

# The unexpected persistence of non-corporate platforms: The role of local and network embeddedness

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## ABSTRACT

The Covid19-pandemic has accelerated processes in which digital platforms, privileged by their critical size, become central instances of urban life. While most scholars associate platform urbanism with transnational platform corporations, such as Amazon or Facebook, local non-corporate platforms unexpectedly persist despite lacking critical size. This article analyzes processes through which non-corporate platforms are created, maintained, disseminated, and locally implemented; given this type of platform's absence of critical size. We explain the persistence of local non-corporate platforms by drawing on the concept of embeddedness. Embeddedness accounts for non-market-based, i.e. socially and culturally influenced behavior, that shapes economic interactions. We distinguish between network embeddedness, in which organizations maintain permanent and exclusive relationships with one another, and local embeddedness, which combines Hess' (2004) notions of societal embeddedness and territorial embeddedness. This article is empirically grounded on an analysis of two *most different* ways of creating and maintaining, disseminating, and locally implementing non-corporate platforms: Platform cooperativism and free/libre open-source software-based platforms (FLOSS-based platforms). Two empirical case studies of collaboratively governed Western-European non-corporate platforms, *Gebiedonline* and *Decidim*, respectively inform the analysis of platform cooperativism and FLOSS-based platforms. *Gebiedonline* is a platform cooperative through which neighborhood and theme-specific platforms are created. *Decidim* is a FLOSS-based platform that is mainly used for civic and political participation processes. We find that governments and civil society stakeholders create non-corporate platform technology by disentangling processes related to the creation, maintenance, and dissemination of platform technology from platform implementation processes. Following platform creation, platform maintenance is embedded in a network. Non-corporate platforms pool cost-intensive technology maintenance, while platform implementation necessarily takes place in a locally embedded manner.

## 1. Introduction

Since early 2020, the Covid19-pandemic accelerated the transition towards platform urbanism, a process in which ubiquitous digital platforms reshape “urban conditions, institutions, and actors” (Barns, 2020, 19). Lockdowns forced restaurants and retailers to review their business models and turn towards transnational corporate platforms (e.g. Amazon, Facebook, Uber) to interact with end-users staying at home. Regardless of the overall economic downturn, transnational platform corporations saw their revenues skyrocket (Lee, 2020; Murphy, 2021). “The ‘winner takes it all’ nature of platforms” (Barns, 2019, 7) leads to dominant, often monopolistic, platform corporations (Langley & Leyshon, 2017; Srnicek, 2016) that rely on their critical size to consolidate themselves by reaching into new economic areas (Grabher, 2020; Pais &

Provasi, 2020). Most scholars, therefore, associate platform urbanism only with transnational platform corporations, even if locally-created and governed non-corporate platforms persist (e.g. Priester & Niederer, 2014; Husain et al., 2019; Leszczynski, 2020; Chiappini, 2020). While local non-corporate platforms can aim to counter the excesses of transnational platform urbanism (Chiappini, 2020; Graham, 2020; Leszczynski, 2020), this type of platform arguably entails completely renouncing the use of “network effects”, meaning renouncing to reap the benefits of large scale technology development and roll-out (Barns, 2020; Stallkamp & Schotter, 2021; van Dijck et al., 2018). Yet, if the power of platforms lies in their scale and global reach in which the “winner takes it all,” the persistence of local non-corporate platforms is puzzling.

We adapt Ansell and Miura's (2020, 264) definition of governance

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platforms to define *local non-corporate platforms* as webpages that use their “architecture to leverage, catalyze, and harness distributed social action”. Like digital participatory platforms, we understand local non-corporate platforms as a “specific type of civic technology explicitly built for participatory, engagement and collaboration purpose” (Falco & Kleinhans, 2018). By being largely independent of corporate activities, local non-corporate platforms are “glitches” in platform capitalism – errors and corrections in the “hegemonic configuration” of society – “which belie hegemonic overdeterminations of the total and complete capitalist take-over of cities” (Leszczynski, 2020, 197). Scholarly research on local non-corporate platforms has mostly focused on the utilization of platforms as an urban governance tool, using an e-governance perspective (e.g. Anttiroiko, 2016; Royo et al., 2020; Gil et al., 2019) and concentrating on the relationship between governments and citizens (e.g. Falco & Kleinhans, 2018). To date, only limited research (e.g. Farías & Widmer, 2018; Leszczynski, 2020; Schneider, 2018) has inquired into the reasons why non-corporate platforms persist without focusing solely on specific (e-)governance tools. This article, in contrast, attempts to grasp the conditions under which non-corporate platforms persist not only as institutionalized governance tools (e.g. Royo et al., 2020) but rather as alternatives to transnational platform corporations. More precisely, this article addresses the question through which processes non-corporate platforms are (1) created and maintained, (2) disseminated, and (3) locally implemented given this type of platform’s absence of critical size.

This paper explains this (seemingly) puzzling persistence of local non-corporate platforms by drawing on the concept of embeddedness. Taken from entrepreneurship research and economic geography, the embeddedness concept allows to account for non-market-based – i.e. socially and culturally – influenced behavior that shapes economic interactions (Granovetter, 1985; Grabher, 1993; McKeever et al., 2014; Hess, 2004; Uzzi, 1996). The concept of *embeddedness* focuses on “the natural everyday settings in which entrepreneurship” takes place (McKeever et al., 2014, 230). Granovetter (1985) coined the concept of embeddedness to explain the persistence of small and medium enterprises despite their disadvantages in a capitalist economy. Wood, Graham, Lehdonvirta, and Hjorth (2019) use the embeddedness concept to explain processes of (de-)commodification of labor and goods in platform capitalism. Here, we draw on the concept of embeddedness – outside the concept’s typical focus on firms (e.g. Grabher, 1993; Hess, 2004; McKeever et al., 2014) – to explain the persistence of non-corporate platforms despite their absence of critical size. To this end, we distinguish between network and local embeddedness. We define *network embeddedness* as organizations maintaining “ongoing and exclusive relationships with one another” (Uzzi, 1996, 676) which are based on trust and problem-solving arrangements rather than market-based transactions (Hess, 2004; Uzzi, 1996; Wood et al., 2019). We define *local embeddedness* as a combination of Hess’ (2004) notions of societal embeddedness – meaning an organizations’ attention to its immediate cultural, political, normative, and institutional environment – and territorial embeddedness – which involves being “‘anchored’ in particular territories or places”.

Empirically, this paper is based on a *most different* case selection (Flyvbjerg, 2006; Gerring, 2006; Mill, 1869). This approach suggests focusing on similarities of two vastly different cases of non-corporate platforms to cautiously draw broader conclusions on the reasons for the persistence of non-corporate platforms despite their absence of critical size. We investigate two vastly different ways of creating and maintaining, disseminating, and locally implementing non-corporate platforms for structural similarities: Platform cooperativism (Schneider, 2018; Scholz, 2016) and free/libre open-source software-based platforms (henceforth FLOSS-based platforms) (Birkinbine, 2018; Graham & De Sabbata, 2020). The conceptualization of platform cooperativism and FLOSS-based platforms is paradigmatically informed by two empirical case studies of collaboratively governed Western-European non-corporate platforms: *Gebiedonline* and *Decidim*. We

selected the specific cases because of their strong differences and their respective representativeness of platform cooperativism and FLOSS-based platforms. *Gebiedonline* is an Amsterdam-based formalized platform cooperative that owns the technology to create local non-corporate platforms for various civil society activities. These activities include vitalizing neighborhood life, improving public space, conducting sustainability campaigns, and small commercial interactions. *Decidim* is a FLOSS-based platform that was first created by Barcelona’s municipal government to carry out political participation processes and is now largely managed by an open community of supporters. The geographical focus on two Western-European cases somewhat limits the scope of this article. Also, as the focus of this paper lies in examining commonalities across different types of non-corporate platforms that explain their persistence despite lacking critical size, findings regarding platform cooperativism and FLOSS-based platforms are somewhat less generalizable.

In broad terms, this paper contributes to the field of digital geography by mobilizing concepts of local and network embeddedness to explain the persistence of non-corporate platforms despite their absence of critical size. The key contribution to digital geography – as defined and extensively reviewed by Zook, Dodge, Aoyama, and Townsend (2004), and by Ash et al., (2018) – is that the geography of non-corporate platforms differs substantially from the geography of corporate platforms due to different forms of the platforms’ network and local embeddedness. In more precise terms, this article contributes to the literature on non-corporate manifestations of platform urbanism (e.g. Graham, 2020; Chiappini, 2020; Certomà et al., 2020; Leszczynski, 2020). By drawing on platform cooperativism and FLOSS-based platforms, this article also relates to wider debates on grassroots and “hacking” urbanism (e.g. Balestrini et al., 2017; de Waal & de Lange, 2019; Morozov & Bria, 2018).

We find that governments and civil society stakeholders create non-corporate platform technology by disentangling processes related to the creation, maintenance, and dissemination of platform technology from local platform implementation processes. The creation and maintenance of technology are embedded in a collaboration network of locally embedded organizations. Non-corporate platforms pool cost-intensive technology maintenance, while platform implementation necessarily takes place in a locally embedded manner.

This article is structured in the following way. First, in the next section, we discuss the literature on platform urbanism, platforms cooperativism, and FLOSS-based platforms. Then we briefly describe our methods. Next, we extensively analyze the two case studies, *Gebiedonline* and *Decidim*. Finally, this paper discusses the findings of the case studies comparatively before concluding with suggestions for further research.

## 2. Platform governance and beyond transnational platform corporations

In times of social distancing, numerous digital platforms have become of even greater importance as an infrastructure of (the remaining) economic, political, and social interactions (van Doorn et al., 2021). In platform urbanism, platforms are not only “content intermediaries” (Gillespie, 2010, 348), but also govern urban spaces, as they are “re-encoding [...] urban socio-spatial relationships into territories for platform intermediation” (Barns, 2019, 7). Platforms represent a new structure for social and economic interaction (Grabher & König, 2020; Langley & Leyshon, 2017) and platforms become central intermediaries that structure interactions between citizens, businesses, and government organizations in most domains of urban life (e.g. van Doorn, 2020; van Doorn et al., 2021). Platform urbanism “addresses the layers of governance relationships that structure interactions between different platform participants, which increasingly extend to urban institutions and citizens, as much as ‘traditional’ platform users like online users, advertisers, media organizations and software providers.” (Barns, 2020, 19). In urban areas, for instance, platforms create new markets or

mobilize – supposedly unused – capacities by integrating them into urban markets (Barns, 2019, 5; van Doorn, 2020). However, platforms are structured as interdependent networks or even as network-market hybrids and platform urbanism represents wider changes than the mere reformulations of particular markets (Haveri & Anttiroiko, 2021). As transnational platform corporations mediate work or housing, they commodify goods by dis-embedding them from local geographies and disregard local legislation by referring to their transnational scale (Graham, 2020; van Doorn, 2020; van Doorn et al., 2021).

Transnational platform corporations present themselves as a type of organization that challenges the dominance of traditional “Fordist” corporations but are in fact, mere corporations that restructure markets by removing conventional worker’s and industrial sector’s protections (Frenken & Fuenfschilling, 2020; Srnicek, 2016). In contrast to the traditional “Fordist” corporations, transnational platform corporations are “asset-light” and their value-creating processes depend on their technology-enabled matchmaking potential (Grabher & van Tuijl, 2020) which becomes the means of production in the economy of the 21st century (Schneider, 2018). This matchmaking potential rests on a corporate-owned platform technology that is *created and maintained* (and constantly improved) most efficiently at a trans-local scale by mobilizing massive amounts of data gathered on platform participants (i.e. “users”) (Srnicek, 2016). Once a platform reaches critical size, the large quantities of gathered data reinforce a “winner takes it all”-effect (Barns, 2019; Langley & Leyshon, 2017). This effect allows transnational platform corporations to use the gathered data to strategically *disseminate* their platform technology into new economic and geographical areas (i.e. markets) (Grabher, 2020; Pais & Provasi, 2020; Stallkamp & Schotter, 2021). The strategic dissemination into new markets generates new data-based feedback that allows to improve platform technology, which in turn further consolidates the critical size and the advantaged position of transnational platform corporations (Fig. 1).

*Local implementations* of transnational platform corporations’ technology differ little across localities leading to a limited local embedding of transnational platforms (e.g. Graham, 2020). Following their implementation in local markets, transnational platform corporations exert subtle and untransparent forms of algorithmic control over citizens and raise privacy and surveillance concerns (Törnberg & Uitermark, 2020). Platform corporations thus re-frame institutional frameworks in which social and economic interactions take place to make globally standardized business models work (Grabher & van Tuijl, 2020). In refusing to provide local accountability (Graham, 2020) – including with regards to the use of platform participant’s data – and to embed themselves in the site in which platforms are locally implemented, transnational platform corporations impede more socially sustainable form of platform urbanism (Graham, 2020; Leszczynski, 2020).

Based on the distinction between creation and maintenance, dissemination, and local implementation we turn to two distinct ways of governing non-corporate platforms: Platform cooperativism and FLOSS-

based platforms. Whilst not mutually exclusive (e.g. Pazaitis et al., 2017 Bauwens & Kostakis, 2014) each concept suggests its own processes of overcoming the non-corporate platforms’ lack of critical size, which calls for a distinct analysis of platform cooperativism and FLOSS-based platforms.

### 2.1. Platform cooperativism

Platform cooperativism is a platform ownership model that mobilizes the potential of cooperatives – which draws on a centuries-old tradition of the provision of housing and other basic services – for the governance of platforms (Schneider, 2018; Scholz, 2016). Cooperatives seek to combine activism and business enterprises (Sandoval, 2020) “in ways that serve needs unmet by investor-owned businesses” (Schneider, 2018, 322). The International Cooperatives Alliance defines cooperatives as “an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise.” (International Cooperative Alliance, 2021). Cooperatives are typically controlled by a general meeting of members and subject to internally elaborated statutes that define the conditions of recruiting new members, relationships between members, and the cooperative’s goals and ambitions (Stryjan, 1994).

Platform cooperatives, then, aim to combine the benefits of platforms as efficient matchmakers with the benefits of a cooperative ownership model (Pentzien, 2020; Sandoval, 2020; Schneider, 2018; Scholz, 2016). Platform cooperativism aims at replicating the platforms of transnational platform corporations with democratically owned and governed organizations (Sandoval, 2020). Like cooperatives in general, which can be owned by consumers (e.g. housing) or producers (e.g. agriculture), ownership of platform cooperatives cuts across different social groups, sectors, and localities. The concept of platform cooperativism “embraces the technology but wants to put it to work with a different ownership model, adhering to democratic values” (Scholz, 2016, 14). Trebor Scholz’s (2016) elaboration of the concept and the works of Schneider (2018), and Sandoval (2020), focus on the potential to improve working conditions associated with the gig economy and of platform capitalism. According to the scholars, local cooperatives can overcome the atomization and alienation of (allegedly self-employed) workers by turning them into co-owners of urban platforms, who then collectively decide on the platforms’ workings (Sandoval, 2020).

By “erasing the distinction between workers and owners” (Sandoval, 2020, 805) the cooperatives are a contentious object. On one hand, cooperatives allow “collective ownership by the people who generate the revenue” (ibid., 804) but on the other hand, booster competition, entrepreneurialism, and commercialization. Moreover, Sandoval (2020) argues that because of the latter, platform cooperatives still serve the interests of their members, which do not necessarily overlap with the wider interests of society.

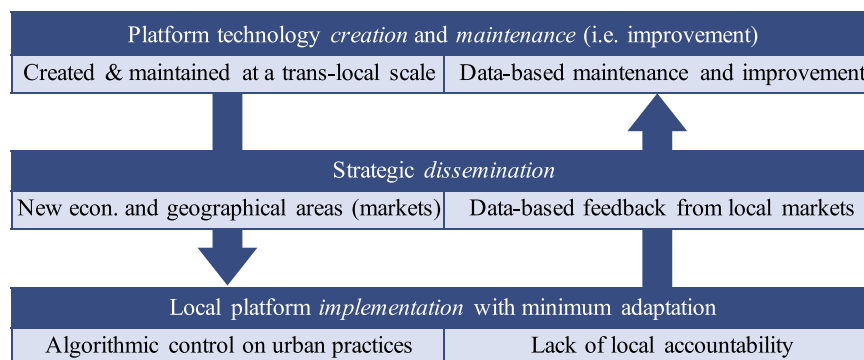


Fig. 1. Illustration summarizing this article’s understanding of the literature on platform creation and maintenance, dissemination, and local implementation by transnational platform corporations.

## 2.2. FLOSS-based platforms

Free/libre open-source software-based (FLOSS-based) platforms are the application of the FLOSS concept, “which allows [software] users to freely study, use, copy, modify, adapt, or distribute the software” (Birkinbine, 2018, 292) to platform technology and its dissemination. The FLOSS concept emerged in the 1980s as a reaction to software companies ceasing to share software source codes with software users and developers (Stallman, 2002). Essentially, FLOSS combines notions of open innovation (e.g. Bogers et al., 2017), such as peer production and knowledge and technology crowdsourcing with questions of collective ownership and freedom of usage (Stallman, 2002). Benkler and Nissenbaum (2006, 369) situate the movement towards FLOSS as an “instance of a more general phenomenon of commons-based peer production”.

The processes of commons-based FLOSS peer production are safeguarded by social contracts, notably through licensing and intellectual property regulations. These licensing and intellectual property regulations, such as the “GNU General Public License” (henceforth GPL), enable, foster, and safeguard commons-based peer production. The GPL further ensures that “derived works of the software would be released under the same license and that everyone who received the software would have a chance to get the source code” (Stallman, 2002, 170). As business models involving FLOSS cannot rely on revenue from software licenses, revenue originates from other sources, notably from the sale of hardware using FLOSS (e.g. sale of Linux-based hardware) and, more frequently, from offering FLOSS-based services and technological support (Stallman, 2002). The social contracts underlying FLOSS can go beyond the GPL in permitting usage, distribution, and modification only to certain types of organizations. These more restrictive licensing (social) contracts aim to avoid FLOSS becoming “incorporated” or co-opted into capital-producing activities (Birkinbine, 2020; Sandoval, 2020). In contrast to platform cooperativism, to date, a variety of large-scale and globally-used platforms rely on FLOSS technology and/or open peer production. One of the most visible examples is Wikipedia, which is based on a global community of peer producers who collectively write, edit, and review the world’s largest digital encyclopedia (Lovink & Tkacz, 2011).

Whilst portrayed as based on bottom-up communities, FLOSS projects are strongly embedded into the global software production (e.g. Microsoft, Oracle) (Birkinbine, 2020). The FLOSS communities and their peer production processes are not necessarily based on democratic processes, nor are they representative of any wider population. Also do contributors to FLOSS concentrate in the global north, possibly leading to geographical disparities and new forms of digital divides (Graham & De Sabbata, 2020).

## 3. Methods

This paper is based on qualitative methods. We base our empirical research on semi-structured interviews with persons directly involved in the creation and maintenance, dissemination, and local implementation of Gebiedonline and Decidim. We also draw on additional analyses of digital documents related to the Gebiedonline and Decidim platform technologies and the platforms’ direct environment (Table 1). Interviews were conducted in two steps. First, we conducted face-to-face interviews during two research trips to Amsterdam (June 2018; January 2019) and one to Barcelona (October 2019). Second, we conducted online video-call interviews from November to December 2020. Table 1 lists the paper’s sources in detail.

All 25 interviewees gave their informed consent to a recorded interview and to a semi-anonymized use of their statements. The recordings’ length varies from 0:23 (as part of a group interview) to 2:25, averaging at 1:12 (median at 1:04). Following the interview phase, interview recordings were transcribed. We then coded and analyzed interview transcripts and documents in MaxQDA with the following

**Table 1**

Summary of the mobilized empirical material.

Analytical steps	Sources
Preliminary interviews with persons related to the platform urbanism ecology in Amsterdam and Barcelona	For the <b>Gebiedonline</b> case study interviews were conducted with the following persons: head of programme at Waag Society; program maker in urban development and social innovation at Pakhuis de Zwijger; community manager at Amsterdam Smart City Foundation; strategy advisor at Amsterdam Smart City; Urban Innovator at Amsterdam municipality [references anonymized as CA1-5] For the <b>Decidim</b> case study interviews were conducted with the following persons: director at Xarxa d’Ateneus de Fabricació; project manager at i.labs; culture commissioner at Barcelona municipality; partner at Ideas for Change [references anonymized as CB1-4]
Interviews with persons involved in the creation and maintenance, dissemination, or local implementation of Gebiedonline and Decidim	Interviews for the <b>Gebiedonline</b> case study were conducted with the following persons: founder of Hallo IJburg; president of the Gebiedonline Cooperative; treasurer of the Gebiedonline Cooperative; process director at Amsterdam East district government; co-initiator of stadmakersonline.nl; former project leader of NieuwlandSamen; coordinator of Buurtgroen020; co-founder of 02025.nl [references anonymized as G1-8] Interviews for the <b>Decidim</b> case study were conducted with the following persons: general director of Citizen Participation and Electoral Processes at the Government of Catalunya; researcher at the Institute of Government and Public Policy (IGOP); former councilwoman at the Barcelona municipality; chief technology officer at Alabs; participation technician at SOM Energia SCCL; director of democratic innovation at Barcelona municipality; consultant at Open Source Politics; project leader public participation at Angers municipality [references anonymized as D1-8]
Document analysis	For the <b>Gebiedonline</b> case study the analysis included documents and webpages referenced on the websites of the Gebiedonline cooperative and its platform implementations, as well as press coverage on Gebiedonline and its local implementations. For the <b>Decidim</b> case study the analysis of included documents and webpages retrieved from Decidim.org, Meta-Decidim, Decidim’s Git-Hub pages, legal documents, including codes of conduct and contracts, as well as, the Decidim’s local implementations

coding categories and empirically-grounded subcategories:

- (1) *Platform technology creation and maintenance* including (1a) the motives for the initial platform creation, (1b) the processes of the initial platform creation, and (1c) the processes behind the platform technology’s maintenance.
- (2) *Platform technology dissemination* including (2a) the motives and ideals guiding platform dissemination, (2b) the governance structures behind the dissemination processes, and (2c) the

interaction between stakeholders to provide feedback for technical maintenance.

- (3) *Local platform implementation* including (3a) information on local implementers, (3b) local platform users, (3c) goals of local platforms, and (3d) interactions taking place on local platforms.
- (4) Views on *platform urbanism and platform capitalism* including (4a) perceived problems and (4b) ideas, proposals, and concepts on how to overcome these problems.

We elaborated the interview guidelines in a way to allow the interviewees to address all coding categories, without pressuring them to touch upon issues they were unfamiliar with.

#### 4. Gebiedonline: non-corporate platforms as cooperatives

##### 4.1. Collective creation and maintenance of platform technology

*Hallo IJburg*, a non-corporate neighborhood platform, was programmed in 2012 by a resident of IJburg, a newly-built suburb of Amsterdam (G1; G2; G3; G6 [see Table 1 for anonymization key]). The founder of the neighborhood platform aimed to “develop a communication website for the citizens to work together better to share information and to allow working together with the government, with companies, and with other parties in the neighborhood” (G1). Growing criticism of global platforms, particularly following the publications made by whistle-blower Edward Snowden in 2013, highlighted the risks of transnational platform corporations and urged for local independent non-corporate alternatives (G1; G3).

By 2016 persons and civil society groups, who were looking for alternatives to transnational platform corporations, contacted the founder of *Hallo IJburg* and sought to replicate the neighborhood platform (G2; G3; G6) (also Gerritsen et al., 2020, 14). As *Hallo IJburg* became recognized as a non-corporate alternative to transnational platform corporations on which communication and social networking could take place, persons from IJburg, Amersfoort Nieuwland, and Gouda – all but one without a in software development – founded the Gebiedonline cooperative which from then onwards owned *Hallo IJburg*’s platform technology (G1; G3).

All interviewed members of the cooperative share the ambition to improve social relations between citizens but were suspicious of transnational platform corporations. To them, platform cooperativism represents a suitable alternative to avoid the pitfalls of platform capitalism while nevertheless having a local platform to improve social relations between citizens (G1; G2; G6). More precisely, our interview partners describe platform cooperativism as an appealing alternative to transnational platform corporations because of two main reasons.

First, platform cooperativism allows locally embedded civil society organizations to embed themselves in a network of like-minded organizations to co-create platform technology with their preferred technology supplier. The Gebiedonline cooperative delegates the maintenance and improvement of the technology to CrossmarX, a technology company in Amsterdam, which is owned by the founder of *Hallo IJburg*. CrossmarX acts as a service provider to the cooperative and could theoretically be replaced by any other technology company (G1; G2; G3). A (spatially) close relationship to the provider of technology allows local civil society groups to directly participate in platform maintenance. The close interaction with CrossmarX allows cooperative members to discuss the platform’s design, data collection practices (G6; G7), and accessibility “by different people with different digital skills” (G7).

Second, platform cooperativism allows to collectively create non-monetary value from platform urbanism. This non-commercial character of Gebiedonline stands in contrast to local sub-platforms on transnational platform corporations, such as a local “group” on Facebook. For instance, in Gouda, a small city about 50 km from Amsterdam,

a local community stopped using the US-based commercial platform provider Ning, a Platform-as-a-service provider, as it became “too commercial” (G3). In the cooperative “value is [created] when users own the platform themselves” (G3) and technological collaboration takes place with a local developer who “shares the same values of building communities from the bottom-up” (G2). *Hallo IJburg*’s founder argues that in contrast to global platforms, which “take all the money to Silicon Valley”, platform cooperativism allows “to own the platform yourself as neighbors, citizens or neighborhoods and make your own decisions about all financial aspects” (G1).

##### 4.2. Governance of platform dissemination

As of mid-2021, 39 publicly accessible platform implementations have been set up within the Gebiedonline cooperative. 30 of these implementations are area-based communities, dedicated to specific neighborhoods, districts, or cities (i.e. platforms with “neighborhood as issue” Priester & Niederer, 2014). 9 implementations are orientated around themes such as urban gardening, social work in cities (i.e. city making), energy transition, or sustainable development. A majority of local platform implementations are linked to areas near Amsterdam, with exceptions located elsewhere in the Netherlands or directed at national themes.

To implement a Gebiedonline-based platform, an organization (i.e. a civil society organization or a local government) must become a member of the platform cooperative. In other words, the cooperative’s members are necessarily embedded into a network that grounds itself on like-mindedness and trust. The individual or the organization willing to create a new platform with Gebiedonline requires the approval of the existing members and needs to contribute financially (G3, G6, G2). In principle, new members can join for one year (G3). However, since the cost of the first year of membership, in which a local platform implementation is created, is higher than the following years, a one-year membership is somewhat unlikely and members tend to form long-term relationships (G3). The membership fee means any local platform implementation must be formally supported by a legal entity that guarantees the fee’s annual payment. According to the founder of *Hallo IJburg*, this is not problematic as in “most neighborhoods there is at least one legal entity that represents the citizens and which is financed by the government.” (G1). None of the interview partners regarded the absence of such a legal entity in an area as a structural barrier to the platform’s dissemination, as financial support to civic life by various levels of government is widespread in Dutch neighborhoods (G3; G6).

Local and regional governments thus, at least indirectly, finance the Gebiedonline cooperative by funding neighborhood organizations that are members of the cooperative. According to the cooperative’s treasurer, about three-quarters of all neighborhood-orientated platform implementations are financed – either directly or indirectly – by government entities (G3). By indirectly supporting the cooperative, local governments deliberately delegate their decision-making power regarding the platform’s maintenance and dissemination to civil society organizations that hold the membership status (G2; G3). This way any local platform implementation is locally embedded into (political) structures but also embedded into a network of local platform organizers (i.e. the cooperative’s members). Only in a few newly-built neighborhoods, where no organized civil society structures exist, local governments directly become members of the cooperative. This way the Amsterdam municipality is a member of Gebiedonline but is still considerably less involved in the cooperative’s governance of technology than other members (G1; G4). A minority of theme-specific platforms rely on more varied sources of funding to finance their membership. The energy transition platform 02025, for instance, is formally part of an energy cooperative, which also mobilizes public and private funds to maintain their membership in the Gebiedonline cooperative (G8).

### 4.3. Local platform implementation

Due to the pooling of common resources and the modular replication of the platform technology the maintenance of platform technology is cost-efficient. Being embedded into a network (i.e. a member of the Gebiedonline platform cooperative) enables local organizations without technological know-how to create a local platform according to local priorities and needs at a low cost. The pooled production of platform technology is effective as the implementation fees paid to the cooperative by local organizations wishing to create a local platform become dwindling small when compared to custom-made platforms (G3; G7). The network embedding of local organizations aiming to create a local platform simplifies the local implementation. Such “turn-key” development of local platforms limits the possibilities for local adaptation to several pre-set modules. Nevertheless, the selections of available modules used on a local platform implementations shape the interactions that are likely to result from the platform’s use (Gillespie, 2018; Törnberg & Uitermark, 2020). Gebiedonline’s platform implementation can draw on a variety of features. Whilst the main features are similar across all of the local platform implementations run by members of the Gebiedonline cooperative, the arrangement and prominence of particular modules are defined locally.

The main aim of Gebiedonline’s local platform implementations is to support area or theme-specific community-building. In this aim, local platform implementations serve as registries of local stakeholders. Like transnational platform corporations, local non-corporate platforms build on what Grabher and van Tuijl (2020) call “matchmaking potential”. For instance, 38 of the 39 local platforms feature a registry of persons and local projects, 37 include lists of organizations, and 35 list places. Across all local platforms, a total of 24,928 persons, 5226 organizations, 4530 projects, and 1845 places are registered online.<sup>1</sup>

For the time being, direct private messaging is not possible on Gebiedonline. The local platforms serve as a site for intermediation; allowing locals to find each other (G5; G7; G8), while “most of the knowledge is shared by just calling each other or mailing each other” (G7). On 31 of 39 platform implementations, participants can write reports or express wishes on how to improve the area. This way until mid-2021, 15,649 reports (on average 401 per local platform implementation) and 302 wishes for improvement (on average 12 per platform using the “wishes”-module) were shared by participants on all of the cooperative’s platform implementations. The reports and “wishes” section allow other platform participants to react with a commentary, or signal support and/or willingness to help by clicking on a dedicated button. This way local platform implementations are used for civic interactions, meaning the collective pursuit of “societal, political, and cultural goals outside of the main institutional frameworks” (Pesch et al., 2019, 305). Local embeddedness protects the numerous platform participants from trolling or hate speech – problems that transnational corporate platforms face – because a real-name policy and incentives to display profile pictures turn anonymous platform users into recognizable neighbors (G3). Gebiedonline-based platforms also automatically generate newsletters based on participant-generated content, which interviewees described as a key way of engaging with a broader set of (less active) participants. (G2; G7).

Politically-orientated interactions, in which governments and civil society interact on digital platforms (as described by Falco & Kleinhans, 2018), take place on five of Gebiedonline’s local platform implementations. The district government of Amsterdam-East, for instance, implemented a participatory budgeting scheme with Hallo IJburg and later created its Gebiedonline-based platform implementation<sup>2</sup> for participatory processes linked to Amsterdam-East’s area plan (G1; G3;

G4). In other areas, Gebiedonline based platforms are used to organize parts of participatory budgeting schemes (G3; G4). However, political interactions are used in an experimental way and it is unlikely that local governments will use Gebiedonline as the main platform technology for participatory policy-making (G1; G4). Like the politically orientated interactions on area-based implementations, theme-orientated platform implementations also indicate that the transformative power of platforms (Barns, 2019) is used to “co-creatively start designing solutions” with citizens and civil society (G5 also G1; G4). An agenda module is used to coordinate face-to-face activities of local civil society initiatives online via the local platform implementations. This way local platforms structure a plethora of local activities linked to the specific themes defined by a local member of the cooperative.

Economic interactions also take place on Gebiedonline’s local platform implementations (G3). On 34 platform implementations, businesses can create a profile in the “organizations” registry and announce their services on a “marketplace”. On these 34 platforms the “marketplace”, on average, consists of 25 announcements of new services, 14 postings of persons searching for service providers, volunteers, or project partners, and 9 classified advertisements by local persons comparable to platforms such as eBay or craigslist (G4).

On rare occasions, additional features are requested by individual members of the cooperative. In these cases, extra technology can be developed, if the cooperative member desiring the technology is able and willing to pay for the technology’s development (G1; G3).

## 5. Decidim: non-corporate platforms as FLOSS commons

### 5.1. Collective creation and maintenance of platform technology

Decidim is one of the long-term outputs of the social and political 15 M movement (D6, also Bua & Bussu, 2020) that originated in 2011 during social unrests caused by the economic downturn which followed the 2008 great recession (Castells, 2012). Part of the 15 M movement institutionalized into the party Barcelona en Comú [Barcelona in Common in Catalan, henceforth BenC] (D2; D3; CB3), which won Barcelona’s municipal elections in 2015. Having won the election with a proposal of implementing a participatory government (Barcelona En Comú, 2015), BenC created Decidim’s platform technology in the first months of its mandate to elaborate the municipal action plan<sup>3</sup> in a participatory manner. The first creation of Decidim’s platform technology involved non-profit knowledge institutions (i.e. universities, fab labs, knowledge networks) and European small and medium enterprises<sup>4</sup> (D4). Avoidance of partnering with transnational platform and technology corporations exhibited a clear ideological shift from the technology policy of the previous municipal government (de Hoop et al., 2018). From its first creation, Decidim enabled the participatory elaboration of public policies by creating discussion boards, digital voting mechanisms, and organizing proposals made in face-to-face meetings (Solà, 2018). To date, Decidim’s platform technology offers an even broader set of tools that can be implemented locally by local stakeholders such as direct messaging, creation of petitions, and calls for participation (Decidim Docs; Peña-López, 2019).

The creation processes of Decidim’s technology were ideologically guided by the techno-politics concept which “assume[s] the primacy of technological change and the contingency it creates in terms of political power” (Kurban et al., 2017, 8) and hacker ethics (Bua & Bussu, 2020, 10). Techno-politics and hacker ethics highlight the potential of locally embedding platform technology by building on decentralized FLOSS-

<sup>1</sup> It is important to consider the registering on multiple local platforms is common.

<sup>2</sup> <https://onsgebied.nl/> (accesses on July 7th 2021)

<sup>3</sup> The municipal government defines the municipal action plan as “the city’s roadmap for this period, the cornerstone of the political strategy and main goals for the City Council’s current term of office” <https://ajuntament.barcelona.cat/seguretatipreccio/en/municipal-action-plan> (accessed March 14th 2021)

<sup>4</sup> <https://decidim.org/partners/> (accessed March 14th 2021)

based technology which aims to ensure widespread technology access and the capacity of modifying the platform's source code (D3) (also in Kurban et al., 2017; Smith & Martín, 2020). Bua & Bussu, 2020 describe Decidim as part of democracy-driven governance, which is an "attempt by social movements to 'move into the state' and radicalize participatory governance as part of their strategy for change". In this sense, while the government lies at the start of the formal platform creation process, the conceptual, political, and social basis of Decidim's platform technology was created in a social and political movement outside of government.

Relying on a FLOSS-based platform technology was one strategy to safeguard the longevity of Decidim (D1) as FLOSS is necessarily embedded into networks of co-creators; the Decidim-community (D4; D6).

Decidim is a democratic community. Since we're building a software project for democracy, it was an essential requirement that the process of elaboration of this code and this platform also be done in a democratic and participatory way. Since the beginning, we have built and promoted a community [...] that reflects, makes proposals and contributes to the code and the platform. (D6).

The Decidim-community is based on two platforms: First, Meta-Decidim<sup>5</sup> is a specific Decidim-platform dedicated to discussing the platform's design, technology, and governance. On Meta-Decidim, persons, collectives, organizations, and governments who use a Decidim-based platform suggest new functionalities to Decidim's technology and discuss technical issues. Meta-Decidim is based on Decidim's platform technology and thus shares many characteristics with all Decidim-based platform implementations. This meta-platform mobilizes decentralized crowd intelligence to improve technopolitical processes (Kurban et al., 2017). As of March 2021, 201 participants have made 599 proposals for improvement<sup>6</sup> and 109 participants have reported 433 technical issues.<sup>7</sup> Second, the Decidim-community uses a dedicated GitHub-page<sup>8</sup> to collectively address proposals for improvement and technical issues raised on Meta-Decidim. GitHub is the globally leading platform that structures decentralized and collaborative FLOSS development (Graham & De Sabbata, 2020). Decidim's GitHub page is openly accessible and a community of software developers collaboratively implements new functionalities and fixes technical issues signaled on Meta-Decidim (D4).

The openness in the Meta-Decidim and GitHub communities has limits "in terms of cultural capital" (D7; also D1). Not every citizen can (effectively) submit a proposal, because "it is necessary to know the codes for a proposal to be accepted on Meta-Decidim" (D7). Participation on GitHub is also unevenly spread: Of the 99 persons who contributed to the Decidim software on GitHub until March 2021 the ten most active contributors account for over 75% of all software contributions.<sup>9</sup> One person involved in the creation of Decidim admits "that 99.99% of Barcelona's citizens do not know and do not care that the digital processes of the City Council are on GitHub and can be commented upon" (D1). However, he argues, that the shift from proprietary platform technology towards FLOSS is nevertheless ground-breaking because it enables the formation of a growing community. Decidim's software is different from the participatory platforms developed by "major consultancies with a proprietary code" (D1) because Meta-Decidim is not only used to maintain the platform technology, but also to reflect on the platform's social outcomes (Peña-López, 2019). The

Meta-Decidim enables the network to maintain the platform's technology to establish a social contract and to discuss the values associated with the platform's use.

The Meta-Decidim and GitHub communities are autonomous, but Barcelona's municipal administration nevertheless holds a key role in the Decidim's technology creation and maintenance. Most contributors on Meta-Decidim and Decidim's GitHub have some relations to Barcelona's municipal government and the municipal government also finances running the Meta-Decidim platform and seconds employees to improve Decidim's code on GitHub. In this sense, the maintenance of Decidim FLOSS depends on the sponsorship of the municipal government, even if the creation of the Free Software Foundation Decidim<sup>10</sup> in 2019 and a subsequent collaboration agreement grants the community of Decidim's developers greater autonomy.

## 5.2. Governance of platform dissemination

About 70 cities, regional authorities, civil society organizations, and corporations have adopted Decidim (Borge et al., 2018). Since Decidim is based on FLOSS, at first sight there seem to be only limited legal or ownership-related barriers to its dissemination, apart from its social contract and the GPL. However, the technological complexity of the implementation of the software represents a major hurdle to the dissemination of Decidim, as neither the Free Software Association Decidim nor the Barcelona municipality has the capacity to creating local platform implementations. Since a vast majority of organizations implementing a Decidim platform lack the know-how to modify Decidim to their needs, whenever necessary, requests are posted on Meta-Decidim. This way, demands for technological adaptation become coupled with a new "governmentality through code" (Klauser et al., 2014) based on openness and participatory processes, which differ significantly from the governmentality imposed by transnational platform corporations.

Most organizations desiring to implement a Decidim-based platform require considerable support, which is provided by intermediate organizations. Two notable organizations that act as intermediaries are Localred, a network of Catalan municipalities, and Open Source Politics, a consultancy start-up specialized in managing participatory processes with Decidim.

Localred has played a key role in disseminating Decidim in Catalan municipalities. In a collaboration agreement with the municipality of Barcelona and the Free Software Association Decidim, Localred is tasked with supporting "city councils in the implementation of the platform and offer technical advice for the development of participatory spaces using the Decidim platform" (Collaboration Agreement, 2019). Localred thus coordinates the knowledge transfer to smaller municipalities and provides structured feedback on possible improvements of the platform technology (D4). The role of Localred in strengthening the dissemination in Catalonia led to Decidim's adoption in 13 municipalities (in addition to Barcelona), two provinces, and by the Catalan regional government (17 of 43 government-managed implementations of Decidim are in Catalonia).

<sup>10</sup> To grant the Decidim community more autonomy, in February 2019, the Free Software Association Decidim was created. Persons and organizations "interested in the development, growth and improvement of the democratic infrastructure of digital participation based on free software Decidim.org" can become members of this independent foundation (Associació de Software Lliure Decidim, 2021). The main task of the foundation is to be "the instrument of governance of the Decidim community" (Associació de Software Lliure Decidim, 2021). This move aims to provide the Decidim community greater autonomy, by reducing the direct role of government organizations in the platform and algorithmic governance. However, the government of Barcelona is still involved by seconding one employee, supporting the Free Software Association Decidim economically and hosting the Meta-Decidim community online.

<sup>5</sup> <https://meta.decidim.org/> (accessed March 14th 2021)

<sup>6</sup> <https://meta.decidim.org/processes/roadmap/all-metrics> (accessed March 14th 2021)

<sup>7</sup> <https://meta.decidim.org/processes/bug-report> (accessed March 14th 2021)

<sup>8</sup> <https://github.com/decidim/decidim> (accessed March 14th 2021)

<sup>9</sup> <https://github.com/decidim/decidim/graphs/contributors> (accessed March 14th 2021)

Open source politics (OSP) is a French start-up that consults governments, NGOs, and corporations on improving or creating their digital participation platforms (D7). OSP offers turnkey solutions for participatory processes and embeds digital platforms into (face-to-face) participatory policy-making processes (D7; D8). All of the 17 Decidim-based implementations in France mention OSP in their imprint as the platform's creator. The services of OSP range from the provision of technical support to use Decidim-technology to the delivery of entire participatory processes with a customized Decidim-based platform implementation (D7). If OSP creates additional features for Decidim-based platforms, per GPL and FLOSS standards, the newly created code must be made available to the entire Decidim-community. The FLOSS nature of Decidim's technology makes it possible for companies to base their business model on disseminating and improving Decidim. The GPL license allows commercial activity involving FLOSS as long as all derivative software is shared with the community (Birkinbine, 2020; Stallman, 2002). Scholars have criticized this position of FLOSS "between capital and commons" as it allows corporate stakeholders to "commercially exploit collaborative production [...] communities" (Birkinbine, 2020, 3).

### 5.3. Local platform implementation

Decidim's platforms are primarily used for participatory policy-making and most of the processes that take place in Decidim are temporarily bounded processes that aim to elaborate, amend or evaluate a particular set of public policies (D1, D3; D6; D7). Decidim's platforms are generally directly implemented by governments that ensure the local platform's embeddedness into a wider institutional framework. To this end, Decidim's platform technology offers a variety of modules, which can be applied accordingly to embed the local platform implementation into local policy processes:

We have participatory processes, assemblies, citizen initiatives, consultations. [...] For instance, in a process, you can have proposals, meetings, a blog, or assemblies. If you like, you could have only proposals and their results. You have a big administration panel, and then you can configure for your needs. Now, like, we think that democracy, it's always really different from a place to another, like maybe on details (D4).

Decidim's most central innovation, however, is the technology's focus of integrating online and face-to-face instances of public participation (e.g. Smith & Martín, 2020, 17; Peña-López, 2019). It serves as a platform in which deliberation takes place, but also, on which the deliberation that takes place in face-to-face assemblies is uploaded and is commented upon by those unable to attend face-to-face events.

The interviewees involved in Decidim's creation were skeptical of "clicktivism" which characterizes interactions on platforms of the likes of Facebook and Twitter (D1, D3). Instead, they worked to design the platform in a way that fosters deliberation between citizens and allows processes and debates to be transparent (e.g. Aragón et al., 2017). A former high-ranking member of the municipal government summarizes: "Decidim is not about you giving out "likes" but about generating collective debates in a traceable digital space." (D3).

Direct citizen-to-citizen interaction is encouraged by platform design. In contrast to Gebiedonline, Decidim allows citizens participating online to interact via private messages. In rarer instances, local stakeholders use virtual spaces to directly organize civil society activities. This is the case for neighborhood assemblies and representatives using Decidim for internal debates (D6). Some organizations such as the International Observatory on Participatory Democracy and the Catalan

Federation of Scouting and Guiding have a Decidim-based platform with restricted access for internal use only. In the French city of Angers, citizens have used Decidim's "communities"-function to mobilize volunteers to support those hit hardest by Covid19-related social isolation (D8).<sup>11</sup>

## 6. Discussion

In this paper, we inquired into the processes in which non-corporate platforms are created and maintained, disseminated, and locally implemented. We found that in two vastly different approaches to local non-corporate platforms – platform cooperativism and FLOSS-based platforms – numerous similarities explain the persistence of non-corporate platforms despite their lack of critical size. In both cases, platform technology creation begins with a locally embedded pilot. However, the maintenance and dissemination of platform technology, then, is embedded in a network that allows stakeholders to participate in technology governance as suggested by concepts such as "hacking urbanism" (e.g. de Waal & de Lange, 2019) and techno-politics (Kurban et al., 2017; Smith & Martín, 2020). Being embedded in a network allows local civil society organizations and governments to share the costs of technology maintenance. The networked technology maintenance shows that non-corporate organizations (i.e. civil society organizations and local governments), like businesses (e.g. Echols & Tsai, 2005; Uzzi, 1996) can benefit from network embeddedness. While platform technology is maintained in a network-embedded way, platforms are implemented in a locally embedded manner. Local platform implementation accounts for what McKeever et al., (2014, 230) call "the natural everyday settings" in which a particular (economic) endeavor – in this case, the local non-corporate platform implementation – is "framed against a backdrop of prevailing circumstances and situational constraints" (McKeever et al., 2014, 231).

It is very unlikely that local platforms, such as cooperatives or FLOSS-based platforms, can effectively compete with the "winner takes it all" nature of platforms" (Barns, 2019, 7; also Srnicek, 2016; Langley & Leyshon, 2017; Pais & Provasi, 2020) to become more than "glitches" (Leszczynski, 2020). Nevertheless, our cases show that combining network embeddedness (i.e. like-minded organizations that share technological resources) with a local embedding (to collect financial and technical support) allows non-corporate platforms to persist. The processes governing the dissemination of platform technology and the systems in which stakeholder feedback is incorporated also differ between platform cooperativism and FLOSS-based platforms (see Fig. 2). In platform cooperativism, network embedding means putting greater attention on technology ownership (Kenney & Zysman, 2016) and sharing ownership with like-minded organizations (Schneider, 2018; Scholz, 2016). In FLOSS-based platforms, a loose community of committed stakeholders takes care of software commons (Benkler & Nissenbaum, 2006; Birkinbine, 2018).

Non-corporate platforms, particularly FLOSS-based platforms, highlight the openness of their technology and the possibilities to locally adapt platform technology software to create strongly embedded local implementations. This openness only extends to organizations that can adopt the FLOSS technology or join a cooperative. The entry requirements of the Gebiedonline cooperative are formalized barriers while the necessary knowledge and technology to use Decidim are fuzzy and context-dependent. Nevertheless, both case studies that emblematically represent two distinct types of local non-corporate platforms avoid the centralization of technological power by creating mechanisms for participatory platform technology creation (van Dijck, Poell, & de Waal, 2018; Birkinbine, 2018).

To be successful, however, in both platform cooperativism and

<sup>11</sup> <https://ecrivons.angers.fr/assemblies/ENTRAIDE> (accessed March 14th 2021)



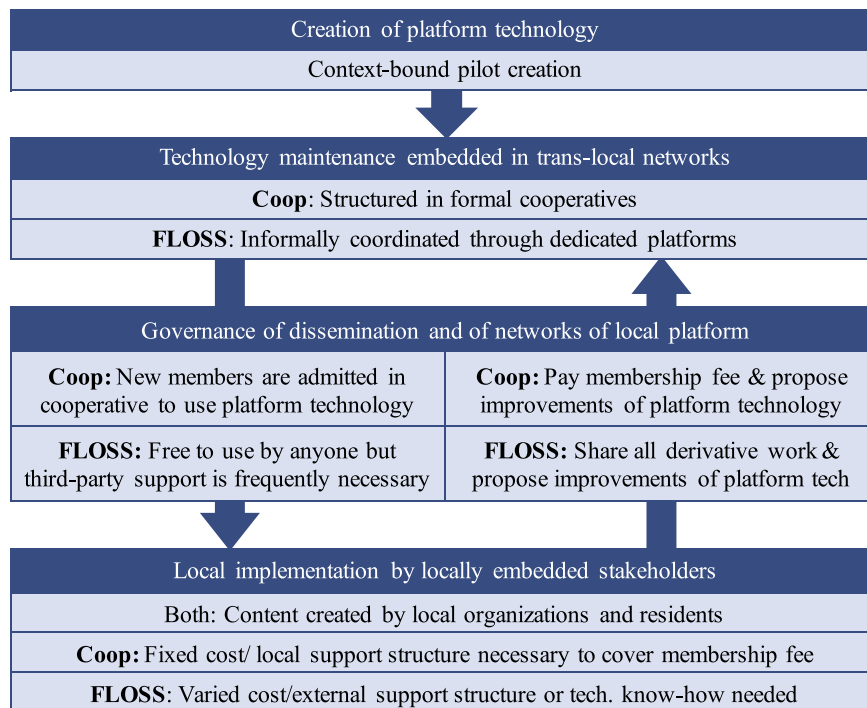


Fig. 2. Illustration summarizing this paper’s findings on platform creation and maintenance, dissemination, and local implementation by cooperative and FLOSS-based non-corporate platforms.

FLOSS-based platforms, local implementation of platform technology is dependent on at least some degree of support of local governments and local civil society. This means that non-corporate platforms are not only dependent on being embedded into inter-local networks to create and maintain platform technology but are dependent on embedding themselves locally into government and civil society structures. Notably, the necessity for government support, but also the necessary civil society structures indicate that the implementation of local non-corporate platforms, such as Gebiedonline and Decidim, is limited to regions in which governments and civil society organizations have sufficient financial and infrastructural capacities to do so. These results hint that non-corporate platforms might be linked to *territorial* digital divides (see Pearce & Rice, 2017; also Graham & De Sabbata, 2020; Haveri & Anttiroiko, 2021). This highlights the relevance of Zook et al.’s (2004, 156) argument that the “way in which places and people become ‘wired’ (or remain ‘unwired’) still depends upon historically layered patterns of financial constraint and cultural and social variation.” In other words, as the persistence of non-corporate platforms is bound to specific geographical contexts, non-corporate platforms are also a reflection of spatially pronounced digital divides.

To combat territorial digital divides at least at a regional scale, organizations such as Localred and OSP provide support to implement Decidim platform technology, while the Gebiedonline cooperative directly provides set-up services. Nevertheless, Sandoval (2020) and Schneider (2018) point to the processes of using FLOSS for profit-making as a form of co-optation of technological commons. The existence of (and dependence upon) an ecology of intermediaries providing FLOSS-related services to governments, civil society stakeholders, companies, and universities is a common and intended feature of successful FLOSS projects (e.g. Stallman, 2002). Regarded from a larger scale, however, the uneven dissemination of locally embedded platforms is likely to strengthen gaps in the social infrastructure of areas. Like their corporate counterparts, non-corporate platforms also (re-)produce digital inequalities (for another example see Graham & De Sabbata, 2020), even if these inequalities differ significantly from those produced by corporate platform urbanism (Barns, 2020; Langley & Leyshon, 2017;

Srnicek, 2016).

The Covid19-pandemic impacted local social and economic structures (at least temporarily) questioning the ordinariness of face-to-face interactions. While on many occasions the pandemic has led to an increased significance of virtual tools (e.g. Zoom), it destabilized the local social networks into which local non-corporate platforms are embedded. For Gebiedonline’s implementations, for instance, the lack of events and accessible physical spaces in the neighborhoods negatively impacted the relevance of neighborhood platforms as local content was lacking (D8, D7). The same applies to Decidim-based platform implementations, where digital participative processes could no longer be embedded into face-to-face participatory processes. Without the possibility to embed the digital citizen participation to face-to-face participatory processes the entire participatory processes risk excluding citizens that lack access to the platform (e.g. Anttiroiko, 2016; Scheerder et al., 2017). Digital public engagement is motivated by public engagement and not by digitalization and digital innovation (Cho, Mossberger, Swindell, & Selby, 2020), meaning that if digital (political or social) interactions are dis-embedded from the face-to-face public realm the advantages of local non-corporate platforms vanish. Even if some interactions such as digital social support and self-help networks, were maintained or intensified thanks to the existence of local non-corporate platforms, the lack of face-to-face interactions during the pandemic reduced the relevance of local non-corporate platforms.

## 7. Conclusion

This paper discussed the question of how non-corporate platforms are created and maintained, disseminated, and locally implemented, given their absence of critical size. To address this question, we analyzed two vastly different manifestations of non-corporate platforms as platform cooperativism and FLOSS-based platforms with paradigmatic two case studies: Gebiedonline and Decidim. We conceptualized network and local embedding to argue that local non-corporate platforms persist because they disentangle network-embedded platform technology creation and maintenance, from locally embedded platform

implementation. Crucially, we find that the persistence of non-corporate platforms is possible because the dimensions of creation and maintenance, dissemination, and local implementation are disentangled and either embedded locally or into networks.

First, the creation of the initial platform technology takes place as a pilot which is embedded in a specific local context. The maintenance of platform technology, then, harnesses the benefits of embedding cost-intensive technological developments in a network. Collaborative platform technology maintenances take place in delimited (as is the case in platform cooperatives) or open communities (as in FLOSS-based platforms) which include, formal or informal, feedback loops.

Second, the network-embedded platform technology creation and maintenance, and locally embedded platform implementation are mediated by a governed platform dissemination, which establishes the conditions for platform technology use and the channels for technology improvement. Platform cooperativism and FLOSS-based platforms are approaches to govern platform dissemination and interact with a plethora of locally embedded implementations either in a formalized, delimited; or in an informal, open way.

Third, while dis-embedded local implementations of transnational platforms corporations follow decisions from distant headquarters, we find that non-corporate platforms depend on local support structures (e. g. mostly functioning local governments and civil society) to exist. This dependency on the local support emphasizes that non-corporate platforms are, by necessity, locally embedded. Moreover, due to their local embedding, the modularity of platform technology and the interaction with technology developers (through formal cooperatives or informal FLOSS-communities) platform implementors locally set up platform technology in a way that accounts for local needs and specificities. In this sense, local embeddedness not only explains the persistence of small enterprises (Granovetter, 1985), but also the persistence of non-corporate platforms in the light of their structural disadvantage compared to transnational platform corporations.

While local embedding explains the persistence of non-corporate platforms, the (technical) possibilities for local embedding are, in turn, conditioned by a network in which the local platform implementors are embedded. By building a network of local applications, non-corporate platforms capitalize on the advantages of scaling up cost-intensive technology creation, maintenance, and improvement, while at the same time representing geographically rooted alternatives to prevailing embodiments of platform capitalism.

The article contributes to the literature on “glitches” in platform capitalism (Graham, 2020; Srnicek, 2016; Leszczynski, 2020; Chiappini, 2020; Certomà et al., 2020) by introducing the concepts of (local and network) embeddedness to explain the persistence of non-corporate platforms. Our conceptual findings contribute to digital geography in asserting that the spatial configurations of non-corporate platforms differ substantially from the geography of transnational platform corporations. By drawing on platform cooperativism and FLOSS, this paper also interacts with wider debates on grassroots “hacking” urbanism and “bottom-up” smart cities (e.g. Balestrini et al., 2017; de Waal & de Lange, 2019; Morozov & Bria, 2018).

Naturally, this study has multiple limits. First, the operationalization of non-corporate platforms into platform cooperativism and FLOSS-based platforms with only two case studies means that our conclusions require additional empirical confirmation. Findings that are attributed to platform cooperativism or a FLOSS-commons approach might be the consequence of local specificities, not of the platforming approach. Second, the possibilities to combine both concepts of alternative platform urbanism are ignored for the sake of analytical clarity. Third, the study lacks a direct comparison between local non-corporate platforms and corporate platforms that seek to embed themselves locally by creating geographically restricted access and strongly adapting their intermediation and platform architecture to local institutions (e.g. Nextdoor). Future research should directly disentangle the elements which the study focuses on – network and local embeddedness of

platforms and on non-corporate platforms as platform type– from each other by analyzing locally embedded corporate platforms and transnational non-corporate platforms as cases. Future inquiries into the persistence of non-corporate platforms need to expand on the methods used here by engaging in digital ethnography and social network analysis.

Finally, the continuous growth of both Gebiedonline and Decidim as successful local non-corporate platforms highlights the importance of inquiring into the platformization processes that take place outside and in parallel to the dominant processes of platform capitalism (Farias & Widmer, 2018; Leszczynski, 2020). This study should therefore be understood as a point of departure for further research on both local and non-corporate platformization processes.

## Declaration of Competing Interest

There are no competing interests to declare for this submission.

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