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Digital Urban Planning Platforms:
The Interplay of Digital and Local Embeddedness in Urban Planning

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ABSTRACT

This article discusses platformization and its impact on urban planning. Platformization refers to an increased utilization of platform logic in society. In urban planning, it is manifest in the emergence of digital co-production platforms. They offer a range of genuinely beneficial features—especially digitally-assisted collaborative mapping, ideation, sharing, and analytics—and facilitated integration of citizen input into democratic planning system. As such, they have a potential to develop into a new urban planning model that meets the needs of a complex late modern society.

KEYWORDS

Co-Production, Digital Platform, Participation, Platform, Platform Economy, Platform Urbanism, Platformization, Urban Planning

1. INTRODUCTION

This article discusses the impact of platformization on urban planning. The question is, to what extent we may assume that the emerging platform logic fits with the requirements of urban planning. Let us start by elaborating this issue further.

The obvious starting point is the emergence of *platforms* as a new model on which the cutting-edge businesses are built. Platformization has started to change the foundations of social organization, most notably in the economy, revolving around social media and sharing platform business model. The claim that we have witnessed a platform revolution in business (Parker et al., 2017), the emergence of a platform society (Nash et al., 2017), and the beginning of the new era called the age of platforms (Simon, 2013; Barns, 2018a), depicts the pervasive impact of platformization on almost every sphere of the contemporary world. The most radical interpretation of this transformation is the hypothesis that platform logic is spreading to various realms of society just like industrial logic did in the 19th and 20th centuries.

The previous point leads us to another facet revolving around the forces or drivers behind the surge of platforms, that of *digitalization* that has given platform logic an extra-local nature and immense power to reach wide audiences and generate global high value-added processes, as in the cases of social networks such as Facebook, media content-sharing platforms like YouTube, and sharing economy platforms, such as Uber or Airbnb. This is a particularly interesting issue regarding digital

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urban platforms, as the scalability and network effect associated with digitalization is challenged by the location specific aspects of urban life.

The third element worth a closer look is localness, or more precisely, the question of what is the role of *localness* and the urban dimension in the utilization of platforms. How the existence of the composite logic of the urban land nexus with private and public interests and their historical interplay actually condition urban planning, design and development, including the emergence and utilization of urban platforms.

And lastly, the fourth layer relating to our question is about *urban planning*, or more generally, of how the internal and external factors affect cities' ability to plan and design their structures and functions in terms of the demands of their inner logic and of the need to adjust to contextual changes. Here we can make the relationship of the institutional features of urban planning and the platform logic our focal point. In short, what is the capacity of rising urban platforms to mediate local-global processes and serve strategic urban planning, design and development functions, and what are the conditions for the realization of their potential?

On the basis of the previous discussion the research objective of this article is formulated as follows: How are locally and digitally embedded urban platforms able to serve critical urban planning functions? This overall objective is broken down into four research questions.

1. How is *platformization* – understood here as the widening influence of the logic of the platform economy – changing the preconditions for social organization in the advanced capitalist societies?
2. How is *digitalization* enabling platforms and how does it affect the premises of the establishment and the functioning of urban platforms?
3. How are *locational* and urban dimensions of urban communities conditioning the value creation within digital urban platforms?
4. How can digital urban platforms be utilized in *urban planning*?

There is an obvious lack of research on the above research problem. Relevant research is rare and thematically dispersed, often focusing on narrow themes outside the core issue of the impact of platform logic on urban planning.

The interest in the above research questions is primarily of theoretical nature. The topic discussed here is novel in the sense that it describes phenomenon that has neither become widespread nor matured yet. There is need to theorize about the complex relationships between key analytical categories used in describing this phenomenon, such as platformization, digitalization and local embeddedness as well as their interplay. Thus, this article presents an exploratory institutionally-oriented meso-level analysis of digital urban platforms.

Discussion about the preconditions for utilizing digital platforms in urban planning aims at making sense of this phenomenon in the techno-economic and organizational contexts of their realization. Among sociological traditions, such an approach resembles theoretically-oriented neo-institutional theory, which aims to make sense of organizations affected by other organizations and social forces. At the later stage of the evolution of this tradition, its focus extended from the conditions for organizational isomorphism and legitimation to the institutional logics, transnational dynamics and the account for the transformation and change of institutions (e.g. Greenwood et al., 2012; Marquis et al., 2011; on institutionalism and urban planning, see Inam, 2002). In order to build relevant connection between theoretical terms and empirical reality, this paper refers to empirical instances of digital urban platforms using secondary sources (Falco & Kleinhans, 2018). They serve as exemplifications of the real-life developments in platform-oriented urban planning.

2. FROM THE URBAN LAND NEXUS TO NEW FACETS OF URBAN PLANNING

Urban planning deals primarily with the spatial organization of local society by facilitating the decision making on the structure of the city. The ultimate goal of urban planning includes securing urban functionality, beauty and development (cf. Fischler, 2012; Punter, 2007). It concerns the decisions on the relationship of people to their environment, in which the major functions include the allocation of land to human purposes, the design of the built environment and infrastructures, and regulations relating to urban life and development (Fischler, 2012). It constitutes a specific professional field integrated with urban policies and democratic processes, assuming thus the involvement of a range of important stakeholders, including real estate owners, construction companies, local politicians, urban planners, relevant government agencies, local businesses, and city dwellers.

The term *urban* refers to a densely populated community that is rooted in a particular place and supported by infrastructures, utilities and services needed to maintain and improve its functioning. The formation of such an area is based on two processes, those of the dynamics of agglomeration and the unfolding of an associated nexus of locations, land uses and human interactions. This is essential in understanding the premise of urban planning, as interacting set of land uses expresses the ways in which the social and economic activities of the city condense out into a differentiated mosaic. This phenomenon emerged as an expression of agglomeration, primarily shaped by the firm location and household moving behaviors, which are typically structured by market mechanism that determines land prices and, to a degree, spatial distribution of human activities. (Scott & Storper, 2015)

What characterizes urban land is that it emanates from fundamental dialectic of social processes. As crystallized by Scott and Storper (2015, 8), the shape and form of urban land "express the intertwined dynamics of the individual actions of firms and households and collective action on the part of diverse institutions of control and governance." However, urban dynamics has its dysfunctional side as seen in collapsing infrastructures, deteriorating neighborhoods, and environmental pollution. It emanates primarily from creed or incompetence relating to the extraction of resources from both common pool and private resources of the urban community via market logic. Such dysfunctionalities proliferate in the absence of effective mechanisms of collective coordination.

Modern urban planning paradigm is tightly connected to industrialization and related urbanization, as a manifestation of an attempt to restore order in an increasingly complex urban setting. Originally, the industrial city was seen as an analogy for a machine to be organized rationally utilizing latest technology and scientific knowledge, whereas later during the Fordist period from the 1920s until the early 1970s emphasis was placed on shaping the built environment via land use planning and allocation of land for separate urban functions. (Koll-Schretzenmayr et al., 2004.) A particular problem arose with the modern automotive city and its inherent appeal to functionalistic planning principles and infrastructure-driven approach.

Interrogations emerged from many directions in the 1960s, one of the most influential figures being Jane Jacobs, who successfully brought common sense, inhabitants' perspective, the "sidewalk ballet" and the idea of mixed-use neighborhoods into urban planning. Around the same time, incrementalism increased our understanding of the limitations of rational planning, and communicative and participatory planning started to gain currency. The planning of late modern metropolis is based on a view of an organic and complex whole that evolves as a result of activities of interacting public, private and civic actors. (Koll-Schretzenmayr et al., 2004.)

What is intriguing in this development from the point of view of platform thinking is that collaborative, partnership-based, stakeholder-involving and participatory views of planning strengthened during the last few decades, creating a novel atmosphere that challenged the rationalistic premises of urban planning. There has been a pervasive tendency to increase democratic participation together with self-determination and self-organization, which entails a further shift in planning paradigm (Wallin, 2019; Horelli et al., 2015).

Regarding contextual factors that are reshaping the conditions of urban planning, a critical one is the pervasive use of technology in practically every aspect of urban planning. It is impossible to conceptualize urban planning without taking into account a technological component as well as socio-technical systems and practices that are facilitated by new technologies, including platform economy, social media and smart mobile services. Their impact can be seen in everyday life, which is saturated with news feeds, alert systems, user-generated content, crowdsourcing and a host of intelligent systems (Bollier, 2016). This development is closely linked with the rise of digital platforms, a topic to which we will turn next.

3. A GAME CHANGER: THE RISE OF THE PLATFORM ECONOMY

Platforms have a long history as local arrangements in which people gather to exchange goods, collaborate, solve disputes or make collectively binding decisions. The Agora in ancient Greek cities is an illustrative historical case. Such platforms had obvious time-space limitations. The way of gathering evolved due to advances in technologies, transactions and social organization, the major turning point being the dawn of modernization and the impact of related disembedding mechanisms (Giddens, 1990). While increased digitalization became felt in practically every realm of society since the 1960s, and the development of websites as a locus of online presence has served integrative functions since the 1990s, a new platform logic started to emerge more recently, associated with Web 2.0 and the rise of social media in particular. Even if the increased role of user-generated content has been characterized as the critical novel element brought by Web 2.0 development, at the background it rests on platform logic (Andersson Schwarz, 2017). A related trend was the transformation of social network sites towards fully-fledged social media platforms (Helmond, 2015).

In the business life, platformization refers to the expanded exploitation of know-how and connections organized around platforms that utilize co-creation, sharing, network logic and superstar effect. Nothing epitomizes it better than the success of Facebook, Amazon and a few other global platform companies that created platforms on which to attract, integrate and facilitate value adding activities within broader business ecosystem (Parker et al., 2017; Moazed & Johnson, 2016; Kenney & Zysman, 2016).

Platforms are curious cases in the sense that even if they are collaborative, they do not require the same kind of trust and resource-pooling as more or less closed networks of interdependent actors. Rather, they operate on a more decentralized manner in their attempt to generate audiences and bring application providers together, resembling a business-to-business marketplace. They do utilize interconnectedness and interdependence, which are characteristic of networks, but those connections are created on a voluntary and *ad hoc* basis, both within the business ecosystem and the large pool of users (Parker et al., 2017). A particularly good way of exemplifying the *differentia specifica* of platforms at the firm level is to compare it with linear or product-oriented approach, which lacks the synergy created by the external ecosystem. Platform company together with its collaborators create a business and innovation ecosystem that increases the value of innovations and create synergies and network effects that improve their competitive advantage (Gawer & Cusumano, 2008; Ghazawneh, 2010; Uludağ et al., 2016). The other side of the competitive advantage is based on the creation of digital environment that is able to pool and facilitate social interaction effectively. It includes four dynamic elements: audience building; matchmaking; facilitation tools and services; and lastly, rules and standards needed to govern the actions revolving around the platform (Moazed, 2016).

The platform capitalism as a mode of development utilizes connections in the accumulation of capital, being just another form of the global networks of instrumental exchanges (Castells, 1996). It is a continuation of the interplay of globalization, informatization, and networking, which appears to be much more spiky and place-determined than its theoretically conceived premises might entail, which creates a connection with global urbanization and more specifically with the factual role of cities as the loci of innovation, consumption, investment, and power (cf. Florida, 2005).

4. PLATFORM URBANISM

Platforms have historically grown as local phenomena having limited degree of scalability and network effect. Due to the long historical roots of local platforms, it may be difficult to conceive their metamorphosis in the digital age. The change is real and profound, though. We may approach this with reference to four kinds of platform formations in terms of local-global dialectic: (a) purely local platforms; (b) sharing platforms that serve as mediational environments between local providers and globally dispersed demand; (c) hybrid platforms, which form a complex setting within which local actors take part in global digital platforms and integrate their resources into local service and governance ecosystems; and lastly (d) genuine global platforms.

Our interest is between purely local and genuinely global platforms. Platform urbanism reflects the interplay of the local and the global. A paradigmatic platform formation that epitomizes this is a *sharing platform*, which as a business model utilizes localized and decentralized aspects of the platform economy, as in the case of Airbnb or Uber. Such a platform can be virtually global, yet the solutions, resources or assets distributed or used via digital platform are essentially local or at least distributed or accessed locally. For this reason, such platforms have an obvious urban dimension (Artioli, 2018; Ferreri & Sanyal, 2018). That said, platforms show remarkable variation in terms of the peculiarities of each local "sharing milieu," which includes the actors involved; the objects of exchange; the forms of exchange; and the overall network of relations. In such a complex setting local authorities assume a role as primary instances of local public governance (Artioli, 2018; McLaren & Agyeman, 2015; Salice & Pais, 2017).

The city-as-a-platform is a special kind of locus of platform economy and its capitalist order (Srnicek, 2017). It is a result of business model, including the engineering of value-sharing, relationality of platform intermediation, and the framing of markets through the lens of platform ecosystems, that causes disruptions with long-term consequences that are still largely unknown (Barns, 2020; cf. Stehlin et al., 2020). Platform governance takes place behind the veil of proprietary opacity. As concluded by Barns (2020), it is based on diverse forms of value-sharing and participation within platform ecosystems, on the one hand, while keeping data harvesting and algorithmic programming highly centralized, on the other. A growing impact of platforms on various aspects of urban life suggests that not only its influence but also its logic is gradually extending to urban governance. As a response to the power of global platforms, many researchers have emphasized the need to save local commons within interdependent globality (Keohane & Ostrom, 1995), secure our right to the city under capitalism (Harvey, 2012), and enable citizens to develop their own local solutions and claim their right to access, representation, participation and ownership in the hybrid city (Antoniadis & Apostol, 2014).

There is an asymmetry between profit-seeking global platform players and place-bound city governments, for the latter as legitimate and democratic instances of public governance seek locally meaningful public value (Ferreri & Sanyal, 2018). Even if city governments may lack competence and power in various aspects of platform governance, as densely populated urban communities they possess real and symbolic values, which appears to be a conditioning factor and a resource for several forms of platform intermediation, especially for sharing that depends on local assets. City governments should be aware of the contradictions of the platform capitalism and act accordingly by using the power of places to regulate and benefit from the space of flows (Castells, 1996) and be smart enough to demand reasonable public interest obligations in exchange for a license to operate (Barns, 2020). The inherent challenge in this respect is the platform economy's elusive connection with the place and its extra-local and relational power, which in the context of open economy together with city government's limited competence may make cities toothless in seeking balance between the power possessed by the players of the fluid platform economy and the power of places represented by democratic local institutions.

5. DIGITAL EMBEDDEDNESS OF URBAN PLATFORMS

If we approach the digitalization of urban planning as a purely technological issue, it is possible to sketch its evolution as a consecutive phases from simple online presence and the provision of static information to a more interactive mode and further to various kinds of transformational levels of e-planning, as usually depicted in e-government development stage models (Silva, 2010; 2015). Especially the rise of the Web 2.0 and social media changed this scene profoundly in the first half of the 2000s. Most notably, a social media approach to planning puts users at the center of planning-related value creation and knowledge processes. It introduced technological tools that facilitate communication, content sharing, social networking, and crowdsourcing with apparently huge potential in enhancing active participation in urban planning. Such an approach is sometimes labelled as Urban Planning 2.0, which highlights the use of Web 2.0 methods and tools in creating inclusive planning processes, empowering residents to design their own neighborhoods, and utilizing the wisdom of crowds to achieve better outcomes. Much of this turn has been rhetoric rather than reality, for planning systems must take into account certain legal requirements and democratic procedures and, furthermore, there is some degree of inertia within the planning system itself.

If the introduction of ICTs in governance marked a dramatic change in the sense that dyadic interpersonal interaction transformed into impersonal information processing, it seems that we live in a new transitional phase, which brings big data analytics, machine learning and various forms of artificial intelligence into the picture. This is a layer that is intelligent, algorithmic and capable of learning, thus creating a completely new view of how technology can be harnessed in urban planning (cf. Bala & Moschouti, 2013). What such an intelligence may mean in the planning context is the artificially created informational value added between physical space and digital sphere, which in turn affects the human and social side of the picture (Bala & Mouschouti, 2013; Komninos, 2015). Platforms themselves serve as loci for creativity and intelligence both in the form of artificial and collective intelligence (Verhulst, 2018).

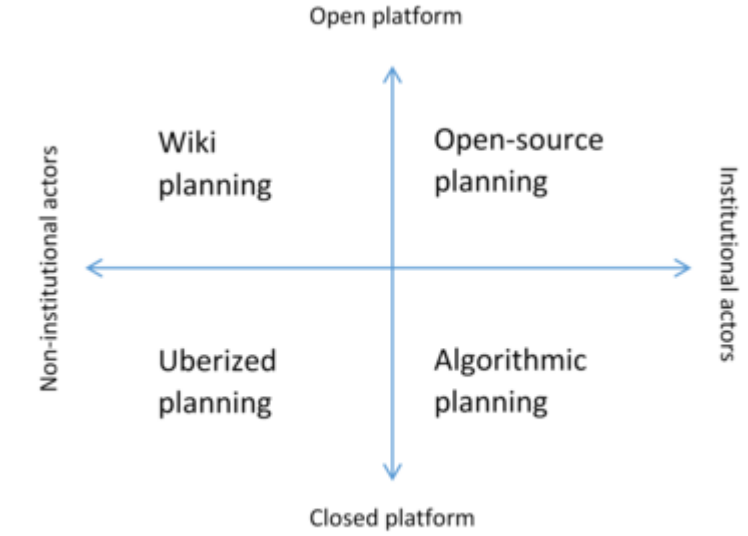
There is an interesting twist here. Namely, as Silva (2010, p. 6) concludes, "the use of new technologies to enhance public participation in urban planning per se does not change much, since it is dependent on the specific context in which the communication between the planning organization and the citizens take place." This is a vital point when considering the potential added value of urban platforms for planning. The defining elements of platforms, such as audience-building, matchmaking, facilitation of creativity and collaboration, and the integrative functions, bear fruit if they are integrated into democratically organized authoritative urban planning. In order to be able to best utilize ICTs, the issue is not only about how ICTs is utilized in formal planning processes, but also how government structures and planning systems are reshaped to enable digital transformation (Santos, 2017).

The digital dimension may lead urban planning to many different directions. For example, on the basis of prevailing polarities relating to planning, Douay (2018) identifies four trends in the use of ICTs in urban planning (see Figure 1):

1. Algorithmic planning implies the return of experts and technocrats.
2. Uberized planning is a reflection of urbanism under the pressure of an extension of the domain of urban capitalism.
3. Wiki planning is based on urbanism looking for a crowdsourced planning.
4. Open–source planning is in essence an enlightened urbanism that relies on the renewal of the practices of the democratic institutions of urban governance.

Following Silva's (2010) argumentation about the decisive role of context in determining how ICTs factually affect urban planning, we may hypothesize that there is no pre-determined paradigmatic cell to which platform planning matches within abovementioned four-fold scheme. Regarding the vertical axis of Figure 1, which expresses a dichotomy of open and closed platforms, platform thinking tends

Figure 1. Approaches to the use of ICTs in urban planning. (Source: Modified from Douay, 2018)



Source: Douay, 2018

to lean towards an open-source thinking. Platform's potential would be better utilized if the platform is open. In the same vain, if we consider the horizontal axis with non-institutional and institutional actors at different ends, the platform planning would naturally lean towards non-institutional actors due to its tendency to build audiences and benefit from network effect. However, algorithmic planning mode can be easily assumed to serve planning functions with strong emphasis on experts and leaving only limited room for public participation that satisfies minimum legal requirements. This shows how important the context is for the utilization of ICTs in urban planning. It also reveals the relevance of normative stance in determining the true nature of platform planning.

6. DIGITAL CO-PRODUCTION PLATFORMS

An archaic platform logic refers to the use of physical sites for both market exchanges and political decision-making. Even if many platforms today reflect this ancient premise of a platform, in the modern setting a few important features emerged. Due to modern institutional systems and communication tools, platforms started to surpass their immediate interaction and local embeddedness. The rise of digital urban platforms is part of this trend.

If we emphasize the technological side of the picture, discussion turns to *urban data platforms* (UDP), which create opportunities to support smart city development and integrate local stakeholders into urban service, planning and development ecosystems (Barns, 2018b). The same holds with many other *technology platforms* that can be used to support directly or indirectly urban planning, including cyber-physical systems (CPS) platforms, content management systems (CMS), media and Web platforms, and AI platforms. They are in essence technological enablers of urban digital business and innovation ecosystems and the critical building blocks of cities as testbeds, living labs or platforms (Schaffers, 2019). They also facilitate *urban informatics* that plays a role in serving urban planning (Kontokosta, 2018; Thakuriah et al., 2017; Barns, 2018a; Unsworth et al., 2016) and making data-driven participation possible (Tenney & Sieber, 2016).

Due to a recent paradigm shift, urban planning devotes its attention to the digital facilitation of *citizen participation and engagement*, referred to as participatory e-planning, public participation

geographic information system (PPGIS) or something similar (Silva, 2010; Sieber, 2006; Bugs et al., 2010; Gaborit & Howard, 2004; Khan et al., 2014). It is worth stressing that many of such digital participatory arrangements are not factually organized as platforms. In addition, a more radical view of participation brings us to genuine social network and content sharing platforms, yet at the same time distancing them from urban planning systems. Namely, there are forms of civic participation in the *social media platforms* in which people become voluntarily engaged from their semi-private spaces in discussing community, policy or political issues (Theocharis, 2015). This is a special instance of platformization and, in the long term, potentially even more transformative than those platforms that are tightly integrated with the formal urban planning systems.

Even if both technological layer and civic participation are necessary for platform planning, they are not sufficient for building success with digital urban planning platforms. A missing element is the institutional context and, more precisely, communication and interaction between city dwellers and urban planners. In their review article on *digital participatory platforms*, Falco and Kleinhans (2018) identified 113 platforms that fall into five categories of citizen-government relationship, those of information provision (4), consulting (22), interaction (51), co-production (25), and self-organization (11). Both informing and consulting lack deeper interaction. Interaction platforms do not utilize the processing capacities of platforms in the way that highlights generative platform functions. A particularly representative forms of them are reporting platforms, such as Fix My Street, which illustrate their signifying functionality. Self-organization, as important as it is both in public and private sectors, does not represent a sophisticated form of citizen-government interaction as such. Of these five categories, *digital co-production platforms* represent a paradigmatic case of urban platform planning. Operationally, in such platforms the representatives of local public authorities – politicians, public managers and urban planners – and citizens meet and collaborate in pursuit of improving the use of each other's resources and achieving better outcomes (Falco & Kleinhans, 2018).

It is essential to keep in mind that urban planning platforms should invite citizens to co-production or co-creation processes facilitated by a platform solution. Falco and Kleinhans (2018) identified 25 co-production platforms worldwide. There are many more in different parts of the world, of course, but this gives us an initial glimpse of the kind of platforms that serve vital urban planning functions. The review in question shows also interesting facts about platforms. Namely, some of them are designed for a particular city (e.g. MinStad in Gothenburg, Sweden), while others are solutions that have been applied in many cities (e.g. Maptionnaire). Most of the platforms are actually proprietary platforms with a specific pricing scheme, even though there are also a few open-source platforms that are free of charge.

Platform functions vary for understandable reasons. Two major purposes are (a) platforms that gather citizens' input regarding a special theme or interest related to an official masterplan or planning framework integrated with wider urban planning system and local policy-making, and (b) small scale urban design or redevelopment cases oriented towards redesigning a specific place or micro environment. Examples of the first are Carticipe for the municipal and metropolitan plans of various cities in France and Crowdbrite used within the process of developing the Las Vegas Master Plan. The examples of the latter are more numerous. They have a narrow focus, such as dealing with bike tracks, playgrounds, bus stations, parks or other small-scale developments. (Falco & Kleinhans, 2018.) Examples of both kinds of platforms are listed in Table 1.

Digital co-production platforms are designed to facilitate communication, joint ideation, knowledge sharing, solution creation and co-production emanating from the interplay between public and private actors. Falco and Kleinhans (2018) conclude that the most typical features of such platforms include opinion maps, surveys, discussion forums, budget allocation, simulation design, voting and ranking of ideas, analytics, map-based and geo-located inputs for collaborative mapping, crowdfunding, exporting in different formats for further analysis, importing and media uploading, and sharing on other social networking sites, such as Facebook and Twitter. They found out that the simultaneous availability of many of such features characterizes a platform as fit for co-production.

Table 1. Examples of digital co-production platforms

No	Platform (Country)	Website	Description	Main features
1	Bang the Table – Engagement HQ (Australia)	http://www.bangthetable.com/	Platform for public engagement needs. Digital mapping, ideation, stories, blogs, discussion forums.	Opinion maps, surveys, submit ideas, forums, exporting, analytics
2	Carticipe (France)	https://carticipe.net/	Carticipe is participatory platform designed to foster citizens debate and consultation on city-related matters. The tool combines social networks and interactive maps.	Voting, submit ideas, comments, map-based, analytics
3	Citizinvestor (USA)	http://www.citizinvestor.com/	Crowdfunding and civic engagement platform for local government projects.	Crowdfunding, voting, submit ideas, upload media
4	CityLab010 (the Netherlands)	https://www.citylab010.nl/	Platform to develop ideas for Rotterdam to make the city a more attractive place to live, work and study.	Submit Ideas and Plans to the city of Rotterdam
5	CityPlanner (Sweden)	https://cityplanneronline.com/site/	Map-based platforms and 3-D models that allows citizens to submit their ideas and projects.	Submit ideas, maps, comments, 3-d models
6	Commonplace (UK)	http://commonplace.is/	A simple and clear map-based tool for capturing people's views.	Map-based analytics, ideas, comments
7	Crowdbrite (USA)	http://www.crowdbrite.net/#_blog	Facilitates citizen and stakeholder engagement in strategic planning, infrastructure and built environment projects.	Maps, surveys, comments, ideas, visualization, analytics
8	Crowdgauge (USA)	http://crowdgauge.org/	Allows users to set priorities, rate and support different options and contribute with ideas about actions and policies.	Open source budget allocation, maps, rating, comments
9	Maptionnaire (Finland)	https://maptionnaire.com/?lang=en#how	Enables creating a map-based questionnaires, promoting discussion by publishing the results in Maptionnaire, and analyzing and reporting results.	Maps, comments, submit ideas, exporting
10	MetroQuest (USA)	https://metroquest.com/	Utilization of scenario planning and visualizations for informing the public and collecting feedback; allows citizens to submit and vote on ideas.	Submit ideas, voting, maps
11	MinStad (Sweden)	http://minstad.goteborg.se/minstad/index.do	This platforms allows citizens to submit ideas in a 3-D model for the city of Goteborg, Sweden.	Submit ideas, comments, maps, 3-D model
12	Shareabouts – Open Plans Project (USA)	http://openplans.org/	A web-based mapping tool for gathering crowdsourced public input; people can drop a pin on a map to provide ideas, suggestions and comments.	Open source map based, comments, submit Ideas
13	TransformCity (the Netherlands)	http://www.transformcity.com/	Collaborative mapping. People can share their ideas and wishes for the area.	Maps, submit ideas, comments
14	Urban Interactive Studio (USA)	http://urbaninteractivestudio.com	Reaches, informs and involves citizens and stakeholders in public projects and decision making allowing them to comment and share opinions.	Maps, submit ideas, comments, analytics

Source: Adopted from Falco & Kleinhans, 2018

The most essential ones are collaborative mapping, map-based comments and ideas submission, voting and ranking options, media uploads, and analytics, as seen in Maptionnaire, Carticipe, Commonplace, TransformCity, and Bang the Table. (Falco & Kleinhans, 2018).

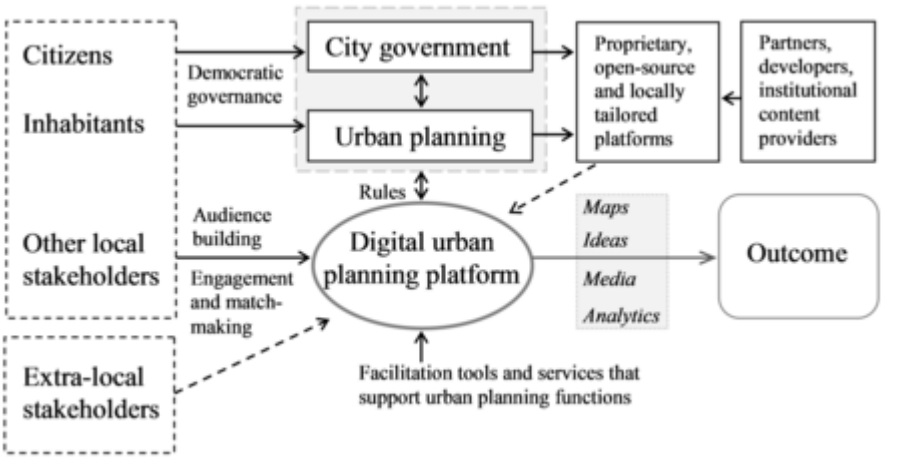
Let us take an example. Maptionnaire is a fairly simple map-based survey tool designed to facilitate public participation. It uses online questionnaire editor that allows for the creation, customization and publishing of survey projects. It enables planners and researchers to collect, analyze and visualize map-based data, while citizens are offered co-design project areas and an organized room for expressing their preferences and opinions (https://maptionnaire.com/). The idea is to involve citizens

in urban planning projects with an easy and engaging digital system. It has been used by the city of Stockholm to map the ideas and feelings of residents towards planned housing development in their neighborhood and in the city of Helsinki for the development of city's master plan, which resulted in some 33,000 ideas and reactions marked on the map by about 4,700 respondents. Features like those used in Maptionnaire – from citizen engagement, interaction and data collection to visualization and analytics – are characteristic to digital co-production platforms. The idea of such a platform is outlined in Figure 2.

Urban platform is a hybrid governance arrangement that places players to particular positions. The platform morphology includes three fundamental positions: platform creator or owner, organized platform ecosystem players (application developers, service and content providers and back-office service providers) and audiences as both users and content creators. Governance-wise, platform rules are essentially hierarchical in nature and set by the platform creator. Institutional ecosystem players form basically a network of interdependent actors that create value by contributing to the platform. Lastly, the audience is involved in the platform primarily along the principles that are reminiscent of market mechanism. In this sense platform represents a multi-modal or hybrid governance structure.

A platform setting is sensitive to an inherent asymmetry in terms of information, resources and power. There is an interesting twist here that echoes the concerns expressed in the e-planning discourse. If platforms are used as an aid to urban planners and decision makers, it is not able to bring about radical transformation in urban planning. As platforms have been currently used as a kind of additional element to public planning, policy and governance, their true potential is still largely unknown and their challenges yet to be faced. The early forms of urban platform planning, such as digital co-production and innovation platforms, are in most cases development-oriented supplementary activities with an *ad hoc*-based relationship with municipal line organizations, allocation of resources, and mandatory planning functions. Their suitability for planning, designing and developing critical urban functions is yet to be tested. Platforms are likely to face fairly similar challenges as any non-hierarchical or hybrid form of organization. There is actually already anecdotal evidence to claim that even purely public platforms have faced coordination and leadership problems (Sriram et al., 2018). Another anticipated critical matter is that platform innovations easily conflict with existing regimes, which in turn is likely to prompt some kind of contestation over the prevailing institutional arrangements (Pelzer et al., 2019).

Figure 2. Digital urban planning platform. Source: Author's own elaboration



Finally, let us consider the added value of digital urban planning platforms. Their revolutionary nature cannot be understood without a reference to the idea of city as a platform. Namely, when city becomes a platform, the view changes from government-centered "dictate and control" towards "engage and empower" approach. In ideal case, politics will be largely replaced by civic interaction, and hierarchical policy-making by dynamic civic initiation, engagement and deliberation. Such an approach requires institutional innovation that goes beyond conventional idea of representative democracy. (Bollier, 2016.) Implications for urban planning are manifold. Platform planning emphasizes the role of local inhabitants and stakeholders as agenda setters, initiators and innovators, which challenges the conventional view of urban planning. It also emphasizes flexibility and adaptability. Thus, as citizens' interests in planning issues vary, so may also the group of people involved in each planning session. Platform-centered urban planning has a few fundamental challenges, however. Most notably, its legitimacy will be tested in how it can be adjusted to the requirements of the rule of law and democratic decision making without losing its adaptability, flexibility and dynamic nature.

Regarding planning process, platforms bring along multimedia facilitation with special tools designed to serve different phases of urban planning process. They are supposed to provide easy access, facilitate sharing, collaboration and creativity, support deliberation and consensus building, and integrate the outcomes into legally binding spatial planning system. As the planning issues operate at different levels, this must be taken into account in platform planning. Some platform sessions operate at the city level, while others operate at city district or neighborhood level, or are set to deal with a particular policy issue or the development of some micro environment. This implies that platforms have a potential to deal with the complexity caused by the asynchronous and multi-level nature of urban development, which is further accelerated in the environment in which the self-organization of local groups, neighborhoods and communities is encouraged (Wallin, 2019; Eizenberg, 2019).

There is a particular context that radicalizes further the view of platforms in urban planning. It is a smart city framework, which builds upon the utilization of datafication and Big Data analytics, algorithmization, machine learning (ML) and Deep Learning (DL) and other aspects of artificial intelligence (AI) (Kirwan & Fu, 2020; Komninos, 2015). This view emphasizes several aspects of planning that can be improved and smarten up with the help of various technological solutions. For example, urban planning AI may combine different layers of licensed and open data on real estate, sustainability, mobility and human intelligence. AI capability can thus be used to take a sharp and insightful view of city as a complex and interconnected system (Rincón, 2018). Such features reflect the ability of the intelligent urban planning platform to operate at the personal level of each platform participant while at the same time integrate their views within a platform and further to contextualize them with Big Data analytics, ML and algorithms that can be used to predict, simulate and recommend feasible solutions. Platforms are organizational solutions for multi-level resource integration *par excellence*, and that is how they can also smarten up urban planning. The precondition for a successful accomplishment of such an endeavor is to deal with creativity, integratedness and complexity that are inherent elements of urban planning.

7. CONCLUSION

Platform logic is an aspect of the new economy that revolves around the monetization of connections and shared assets facilitated by a digital platform. Due to the pervasive impact of digitalization in all realms of social life, it is likely that such a platform logic will extend its influence beyond business. Digitalization helps to gather local players but it also facilitates upscaling and smartening up urban processes and, ultimately, connecting urban platforms with broader socio-economic ecosystems. Such a platform urbanism forms a tensional field in which global platform providers exercise their relational power, while city governments as the instances of local democratic governance have a capacity to use their bargaining power to extract local public value from platform business due to their ability to control local resources and regulate local environment.

While digital platform works as a kind of disembedding mechanism, platform urbanity and urban platform planning contain also re-embedding tendencies. Platform logic has a peculiar relationship with urban planning, as the platform itself as an expression of an emerging social morphology has an ambivalent relationship with the planning function. Of various urban planning platforms, the digital co-production platforms are the most promising formations, which offer simultaneously many features that provide valuable aid for planning, including collaborative mapping, map-based comments submission, voting option, media uploads and analytics. Maptionnaire, Carticipe, Commonplace, TransformCity and Bang the Table are real-life examples of such platforms.

It is likely that platformization affects the future of urban planning at two fronts, through social media platforms, which will increasingly integrate into discursive sphere that has indirect connection with urban planning, and through digital urban planning platforms that are directly integrated with the democratic urban planning system. If the latter is able to redeem its promise as a smart way of facilitating urban planning, it may well become an urban planning model for the 21st century.

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