kjer so na koncu procesa tako uporabljene metode kot tudi končni rezultati in dognanja drugim zainteresiranim prosto na voljo za uporabo, prilagajanje in spreminjanje, v zasebne, javne in celo komercialne namene pod enakimi načeli odprtokodnosti. V prispevku so načela in kriteriji odprtokodne programske opreme prilagojeni in prevedeni v polje urbanističnega oblikovanja in načrtovanja. Cilj prispevka je izluščiti kriterije za določanje ravni odprtokodnosti projektov, ki temeljijo na načelih odprtokodnega urbanizma. Nadalje smo vzpostavljene kriterije OSU uporabili in testirali na treh študijah primerov projektov, ki se ukvarjajo z urbanim prostorom. Rezultati kažejo, da je načela in merila odprtokodne programske opreme mogoče smiselno in uspešno uporabiti pri urbanističnem oblikovanju in načrtovanju. Načela OSU delujejo na širokem naboru projektov in v različnih merilih, od sajenja dreves do načrtovanja večjih urbanih ureditev.

KLJUČNE BESEDE

odprtokodni urbanizem, urbanistično oblikovanje, urbanistično načrtovanje, sodelovanje javnosti, odprtokodna programska oprema, odprtokodna načela

ABSTRACT

The idea of open source, stemming from software development is being applied in various fields, including urbanism, as the concept of Open Source Urbanism (OSU). This approach promotes a transparent process, where the methodology used and developed and the final outcomes are open for others to use, modify, adjust and even profit from while also sharing their process and results openly. In this paper, the principles and criteria of open source software are adopted for-, adjusted to and observed in the field of urban design and planning. The goal was to extract the criteria for determining the levels of urban projects being based on the principles of open source urbanism. Furthermore, the newly established criteria of OSU were applied and tested on three case studies of projects related urban spaces. The results show that the principles and criteria of open source software can be successfully used in urban design and planning. OSU principles can be applied on a wide range of projects and crossing different scales, from planting a tree to large-scale masterplan design.

KEY-WORDS

Open Source Urbanism, Urban Design, Urban Planning, Public Participation, Open Source software, open source principles

1. INTRODUCTION

1.1 The origin and development of OSU

The city is a complex organism, with unpredictable developments in various fields, no defined endings only results from each action we take to plan the city (Roggema, R., 2019). The city can be seen as an ongoing experiment (Roggema, R., 2019) or as a permanent transformation (Keiner, 2012). This challenges planners to find new solutions and experiment with the process.

In recent years, the concept of Open Source Urbanism (OSU), based on the idea, principles and methodology of creating open source software is finding its ways into the process of urban design and planning. Easy to comprehend through its name, open source urbanism connects and links the idea of open source software implanting it into the field of urban design and planning. Phrased differently, planning of the city and its parts becomes sharable, upgradable, adjustable and adaptable, easier to follow and perceive (transparency) and open to different stakeholders and parties to contribute to or tap into.

To begin with, the basic definition of Open Source is that the source code is open to use and modifications so anyone can improve the source code and share the changes (Al-Masri and Curran, 2019). Open Source software and products are widely used, created and maintained voluntarily by the community of developers. Urban planning is one of many fields of possible application that could benefit from the fundamental approach of open source access, development and sharing. We have come to realize the potential of open access publishing, but have the opportunity to go even beyond those with shared methodologies.

In urbanism this is known as Open Source Urbanism, which is established on sharing, using, modifying and redistributing the products based on contribution, alike to Open Source software/ programs (Artibise, 2010).

According to Kaspori (2005), this is a model that can be used for solving urban problems and developing the city based on collaboration. The basic requirement for collaboration is shared interest that results in sharing knowledge and experience. Therefore, people are supposed to share ideas and make them available to others, so others can use and modify them and consequently city planning will be an ongoing process and not a onetime action (Kaspori, 2005).

Compared to traditional practices of urban planning, Oswalt et al. (2013) highlights components that develop differently when applying the concept of OSU. Initially, the focus in the first stages of planning is not on designing the buildings or spaces, but to gradually come to a result that meets the requirements of all, through informal activities, activating and temporary using spaces together with the community. Second, the shared control between municipalities, owners and citizens, and another difference is that solutions to urban questions are not coming from architectural and urbanistic competitions but from actions taken together with the community.

If OSU is practiced in a meaningful way, it will promote a bottom-up decision-making process (Scripcariu, 2012), benefit in democratizing urban development (Zhilin et al., 2018), encourage social interaction, promote a transparent and collaborative process, and the outcomes are as per Bradly (2015): "democratised and owned by many". OSU initiatives also inspire social movements. Since the 'products' – the process, methodology, approaches and results -could be used, modified and developed further by third parties, a planning process and outcome is no longer relevant only for one location but can become a repeated initiative (Zhilin et al., 2018), like 'parklets'1, a guerilla initiative that became a social movement and later was incorporated in urban planning (Bradley, 2015).

The public will benefit in many ways from OSU initiatives, by being included in the process, being able to convey and integrate their needs, gain new knowledge and more (Bradley, 2015). Encouraging citizens to participate in these initiatives can lead to innovative solutions, and their enthusiasm to contribute inspires others and reflects their will to be part of the process (Finn, 2014).

Public authorities will also benefit from OSU. Angelidou (2019) illustrates that tactical urbanism can lead to constructive dialogue and to new initiatives that the municipality cannot implement due to the length of the process by law. Nevertheless, institutions play an important role in supporting OSU by, not only, opening access to the source of information for the public. Douay (2018) argues that opening access to data will allow citizens to be better acquainted with the city by accessing various documents, empower them to follow and be involved in the work and procedures lead by the authorities and propose improvements or suggestions, resulting in processes that are more transparent. The institutions can also show their support by implementing projects of citizens, support them financially, open the resources and make intelligent use of their authority (Oswalt et al., 2013).

The concept of OSU is manifested from citizens through different initiatives, like DIY-urbanism, urban guerillas, urban acupuncture and more (Sassen, 2015-Epilogue). The initiatives are usually documented by citizens, containing their experience and the process in order to be used or modified by others (Zhilin et al., 2018). These documentations are usually shared through online channels and social media. They represent a transparent code and are comparable to sharing the source code in open source software (Bradley, 2015). Specific, tailored information communication platforms, which are currently lacking in OSU approaches could potentially add another level of openness and accessibility to the OSU efforts mentioned by Zhilin et al. (2018).

There is a difference between open source software and OSU concerning an important component. The digital domain offers diversity and interchangeability: if you do not agree with a specific software development philosophy, or you find one that has more beneficial features, you can use another software; that is not the case for cities because projects are specific to one location or building (Demerijn, 2013). It often happens that citizens do not have similar needs or share unified vision for common-spaces, this raises the question of who has the right to shape the city and who is the one with the capacity, knowledge and expertise to negotiate a consensus between the stakeholders involved.

Applying the concept of OSU doesn't end with implementing the project. An important part is sharing the knowledge and if possible constant improvement. This can sometimes depend on the voluntary good of the citizens, and can be considered as a drawback, taking into account the dynamic of life nowadays.

Further, Oswalt et al. (2013) mentions that sharing control between actors, as a characteristic of OSU, would be a win-win situation for all, however the level that shared control that can be applied depends on various factors.

1 https://groundplaysf.org/publication/san-francisco-parklet-manual/

When involving different stakeholders, we must be prepared for a prolonged and more expensive process, to have staff that is trained for developing such processes, and to be careful not to create an adverse effect on the participants, such as the loss of trust and the desire to contribute (Wouters et al., 2011).

The aim of this study is to focus on the concept of open source approach as the core component of OSU and translate principles of open source to the field of urban design and planning as well as set and adapt criteria with which to measure OSU levels. Moreover, this study aims to analyze stages of planning that the concept of OSU can be applied to, the community's willingness to participate and the role of technology in the process.

2. METHODOLOGY

The theoretical groundwork contains examination and study of existing practical and theoretical research on Open Source Urbanism (OSU), open source software, public participation, urban design and technology in urban design. The literature review for this article was based on Science Direct and Google scholar databases. The search was initiated with the exact matching term "Open Source Urbanism" during the years 2015 and 2020. This search generated 400 results in Science Direct and 353 in Google Scholar. The number was reduced by choosing articles most related to the field, involving case studies from Europe and written in English. In addition to this search, our research was also extended to different disseminations of OSU in newspapers, university pages, other relevant pages, interviews, lectures and more.

Initially, the above mentioned literature was analyzed, in order to understand the origin and the development of the concept, how it was defined in literature, the practical uses of it, the various aspects of the concept such as methods, principles and techniques. The analysis of the literature is presented in the "Introduction" chapter of this paper.

The findings of the study the article is dealing with are divided into two parts.

The results of the first part came from interpreting Open Source 10 criteria2 and 6 principles3 to OSU, to better understand the overlap and the concept. There are 10 criteria of Open source that must be fulfilled in order for a software to be considered Open Source, and 6 principles of Open Source that derive from "open source software development models" and can be applied in different fields, not limited to programing. These were adjusted to Open Source Urbanism for the purpose of this study. This translation from OS to OSU is done by the authors through analyzing each criteria and principle to understand if it can or cannot be applied in Urbanism.

The results of the second part came from comparing the principles and criteria of OSU, found in the first part of the results, to case studies that our initial database search clearly identified as belonging to Open Source Urbanism (OSU) principles. We wanted to determine and establish to which extent and level they really followed OSU, looking for alignment between declared and demonstrated components of OSU and possible misalignments.

Three case studies were chosen for the second part of the research: Space-S residential block, Guerrilla Gardening and Open Street Map Kosovo. We set to have a variety in the case studies and intentionally chose according to the next criteria:

- one case study needed to address larger, building block size areas in the city (Space-S residential block);
- one case study needed to deal with open public or private spaces (Guerrilla Gardening);
- one case study that is not aiming towards physical intervention, however still addresses initiatives, mapping, crowdsourcing or such, dealing being directly or indirectly associated with urban spaces and urbanism (Open Street Map Kosovo).

Each case study is briefly introduced and explained within its context, followed by the presentation of comparative findings in tables 3, 4 and 5. The comparison of three case studies with OSU principles and criteria was done in order to understand if the case studies met the OSU characteristics and to which extent.

During evaluation and comparative process, if a criteria or a principle was present in a case study, its presence was evaluated with positive [yes]. If there was no trace of it, it was evaluated with [no]. If it was partially present, it was marked with [partially]. Partial presence was determined based on being between present and not-present, each such case is explained in detail in the results, when it occurs. If the principle was not applicable to the case study or was omitted due to the nature of the case study, it was evaluated with [/]. The case studies were further compared to each other to understand the process and the level of design that the concept of OSU can be applied.

3. RESULTS

3.1 First part of the results: Interpreting Open Source criteria and principles to Open Source Urbanism

Table 1 lists ten criteria that should be present for a software/application to be determined as open source, provided by Open Source Initiative (Open Source Initiative, 2007) and translated by the authors to OSU guiding principles.

In the table below are mentioned the products of urban planning, which as elaborated by Washburn (2013) are: rules (policy, zoning, steps, guidelines, methodology), plans and projects (built work: streets, squares, plazas, parks, leftover space, communication and transportation infrastructure that knits our cities together).

3.2. Second part of the results: Comparing the new established criteria and principles of Open Source Urbanism to three case studies

3.2.1 Case Studies

Space-S

Space-S is a residential block developed on 27 hectares area in Eindhoven (Netherlands) as an example of open source urban planning, led by the company 12n urban matters. The urban block was planned through a future users' driven process. The initiative started in 2012 and the first residential units opened for living in 2016 (12n urban matters, n.d.).

In the beginning, it was searched for potential residents for the unbuilt land, and a mix of people signed up, forming a community with more than a thousand participants that represented the future residents of Space-S (Stam + De Koning, 2017).
The residential block was co-designed. The source of informa-

2 https://opensource.org/osd
3 https://opensource.com/open-source-way

Table 1: Open Source criteria (Open Source Initiative, 2007) translated to OSU

Open Source	Open Source Urbanism
Free redistribution - anyone can sell or give away the software without cost	Free redistribution of the products of urban planning, except built work. Anyone can profit from them.
Source Code - must include the source code and allow its distribution	The method and procedure must be provided (plans, steps and guidelines) and can be distributed by others.
Derived Works - anyone can modify and derive work	Anyone can modify or change the products of urban planning from the original state, except built work.
Integrity of the author's source code	Authors of the products of urban planning must be known, the project may be required to be renamed if it uses the same method/procedure.
No discrimination against persons or groups	Equal participation in the process and for the using the products of urban planning.
No discrimination against fields or endeavor	Impartiality for any field and effort.
Distribution of license - the license is applied to whom the program is redistributed	The rights attached to the original product are transferred to the modified product.
License must not be specific to a person or entity	License to a product must not be specific to a person.
License must not restrict other software	Product must be in harmony with other products, legislation and spatial legislation or have legislation change integrated into the product.
License must be technology neutral	License to a product must be technology and politically neutral.

Table 2: Open Source principles (Opensource, 2013) translated into OSU

Open Source	Open Source Urbanism
Transparency	Open access to the data, transparent process, open outcome of planning and open (re-)implementation.
Collaboration	Collaborative design, including government, community, investors, and more.
Release early and often	Action based planning, use of temporary, changeable solutions before committing to permanent ones (testing purposes but also providing ongoing place making while waiting for final resolutions), flexible planning and changing, constant updating and re-evaluation of existing plans as the city is an ongoing process in (trans-) formation.
Inclusive meritocracy	Involving all but reasonably assigning tasks according to expertise, e.g. urban plan drafting by professionals who are capable, proficient and talented in this domain.
Community	Involving community and stakeholders in all phases of co-design and decision-making.

tion was shared with the community and they determined what was important for them. The planers needed to decide on the viability of the requests and proposals. If there was no agreement between the parties, proposals were re-designed (12n urban matters, n.d.).

Participants were involved with the help of different ICT channels, with an emphasis on social media. They actively participated, acquired new knowledge or used their prior knowledge, as in the case when a participant helped create the 3D model (12n urban matters, n.d.).

The process resulted in a residential block with shared open public spaces, roof gardens, different types of housing, fulfilling the requests of young, old, families, singles, students, working residents and more (Space-S, 2018). The company 12n urban matters developed an open brochure regarding Space-S, describing the initiative in general but not as a manual that could help reproduce the process.

Space-S is an example of why we should re-think expectations that the process of co-designing, involving community with large number of its members, will be long and expensive. Contrary to preconceptions, 12n urban matters (n.d.) reports, the residential block was designed and built on time and at with a reasonable price tag, since it was a common goal for all.

Guerrilla Gardening

Guerilla Gardening is a global movement, part of sustainable efforts to find a balance of taking care of the planet and our needs by gardening, regardless of the obstacles to overcome. The movement strives to achieve this by cultivating the neglected

Figure 1: Sunflower Guerrilla Gardening Day (By Bonnie Kittle on Unsplash https://unsplash.com/photos/vxTpVxYCZjA).

spaces or spaces that belong to others, without having permission (Reynolds, 2008). As a concept, it occurred centuries ago, when someone cultivated someone's land without his or her permission (Reynolds, 2008). As a term "Guerilla Gardening" was first recorded to be used by Liz Christy in 1973 (Reynolds, 2008) when she and the volunteers transformed a neglected land in Manhattan's Bowery, into a vegetable garden (Liz Christy Community Garden, 2007).

Since then, Guerilla Gardening is spreading around the world through initiatives by citizens, which are different from each other but share the same concept. Some citizens join this move-

ment to beautify the spaces, some to revolt against institutions or owners for leaving the land neglected (Taylor, 2013).

The challenges for guerrilla gardeners are the scarce and neglected spaces (Reynolds, 2008). However, they do not necessarily abide by rules/regulations to intervene on spaces or someone's property. They believe that this movement benefits everyone and the procedures of legalizing gardening are often prolonged and end in failure to acquire permits (Reynolds, 2008). For big-scale projects, Reynolds (2008) argues that it is best to get permission and collaborate with institutions because they cannot be completed by being unnoticed.

This movement is well documented. There are many web pages, among others GuerillaGardening.org, where many initiatives around the world are documented. Such as: Seed Bombing, Guerrilla Park, Roundabout Garden, and more (Figure 1).

Open Street Map Kosovo

Open Street Map Kosovo is an initiative by Free Libre Open Source Software Kosova (FLOSSK), an NGO that promotes F/OSS since 2009 in Kosovo (FLOSSK, n.d.). This initiative is not a direct intervention in public space, but enriches information regarding public spaces in urban environments and consequently facilitates easier access and use of them by potential general and local users.

By using different publicly accessible and mostly open source software solutions and applications (such as: Open Street Map iD - editor programmed in JavaScript to edit Open Street Map geodata; JOSM - free software desktop editing tool for Open Street Map geodata; and QGIS - cross-platform for viewing, editing, printing, and analysis of geodata), the community together with professionals edited and added information to the maps of Kosovo in Open Street Map (OSM) platform. They edited historical maps, marked hiking trails, placed road names, mapped geographical features, mapped Kosovo Health System institutions to help with Covid-19 and more. This was established by volunteer work from citizens of Kosovo and abroad, in collaboration with relevant institutions that opened access to the data for the public (FLOSSK, 2020).

Figure 2: Tourist maps by Directory of Tourism generated from OSM data (Rrona Berisha).

The process was organized through Mapathons (an event to make online map improvements), where the community was informed about these events through social media. From time to time, different groups of community were trained on how to use the platforms through workshops and a conference (FLOSSK, 2020).

The process of how the initiative was developed and the maps are open to the user to use, modify and update. The data is available on Open Street Map platform and applications that use data from it (FLOSSK, 2020).

The Municipality of Prishtina also benefited from this initiative. The Directory of Tourism generated tourist maps for Prishtina, by using maps from Open Street Map that were enriched with information from this initiative, as seen in Figure 2 (Guri, 2020, Personal Interview).

There are similar initiatives in the world dealing with urbanity and urban environments, spilling into the urban design and planning domain, such as the Civic Hacking initiative, where citizens add online information that aim to improve the city (Hyder, 2014).

3.2.2. The comparison of OSU criteria and principles to the three case studies

The second part of the results contains three tables. Table 3 represents a general analysis of case studies, Table 4 and Table 5 traces the alignment of criteria and principles of OSU with the three case studies.

Case studies differ from each other on the level and nature of planning, two are physical interventions in built up, unbuilt or/ and open spaces, while OSM-Kosovo is a non-physical digital intervention (online mapping). The number of participant varies from case study to case study: OSM-Kosovo is a small-scale project with low number of participants (however, it affects the largest number of users among the selected case studies), Guerilla Gardening is a global movement and the number of participants varies depending on the project, Space-S is a big project with more than thousand participants.

All three case studies need facilitators or initiators that manage, seek consensus and help steer the effort. For OSM-Kosovo the facilitator is an NGO, Space-S is an investor with social agenda and Guerilla gardening organization is the ideator and moral authority of the initiative.

	Space –S	Guerilla Gardening	OSM - Kosovo
Level/nature of planning	Residential block planning	Urban Gardening	Editing/adding information to maps
Used technology	Social media, others not known	Social media, others not known.	OSM, ID, JOSM, QGIS, Social Media.
Number of participants	More than a thousand participants	Global movement, small initiatives.	Small groups.
Facilitator	Yes	Yes	Yes

Table 3: General analysis of the three case studies.

	Space –S	Guerilla Gardening	OSM - Kosovo
Free redistribution of the products except built work. Anyone can profit from them.	No	Yes	Yes
Method and procedure is provided.	Partially	Yes	Yes
Anyone can modify or change the products, except built work.	No	Yes	Yes
Author is known	Yes	Partially	Yes
Equal participation in the process and for using the products	Yes	Partially	Yes
Impartiality for any field and effort	Yes	Yes	Yes
The rights attached to the original product are transferred to the modified product	/	/	Yes
License to a product is not specific to a person or entity	Yes	Yes	Yes
Product is in harmony with other products	Yes	Partially	Yes
Product is for all users.	Yes	Yes	Yes

Table 4: The three case studies compared to Open Source Urbanism criteria.

Most commonly used ICT solutions between the three case studies are social media - used for the design process and for communication.

Space-S is evaluated as 'Partially' in providing method and procedure, because even though the process is described in a brochure, it lacks the needed details to be used as a guideline in order for the process to be reproduced. Thus, the first and the third criteria in the table are evaluated as 'No'. The products of Space-S are both the building itself (in material form) and the development process. Since the process development was not entirely shared and the built work cannot be modified freely, the seventh criteria in the table is not applicable.

Guerilla Gardening is evaluated as 'Partially' for being in sync with other products and for having its author known, because sometimes it is "a revolt against the institutions or owners for leaving the land neglected" (Reynolds, 2008). It is also evaluated as 'Partially' in equal participation because institutions are not always included in the process.

Space-S is evaluated as 'Partially' on the first principle, because of the lack of detailed guidelines regarding the process development, and similarly, the third principle cannot be evaluated due to the buildings being unable to be constantly updated and upgraded.

Guerilla Gardening is evaluated as 'Partially' in co-drafting plans with the institutions, community, and more, since even though the community is involved in projects, the institutions do not always take part or are intentionally left out, and sometimes the projects are individual initiatives.

Open Street Map Kosovo is evaluated 'Partially' in co-drafting plans and including the government, because some the institutions made the data public or publicly accessible but implemented the data into the maps on their own and not together with the volunteers.

4. DISCUSSION

From Table 1 and 2 we understand that OSU is focused on the process and final product, with emphasis on rules (policy, zoning, guidelines) and plans. Since built environment includes parks, streets, urban inventory and more, the principles of OSU for free redistribution and upgrading do not apply because they are in conflict with other norms and rules of the society (e.g. private property or interference/privatization of public spaces, etc.). Other urban planning products such as policy, zoning, steps, guidelines, methodology and plans usually meet the criteria of OSU and can be modified, changed or profited by anyone without discrimination.

The processes of case studies and in general developed under OSU principles are transparent and co-developed with interested citizens, without discrimination to people and are fields of expertise inclusive. The final product includes consensus and negotiated interests of all actors and are in harmony with other products, e.g. an urban design plan compliance with overall municipality plan, integration with neighboring places, protection zones and such. The authorship of the original project remains with the initiator. If anyone decides to derive the work or modify the product of urban design, it must change the name from the original work but follow the chain of attribution. The rights attached to the original product for using, modifying, sharing or profiting from it, are transferred to the modified product.

Based on Table 4 and Table 5, Open Street Map Kosovo overlaps the most with Open Source principle, which is not surprising due to its nature, concept and origin, which is closely related to information technology. It stagnates in the field of equal participation because institutions do not participate in adding the data or in editing of the maps, where such involvement would sometimes defy their legislative obligations, but they made the data openly available and the desire to cooperate was mutual.

	Space –S	Guerilla Gardening	OSM - Kosovo
Open access to the data, transparent process, open outcome of planning and open (re) implementation.	Partially	Yes	Yes
Collaborative design, including government, community, investors, and more.	Yes	Partially	Partially
Action based planning, changeable solutions before committing to permanent ones, flexible planning, constant updating of existing plans.	/	Yes	Yes
Involving all but reasonably assigning tasks according to expertise.	Yes	Yes	Yes
Involving community and stakeholders in all phases of co-design and decision-making.	Yes	Yes	Yes

Table 5: The three case studies compared to Open Source Urbanism principles

For Guerilla Gardening, the drawback is in involving the institutions. The authorship is also not always known and they do not by default satisfy the needs of all. The outcomes and the process may not be in harmony with other products or societal norms and rules since Guerilla Gardeners often intentionally intervene without permission.

Regarding Space-S, the process was developed based on OSU, but the biggest drawback is that the product of this process is only partially open. There is no detailed guideline or recipe on how to reproduce the process. This contradicts the essence of open source because the process thus cannot be entirely reproduced, modified, added to or redistributed.

Other characteristics of open source presented in Table 4 and Table 5 are fulfilled by all three case studies, therefore, the processes were transparent and equal to all, and participants were willing to improve public spaces and share experiences and ideas with each other.

Analyzing Space-S we come to understand developing big-scale projects based on OSU with more than thousand participants is viable, even though the literature is skeptical towards large scale implementations of OSU due to high costs associated and difficulties in reaching consensus on such a wide variety of interests. OSU is thus not necessarily bound to small-scale initiatives such as DIY-urbanism, guerilla urban tactics and similar.

The case of Guerilla Gardening leaves us thinking that OSU concepts can be – at least to some extent - applied by citizens even when institutions are uncooperative or refrain from participation. It also implicitly sets the boundaries that OSU is reluctant to cross. Namely, it does not condone intentional acting against the norms and values of groups or individuals that would be disadvantaged or discriminated by its actions. OSU is refraining from mere "citizens talking back", an activist action that would revolt and be led by the power of majority, power in its numbers or common good justification.

From Open Street Map Kosovo example we learn that OSU can be applied even without the goal of physical intervention and outcome, but still have urban design, use and planning implications, as long as the goal is to collaboratively improve open public spaces, their access and leave the data open for others to use, modify or profit from.

All cases needed a facilitator of the process, as an equal participant not as a decision-maker. In all the analyzed case studies, there was a facilitator, as an equal participant not as a decision-maker. In such processes, the role of the facilitator is highlighted, as a participant that is needed for direction giving, managing the process, mediating, help in implementation, guiding the group towards meaningful contributions, and more.

Taking into account the nature of work for urban planners, working with different stakeholders, organizing public debates, and more, adds the need for them to be skilled in communication and organizational skills, or else said, to be "good facilitators" (Peel, 2000). Although not always the facilitator of a process is the planner, the planner must have knowledge for facilitating processes (Herd, 2019). The role of technology in the process varied depending on the initiatives' and projects' requirements. ICT and data driven technology have an important role in OSU because using technology is the easiest way to share, manage and manipulate the open data. However, Zhilin et al. (2018) highlights as a disadvantage the lack of an ICT platform tailored especially for OSU. Further, when using technological tools in the process, we should keep in mind that not all citizens have the same access and knowledge regarding the tools, therefore it's essential to choose the right tools and reach to all audience, otherwise citizens that are the most informed and capable of using technology will dominate the city (Douray, 2018).

In the analyzed case studies, social media was a common media and tool for communication and sharing information. Nowadays, social media has become a common ground, a common point for all, widely used by population and widely accessible. We are used to communication through it, prefer to be addressed through it, and we are more likely to respond and be activated through social media.

5. CONCLUSION

While software development became more and more reliant on closely guarded and fiercely protected proprietary code, shrouded in a cloak of business and industrial secrecy, urban design and planning practices were, throughout history, inherently more transparent and open, especially when urbanism approach was scientifically or academia driven. Still, we have much to learn from open source software guiding principles, values and mindset, its radical change of thought and outlook to monetization of creativity and openness rather than propriety and exclusivity.

By now we have established that Open Source Urbanism includes various elements and participants: the city, citizens, government, processes, methodology and principles, technological aspects and tools and more. Learning from open source software principles and guidelines and applying them to urban design and planning process we do not only translate the methodology and ethics but also embrace the fundamental change of thinking and approach from closed systems to open ended systems, thinking within the logic of constant change rather then a perfect snapshots in time, from proprietary to shared principles while not negating the potential of monetization aspects.

We can conclude that OSU offers a contemporary way of democratization of urban design and planning processes. It does so by making them affordable and accessible. By design and its principles OSU creates transparent processes, where we gain more with allowing all participants to contribute their equal share of needs, wishes, experience, feedback but also expertise and knowledge they already possess. It also counts on the participants' willingness to invest all those as long the results will benefit not just specific project but will be openly available also to others to learn from, upgrade, off spin or replicate in new instances with new tweaks.

When included in the process of urban planning, OSU changes the course of classical practices of designing and planning the city. Interventions based on this concept variate from planting a flower to designing a residential block or even more abstract - mapping. Components of the process such as level of planning, method of developing the process, technology used and more change from one process to another. Meanwhile, citizens and other stakeholders, the desire to improve public spaces and the desire to share knowledge with others remain as constants.

The benefits of applying the concept of OSU in the process of urban design and planning are numerous, with an emphasis on meaningfully involving the public in the process. Along with the current practices of involving the public, which are distinguished by many obstacles and hindrances that threaten successful participatory processes, applying the concept of OSU

in the process of urban design and planning can bring positive changes.

Though the concept brings numerous benefits when applied in planning processes, we must keep in mind challenges that may arise along the way. Equally involving the citizens, selecting and using adequate technological tools, motivating citizens to willingly contribute in sharing experiences and ideas with each other, and constantly updating information, present some of the challenges that can harden the process, but, overall don't dominate the benefits brought by applying the concept of OSU in urban development processes.

The concept is already applied in such processes, but further studies can be in analyzing the most appropriate method and visualization/communication tools that can be used for developing a process based on the concept of OSU for planning public spaces.

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