The role of online community platforms for the management of the urban commons

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This article is a preliminary study on the role of Online Community Platforms (OCPs) in enabling individuals to engage in community governance of the urban commons. It proposes a framework called OCPAT which aimed at helping users to choose their optimal OCP. The OCPAT framework is based on the structure of Ostrom's SES framework: each of the SES components is divided into factors of analysis of OCPs. We apply the framework to four case studies to illustrate how it works. Our ultimate goal is to further develop the OCPAT framework with the help of Ostrom's SES variables, and therefore to build a complete tool for the analysis of OCP-based governance systems.

Introduction

Citizen engagement has become an ubiquitous practice since the 1960s and 1970s when the citizen rallying cry was «empowerment», in response to the lack of citizen representation in the political arena. This practice also represents a strong opportunity to get extra hands

working on local affairs. Cities have this property to gather 54% of the Earth population in local clusters of dense habitat. The vicinity imposed by this way of living makes collaboration possible and often necessary. Nowadays bottom-up initiatives in the form of community projects are taking momentum to tackle socio-environmental issues through the collective management of urban resources and spaces, called urban commons (*Foster and Iaione, 2016*). These communities can involve a wide range of actors, from individuals to companies and local authorities.

Urban Commons (UC) are shared material, immaterial or digital goods in an urban setting. Citizens and administration recognise UC as functional to the individual and collective well-being: the degradation of urban commons is perceived as a loss. UC can be tangible such as public spaces, community gardens, locally-grown vegetables and waste disposal facilities, or intangible such as a sense of security, a sense of belonging, social networks and mutual trust (*Foster and Iaione, 2016, Parker and Johansson, 2011*). Decentralising the urban commons governance offers a chance to bring citizens from being resource consumers back to commons appropriators (*Chatterton, 2016, Illich, 1982*). By re-organising themselves as local communities, citizens would also have the opportunity to influence the sustainability of their neighbourhood, by directly acting on green spaces or engaging in circular economy.

Enabling citizens to build local urban governance systems can solve the lack of citizen representation, not as a rejection of the existing representative democracy but as an evolution of it (*Folke et al., 2005, Hess, 2008, Ostrom, 1999, Pahl-Wostl, 2009, Wampler, 2012*). Cooperative arrangements indeed guarantee an equal and open debate (*Chatterton, 2016*). Decentralising decision-making processes facilitates the access to and use of local knowledge and excludes untrustworthy individuals (*Ostrom, 1990*). It also generates disaggregated feedback from the system and well-targetted rules which seem more

legitimate since they come from the individuals they apply to. These processes generally happen in a bottom-up dynamic.

Societies are less and less based on categories or social classes. More and more links are made based on similar interests or by people willing to connect with others which are emotionnally close to them, in the way they perceive their environment. Society of classes becomes society of networks, after French sociologist Alain de Vulpian. This metamorphosis has been taking place during the past half-century. In the 1980's, this desire of more inter-personal connections led to the use of the first cell phones, later followed by the globalisation of the internet (from military purpose to civilian) and the Big Data phenomenon. The metamorphosis also happens outside the technosphere: start-up incubators breeding across the world, catalytic governance requiring better knowledge of the system and less bureaucracy, participative democracies being more popular than their representative precursor. Society is moving towards a democracy of the commons goods, where cooperation and entente as drivers are replacing competition. This «society as a brain» building its own networks in an adaptive manner is what motivates the use of online media.

At our digital age most of the bottom-up initiatives take shape with the help of online platforms. **Online community platforms** (OCPs) are a relevant example. Such platforms have the potential to help local communities to self-organise by engaging interested citizens and sharing knowledge between people who would not have the opportunity to do so face-to-face. OCPs can quickly bind the potential actors of local community governance. Most of the research led on OCPs and online participatory platforms takes the perspective of urban planners or organisations, respectively on how to best engage citizens in electronic governance or obtain successful marketing campaigns (*Afzalan et al., 2017, Estevez and Janowski, 2013, Deng et al., 2015, Luo and Toubia, 2015, Pletikosa*

Cvijikj and Michahelles, 2013). However, there has been no research, to the best of our knowledge, on the perspective of the individuals creating their own community in order to solve a local issue, via the help of OCPs. We aim to fill-in the gap between the ubiquitous practice of online self-organisation and the lack of understanding of such processes.

The goal of this research is to develop a framework which serves as a tool for users to choose their optimal OCP for urban community governance, alongside with a scientific perspective looking at both technical and institutional features of OCPs. The framework explores the possibility to adapt E. Ostrom's framework for the analysis of Socio-Ecological Systems (*Ostrom, 2009*) in order to qualitatively describe OCPs. We base our work on a thorough literature analysis and OCP study-cases.

1 Theoretical backgrounds

1.1 Institutions

Urban commons community governance (UCCG) relies on institutions, which were simply defined by E. Durkheim as collective ways of acting or thinking, encompassing legal forms, conventions and customs. More specifically, they are «*socially constructed, historical patterns of cultural symbols and material practices, including assumptions, norms, values and beliefs, by which individuals and organisations provide meaning to their daily activity, organise time and space and reproduce their lives and experiences*» (*Thornton and Ocasio, 1999*). Governance systems are made of formal and informal institutions that describe the actions and interactions of the different decision-makers. Formal institutions, such as laws or property rights, are codified; while informal institutions reflect social and behavioural norms. Institutions have a coercive effect in the sense that they act upon us from the outside. In brief, institutions regulate social interactions. In the context of OCPs, institutions can help describe the overall platform's management dynamic (for

example top-down or bottom-up), the interactions of the users through the OCP and the rules in places regarding content and privacy.

1.2 Web 2.0 and two-ways communication

`Web 2.0` is based on three main pillars: user-generated content, interoperability of the information systems and the inclusion of the social context of the user (*Fu et al., 2008*). The first pillar deletes the boundary between information user and producer: this is called two-ways communication. This is a cornerstone for any web-based bottom-up process since anyone can submit and read information, within one or several communities. This leads to the modularity offered by the second pillar of `web 2.0`: it allows information to be aggregated from several sources. The development of data format standards and compatible metadata files greatly helped the information to move across the internet. The last pillar of `web 2.0` makes the online interactions of the users more socially realistic, with the possibility of joining users with similar interests, discussing online, posting comments, tagging or rating content. This allowed social networks to spread also virtually through web pages and platforms. It also made possible to customise online services to the user, and the creation of uncountable business opportunities. Targeted advertisement is a controversial example of this phenomenon.

`Web 2.0` has made the internet a common good with the apparition of blogs and wikis, to which anyone can contribute. The roles of the webmasters have decreased by sharing their moderation activities with the users. `Web 2.0` is indeed based on the «wisdom of the crowds» (*O'Reilly, 2012*)) and is therefore self-regulated, as long as it complies with a list of international regulations: privacy, copyright, respect of the other users. Community-based platforms are emblematic of `web 2.0` since they allow users to share information, link people with similar interests or goals and allow their users to manage to a certain

extent the contents of the platform via collaborative processes (*Staab et al., 2000*).

1.3 Online platforms and participatory processes

Two main types of online participatory platforms (OPTs) (*Afzalan et al., 2017*)) can be found: 1) web-based tools aiming at engaging citizens (e.g. *MySideWalk* or the equivalent in Paris *DansMaRue*, literally «*in my street*», inciting citizens to notify the community when they witness damage or issues on public space) and 2) social networking sites such as *Nextdoor*, *LinkedIn* or *Facebook*. In the urban context, most of these online platforms are used by organisations for the promotion of smart cities. The technological advances of `web 2.0` and mobile applications can boost local initiatives and social cohesion within a given urban district (*Albino et al., 2015*): planners can democratise decision-making (*Angelidou, 2015*), respond to wicked problems (*Geertman et al., 2015*), be aware of citizen's interests (*Kitchin, 2014*) and increase social capital (*Lombardi, 2011*). The largest contribution to this field deals with the effects of online platforms on society (*Westerbeek et al., 2016*) or the considerations which such organisations should take into account when choosing an OPT for smarter cities (*Afzalan et al., 2017*). After the latter study, some factors directly influence the efficiency of the use of OPTs for participatory processes, namely the user's literacy on the technology, the expertise of the planners, the organisational resources and the tool capabilities. OPTs should match public interest and promote open-ended interactions. However OPTs are just one option among other tools for decision-makers. Several factors can influence the incorporation of such platforms: the planning organisation's capacity, the community capacity, the planning problem or goal, the existing norms and regulations and elements linked to the creation and maintenance of the OPT itself. However, organisations also face some issues when putting participatory processes into practice via the use of OPTs: lack of motivation from the user's side, lack of trust of

participation from the deciders' side especially (*Afzalan et al., 2017*). The characterictics of an OPT are one thing, but the way communities and decision-makers use it is another (*Flyvbjerg, 2006*). An interesting point of the previously mentioned study (*Afzalan et al., 2017*) is the description of the required tool capacity, which encompasses:

- decision process and leadership (e.g. existence of a monitoring system, decentralisation of the moderation such as in Facebook pages or private groups)
- efficiency to stimulate more user participation via crowdsourcing, promotion of face-to-face meetings or consensus-building processes
- conflict management and possible intervention of the planners
- atmosphere of the platform

However communication tools are still not well described in details. A case- and literature-based study (*Deng et al., 2015*) showed that online platforms can help users build networks and engage in collaborative processes. Actors from various origins, citizens, civic organisations, experts, planners can in theory be brought at the same virtual table. The study outlines some challenges regarding the efficiency of the exchange of short online messages in collaborative processes, and also about the difficulty to engage all potential actors.

2 The Online Community Platform Analysis Tool (OCPAT) framework

The purpose of this framework is to provide citizens with a simple comparative tool to evaluate and compare the various types of existing OCPs in order to engage into urban commons community governance (UCCG). It follows the structure of Ostrom's SES

framework, made of five components: *Resource Units*, *Resource Systems*, *Interactions*, *Governance Systems*, *Users* and *Outcomes*. To make it fit the context of OCPs, we have merged and renamed the first two SES components as *Topic*. The three other components have been kept (Figure 1). Each of these components can be analysed in the perspective of one or several factors listed in Table 1.

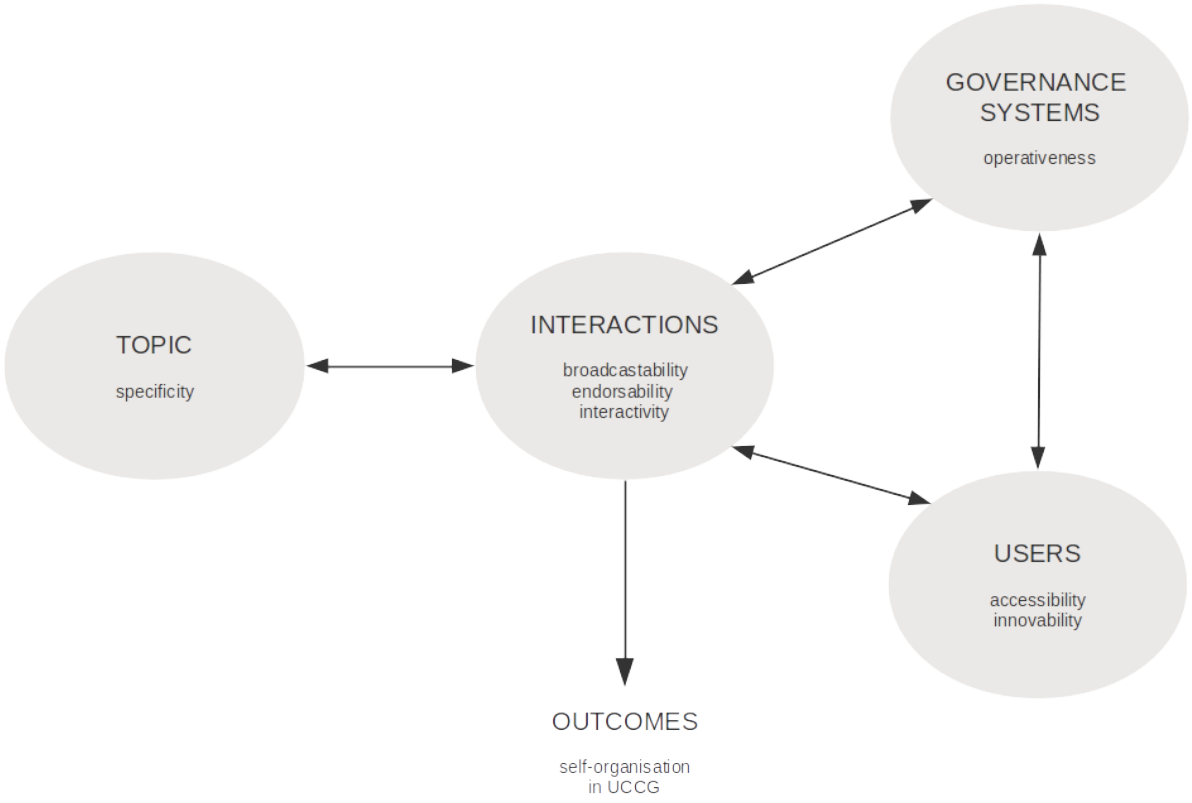

Figure 1: Overview of the OCPAT framework

An OCP platform can first be described by its **accessibility** to users. The platform can be accessed by several types of devices and its degree of accessibility is an important factor or citizen engagement (*Wimmer and Krenner, 2001*). Wikis are an example of very accessible platforms for community co-creation of knowledge (*Kai-Wai Chu and Kennedy, 2011*). Whether an user needs to create yet another account, or use an existing social

Factor name	Factor description	Factor values
Accessibility	ease to become a member	join group, create account, free, costly, public, private, device type
Broadcastability	capacity to reach out	share online, mailing list, campaign
Endorsability	capacity to get external support	integration, isolation, share online
Innovability	capacity to propose project	post on forum, create page, create website
Interactivity	level of user interaction	forum, comments, mailing list, face-to-face
Operativeness	capacity for task and team management	role distribution, sharing information, project status, bottom-up, top-down
Specificity	level of topic diversity	specific, general

Table 1: Detailed factors of the OCPAT framework

media account, pay to access the content or not, undergo strict moderation rules or not, is an important factor to consider. **Specificity**, or the degree of topics diversity, also needs to be assessed: it gives an idea of the potential platform's success and ability to engage citizens. A general platform might however dilute the chance to getting new participants. Platforms' projects plans can be small-scale or large-scale, and must fit the project's goals (*Afzalan et al., 2017*). The third parameter to observe in order to engage in effective community work is the capacity to reach out for interested participants via an effective crowdsourcing: the **broadcastability** The purpose of an OCP is often to engage people that otherwise could not attend public meetings or to inspire a community on an innovative project (*Afzalan et al., 2017*). **Innovability** is another important factor: the way in which new ideas and projects are proposed can fit different goals and match corresponding degrees of efficiency. This factor is a key parameter for the platforms' developers: it shapes the ontology which guides the structuring of the portal information (*Staab et al., 2000*). At the same time community initiators are interested in optimal

online idea generation, which depends on the audience: low-level knowledge users are more attracted to stimulus ideas and in general, decomposing an idea or project into sub-tasks is beneficial to all audience types (*Luo and Toubia, 2015*). **Interactivity** describes the processes by which users participate online. In addition to the common technical features listed in Table 1, one might favor a formal or an informal atmosphere provided by the platform (*Afzalan et al., 2017*). **Endorsability** is a key parameter since it directly influences the success of most initiatives: it is the capacity to get external support, logistic, financial or in terms of participants to organise a workshop or a campaign (*Afzalan et al., 2017, Estevez and Janowski, 2013, Palfrey and Gasser, 2012*). OCPs are a link between citizens, government services, businesses and other relevant actors of collective action. The last factor listed in this framework is the **operativeness**, i.e. how the tasks and community are managed through the platform. Most OCPs do not really allow complex team and content management, and one might have to use additional tools next to the main OCP, such as Trello[1]. A recent study highlighted key features of operativeness: decision process and leadership, efficiency in stimulating public participation, conflict management and atmosphere (*Afzalan et al., 2017*). We have however classified the atmosphere aspect in the interactivity factor as we find it more relevant there.

3 OCP case-study

This section shows how the OCPAT framework can be used, by applying it to four different Online Community Platforms.*Nudge*[2], a *Facebook page*, *Trello*[1] and *Slack*[3]. They have been selected because of their diversity in the way they were designed: from social network to task management platform, they can still all be used by a community for local projects.

[1]https://trello.com/
[2]https://www.nudge.nl/
[3]https://slack.com/

Facebook pages are popular specially for companies, associations or foundations desiring to have a presence online. They can also gather a group of people around a certain centre of interest or ideology. Slack is designed as a powerful communication platform, with the possibility of opening several channels ot topics between a given group of people. Exchanging files is possible and so is the integration of bots to help plan events or divide tasks between the group's members. Trello is a pure task management platform, and can be used by groups of friends, startups or even companies to organise themselves. Nudge platform is a popular dutch OCP focussing on sustainability, with approximately 50'000 active members. It allows citizens to engage in public initiatives in their neighbourhood or across a larger territory. Its members are called *Nudgers*. They are able to propose ideas and create *Nudges* by supporting or commenting *Nudgers*' ideas. Private businesses can also engage in the platform as *Friends-of-Nudge*, by supporting financially, with knowledge or in terms of logistics. Nudge is active in the following topics categories: Water, Nature and Agriculture, Re-use and waste, Habitat and lifestyle, Work and education, Share and commonalty, Mobility, Eat and Drink, Energy.

The first part of this section briefly applies the OCPAT framework to compare the four OCPs. The second part of this section outlines the main features of these platforms observed with the eye of the OCPAT framework: technical and institutional. This serves as a validation of the usefulness of the OCPAT framework. To do so we focus on two most relevant OCPs out of the four originally selected.

3.1 Application of the OCPAT framework

The results of the comparison are shown in Table 2 and Figure 2.

Factor name	Low = 1	Medium = 2	High = 3
Accessibility	Slack, Trello	Facebook page	Nudge
Broadcastability	Slack, Trello	Nudge	Facebook page
Endorsability	Slack, Trello	Facebook page	Nudge
Innovability	Slack, Trello		Nudge, Facebook page
Interactivity		Nudge, Trello	Facebook page, Slack
Operativeness	Facebook page	Nudge, Slack	Trello
Specificity		Nudge, Slack, Trello	Facebook page

Table 2: Examples of OCPs analysed with OCPAT framework

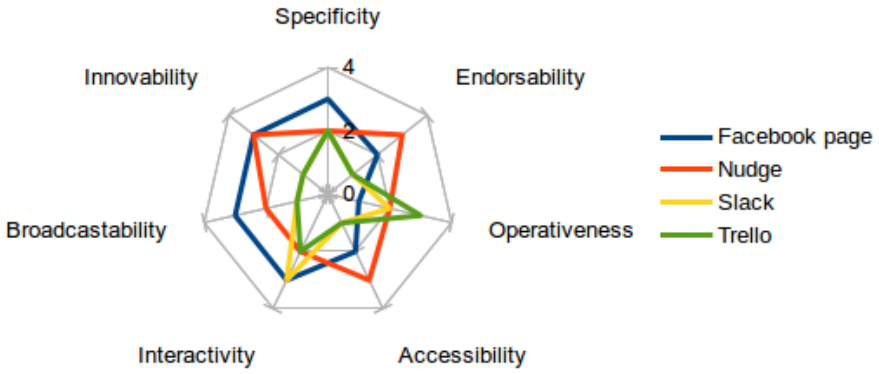

Figure 2: Radar plot of the factors in different OCPs

Slack and Trello are more content and team management oriented, while the Facebook page clearly outperforms in terms of connectivity. Nudge appears here as a compromise.

3.2 Technical and institutional analysis

The analysis is performed over two dimensions: technical and institutional. The technical dimension refers to the technological features of the platform, while the institutional dimension gathers intelligence on the functioning and rules of the platform.

Factor	**Dimension**	**Facebook page**	**Nudge**
Accessibility	Tech.	create account, join page	create account: free for users, costly for private businesses
	Inst.	Facebook terms of use, in-page moderation, free, public/private	Nudge moderation, free, public
Broadcastability	Tech.	Share (wall, private message, group, link)	Sharing profiles of *Nudgers*, news and ideas: in development
	Inst.	Facebook sharing rules and audience restrictions	*Nudgers*, *Friends-of-Nudge*
Endorsability	Tech.	Suggestion of similar pages	Become Friend-of-Nudge, share knowledge
	Inst.	Facebook social network	Friends-of-Nudge network
Innovability	Tech.	comment, create Page	*Nudger*: comment, propose idea, write blog; *Friend-of-Nudge*: start project or campaign
	Inst.	General content control	Nudge company's vision and mission
Interactivity	Tech.	comment on page wall, join events, private message, like, share , subscribe to news and notifications	comment on project page, join events, e-mail, endorse (idea or other comment)
	Inst.	Facebook encourages original content and self-control	Nudge has a Foundation, a Board of Advisors and Experts and an Action Council to engage young people
Operativeness	Tech.	Share ideas, organise events, build a commnunity	
	Inst.	bottom-up (with top-down Facebook regulations)	top-down platform management
Specificity	Tech.	any topic	topics categories
	Inst.	must respect Facebook terms of use	can be tailored to municipality scale: *Nudge Local*

Table 3: Comparative analysis of two OCPs: technical (Tech.) and institutional (Inst.) dimensions

We focus on the Facebook page and Nudge: Facebook being wide spread, it may be the first platform to think of to start a project. A Facebook page is a subdivision of the Facebook platform, which is accessed through a distinct `url`. A page has a clearly defined topic, explained in a short description and can refer to another web domain. A page can be *Liked* or subscribed to in order to stay informed. Nudge is a very good example of OCP, and has allowed many important projects to be carried out successfully in the Netherlands.

Both OCPs allow its users to propose ideas, operate some crowdsourcing and interact through online and face-to-face discussions. The geographical scale of action can be local or more global. Both OCPs however lack the strength to reach out for external support. Nudge has already institutionalised the *Friends-of-Nudge*, although the support can only come from the existing network of Friends-of-Nudge. Nudge is presently working on additional features to better share information across other platforms and thereby enhance its potential endorsability. Facebook endorsability relies on the condition that private businesses already are active on Facebook. The results are presented in Table 3.

4 Conclusion

The Online Community Platform Analysis Tool (OCPAT) framework is a simple tool designed for users to compare OCPs in order to engage in online community governance. This governance can act on many different topics, of which urban commons take a significant share.

The OCPAT framework is designed after the structure of Ostrom's SES framework, which analyses the Sustainability of Social-Ecological Systems (*Ostrom, 2009*). The OCPAT framework subdivides the SES components into seven factors: Accessibility, Broadcastability, Endorsability, Innovativity, Interactivity, Operativeness and Specificity. Every

factor of the OCPAT framework can be subdivided in a technical and an institutional dimension for further analysis.

Further work will develop the OCPAT framework by testing the validity of all the SES variables of Ostrom's framework.

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