Chapter VIII

Barcelona sharing ecosystem: Analysis of 100 platforms and 10 paradigmatic cases

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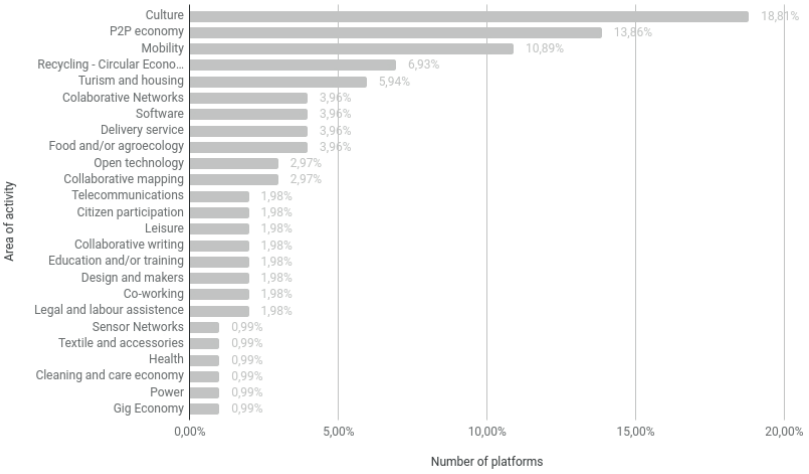
1. Wide angle: 100 platforms with impact in Barcelona

In this section, we will show an overview of how are the characteristics of 100 platforms of sharing economy platforms with an impact on the city of Barcelona. Based on an initial list of cases of the P2P Value project (about 1,000), a review has been made to introduce new sharing economy platforms, and some criteria have been defined to make the selection of the sample: (1) Projects with activity in Barcelona, (2) Projects based or supported by a digital platform and (3) Projects based on collaborative production. Some cases are well-known and important, but there are also many, almost unknown experiences.

Although the universe is unknown, based on a map of 100 cases, we have a strong confidence in reaching our study in much of the experiences of this area with an impact on the city of Barcelona. The most representative platforms are in the field of culture (18.8%), the P2P economy (13.9%) and mobility (10.9 %) but there are many areas with sharing-oriented economy platforms presence (Figure 7).

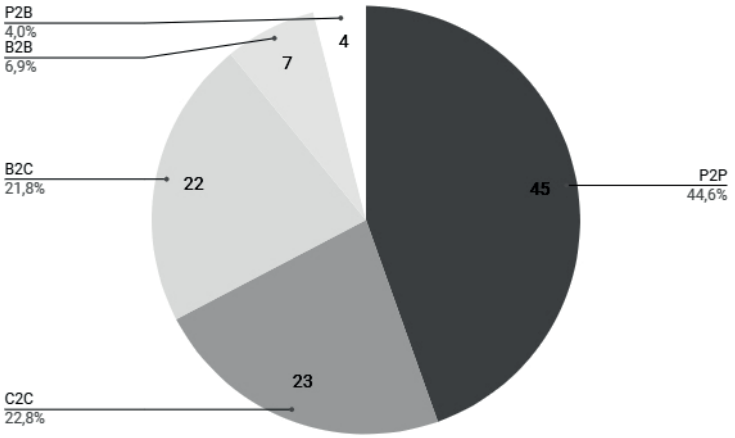
Figure 7. Percentage sharing-oriented economy platforms regarding their area



Source: Prepared by the authors.

Most of the projects base their activity on digital interactions (74.3%), compared to the minority in which the digital platform is a further support (25.7%). While the interaction between peers (44.6%) or between consumers (22.8%) are the most relevant (Figure 8). Focusing on the community, 42% indicate that this is international, while 8% European, 20% Spanish, 22% Catalan and 8% from Barcelona.

Figure 8. Percentage sharing-oriented economy platforms regarding their area



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2. Governance

The level of the freedom of the users of the sharing economy platforms is quite relevant. In spite, the study shows that in the majority of cases (42.6%) platforms offer, demand or value services or products, 31.7% allow users to create content among them, and in 7.9% users have the possibility to generate new ways of adding content. Finally, 17.8% of projects studied have other formats of contribution. At the same time, 35.6% of the platforms allow participation without filters, 25.7% moderate before the user contribution and 2% after. In addition, 57.4% of the analyzed platforms allow users to interact or form groups among them.

Focusing on the governance of the platform, most of them (60%) have different user roles. If we distinguish different

degrees of opening in the administrator role, we note that in 30% of the cases administrators are generated automatically, in 2% through elections among the community, 2% are chosen by other administrators, 4% are selected by the providers of the platform with mechanisms of participation, while in 44% of cases are selected for platform providers without participation mechanisms. At the same time, 50% of the cases have formal community decision-making mechanisms and 54% involve the community in the definition of formal policies of the platform.

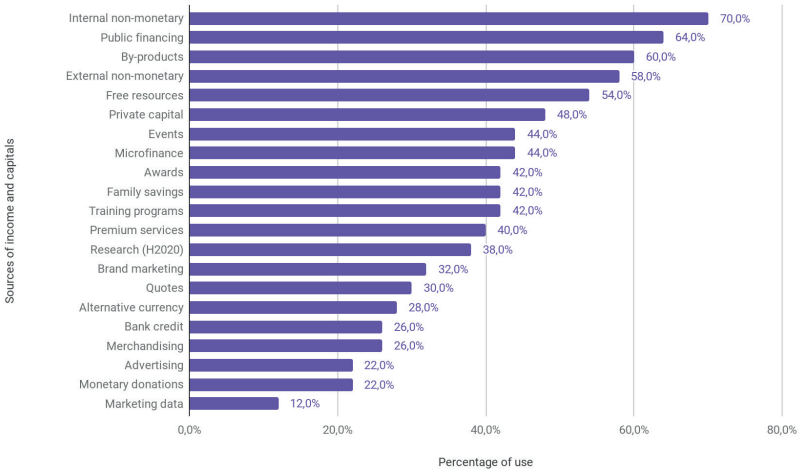
3. Economic model

According to our analysis, 52% of the platforms are not based on economic transitions, while 30% of them, users have almost or always monetary exchange. In the sense of economic governance, 40% of the projects reinvest the benefits in their self, while 50% divide them among the owners and 10% are not defined. In terms of ethical banking, 40% of the platforms use them.

Focusing on the model of sustainability, we detected a large number of types of forms of financing (Figure 9). The five most used, with a rate over 50%, are non-monetary internal donations (70%) and external donations (58%), public funding (64%), the generation of by-products or derivatives (58%) and the creation of free resources (54%). Below we find a range of financing models with an average level (between 30% and 50%) of use: private capital (48%), organizing events (44%), microfinance (44%), prizes (42%), training programs (42%), offering premium services (40%), research programs (38%), marketing the brand (32%) and member fees (30%). Finally, the least used financing models with a use of

less than 30% are: alternative currencies (28%), bank credit (26%), merchandising (26%), advertising (22%), monetary donations (22%), and the commercialization of the data.

Figure 9. Sources of platform income and capitals



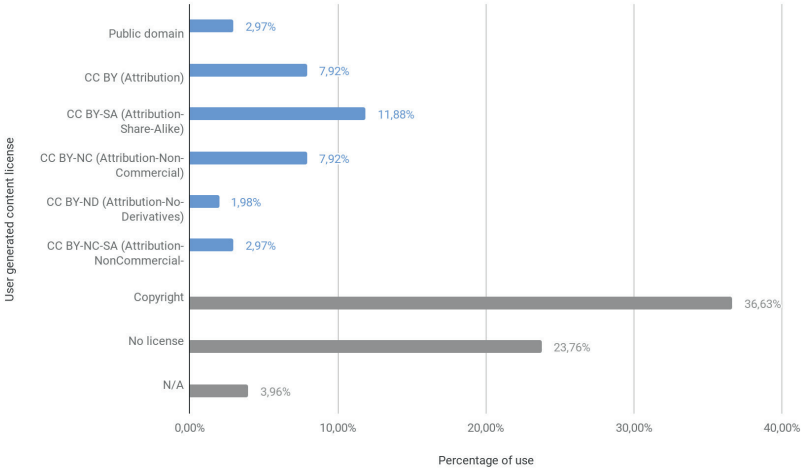
Source: Prepared by the authors.

4. Knowledge policies

Regarding the content license generated by users (Figure 10), most of the platforms have all rights protected (36.63%) or do not use any type of license (23.76). While the remaining platforms have licenses with varying degrees of openness: 2.97% public domain, 7.92% authorship recognition, 11.88% authorship recognition and share in the same model of license, 7.92% of authorship recognition and non-commercial use, 1.98% of authorship recognition without the possibility of generating derivative works

and 2.97% of authorship recognition without the possibility of commercial use and share in the same license model.

Figure 10. User-generated content license



Source: Prepared by the authors.

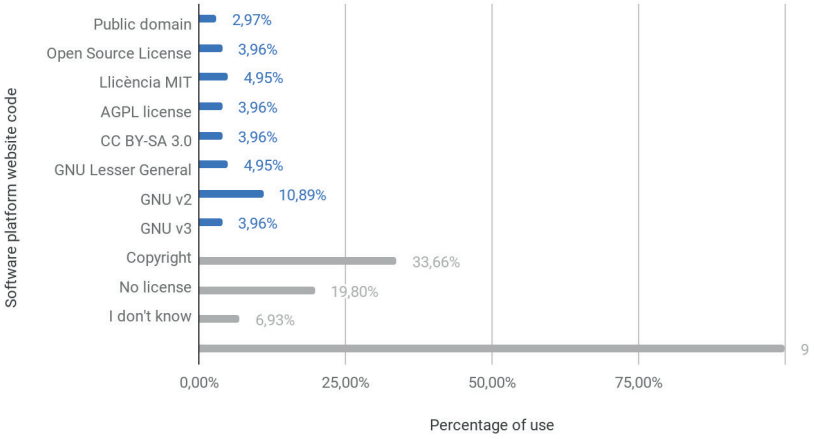
Along the same lines, most platforms studied (53.5%) do not allow data to be downloaded or accessed through an API. While 5.9% allow access through an unrestricted API, in 10.9% of cases a complete download is possible, virtually 2% makes access through an API with restrictions and almost 2% allow the free download of part of the data.

5. Technological policies

Regarding the license of the code, most (33.66%) of the platforms have all the rights reserved or are not licensed (19.80%),

while the rest use a more or less open license (Figure 11). In the same vein, 44.55% of the platforms do not allow any type of software reproduction. In spite of that, 38% of the projects studied have thought of using blockchain as a way of decentralizing their technological infrastructure.

Figure 11. Software platform website code



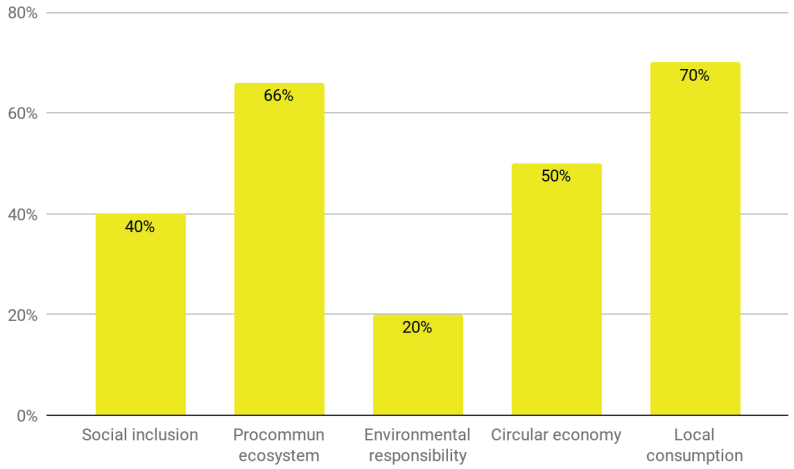
Source: Prepared by the authors.

6. Social Responsibility

Most platforms studied (36%) indicate that there are more men than women participating in the platform. Regarding to the main elements that make up the social responsibility and the impact of the projects, 40% of the platforms indicate that they have elements that favor the inclusion of collectives at risk of social exclusion, 66% favor inter-cooperation with other initia-

tives of the commons or of the social and solidarity economy, 20% have some type of initiative that favors a positive impact on the environment, 50% practice the circular economy and 70% favour the consumption of products or local services (Figure 12).

Figure 12. Social responsibility evaluation indicators



Source: Prepared by the authors.

7. Conclusions of the analysis of the 100 platforms with impact in the city

The results of our research show that the indicators that define the governance model of a platform are interrelated with those that define their economic model. Therefore, a first major conclusion is that the more democratic is the governance of a platform, the more democratic it will be its economic model.

The analysis variables used to study this connection have reinforced this correlation, especially with respect to the community's participation in the definition of the norms and the policies of the platform and the destination of the benefits, while economic participation has an inseparable link with transparency. Therefore, the generation of spaces, whether formal or informal, to promote democratic governance and promote transparency are key elements for generating sharing economy platforms based on the common good.

If we focus on economic sustainability, we note the relevance of non-monetary contributions, both internal and external. This highlights the importance of volunteer work or linked to the mutual society for the sustainability of initiatives, and the creation of communities around the projects as the central capital for the viability of projects. In parallel, although research data means that few projects are initiatives of public administration, the role of public policies is important, since almost 2 out of 3 projects have public funding. For example, some projects have got the support of Barcelona City Council throughout a match-funding campaign, which allows projects to obtain sources from public administration and the community around the project.

In this same sense, the link with research is also an important element for economic sustainability. For the low band of sustainability models, it stands out how traditional models (quotas, bank credits or advertising) have a minority use. Finally, we observe how the commercialization of the data generated by the platform is still an area to explore since it is the least used financing model. Regarding knowledge policies, the area with the greatest presence of openness is the user-generated content, which is present in 35.64 % of the platforms. In knowledge practices relating to data openness, however, it goes down to 20.79% of the sample.

Openness of technological practices in the three modalities investigated was not practised by the majority, but open options constituted more than a third of the cases (39.6% of the projects are based on a free software license, 35.64% are based on open architecture, and 38% of the projects have interest in exploring other forms of decentralized technology).

Two factors may explain this result. The first is the desire to restrict the use of the website's software to the platform owners. The second is the low level of attention to software, content license, and open data exportation in the growing cooperative platform model (cooperatively owned, democratically governed businesses that establish a digital platform to facilitate the sale of goods and services).

Regarding governance, the most prevalent points of openness are seen in the policies of publication without filters or moderated only before publishing (61.3%), the ability to create groups or communicate with other users (57.4%), and internal transparency (76%). The least-used openness policies regard the administrators' election (only 38% of platforms had a democratic or meritocratic process to elect administrators) and who decides the destination of the economic platform's benefits (only 40% were decided by whole community). Therefore, when we look into the core of governance —platform or economic administration— the grade of openness is lower than when we study openness about member participation. Still, overall open governance of the platforms was adopted by 38% to 61.3% (depending on the specific governance indicator), which constituted a higher diffusion of openness in terms of platform governance, compared to technological or knowledge practices.

We could conclude on the basis of the data that openness collaboration in platforms is not irrelevant, but it is prevalent neither, as seen in around one-third of the sample. Furthermore, the cases which tended to be open in one dimension also tended to be open in the other dimensions. This suggests that a segment of the overall platform ecosystem could be characterized as more open, while a larger segment is not based on any of the methods of openness considered.

We have shown a connection between the indicators that define knowledge and technology policies, which, at the same time, are intertwined with governance. In that sense, our investigation suggests that openness in technology and data areas tends to also be reflected in other areas like governance. In spite of the relevance of the sample, however, the limited number of cases requires caution in analyzing its results and conclusions.

Regarding platform governance, we observe the active role of members in some key aspects of the democracy of the platform: defining the rules, involvement in the decision-making process, and internal transparency of the economic balance. We observed better open in the realm of open governance than in the realms of technological, knowledge, and data openness. However, the correlation analysis shows that openness in participation, knowledge and technology are also connected to the governance of the project. To sum up, the results of this investigation suggest a better proliferation of governance openness models than open technological, knowledge, and data ones. The results also suggest the interrelated strength of these three dimensions in the promotion of the open collaborative ecosystem.

8. Zoom: 10 paradigmatic cases of Barcelona ecosystem

Taking advantage of the analytical framework of the democratic qualities of sharing-oriented platform economy proposed, we will show the analysis of ten cases with a presence in the city of Barcelona: El Recetario, SMart IB, Goteo, Katuma, TimeOverFlow, FreeSound, XOBB, eReuse, Sentilo, Pam a Pam. Most of these projects will be involved in the Sharing Cities Summit 2018.

El Recetario <www.el-recetario.net>

A sharing-oriented platform, created in 2007, focused on research, experimentation, and reuse of waste for the construction of furniture and accessories, where the community of creators (700) share what they do and how they do it (through recipes, 450), learning from it and collaborating with others.

- Governance: Voluntary open participation.
- Economic model: Participated in a Universidad Internacional de Andalucia (UNIA) match-funding Goteo campaign (2015), which allows them to improve the project. In spite of that, a sustainable economic model is not yet defined.
- Technological policy: The technological platform is developed in Wordpress and, in spite of being planned, the whole platform code is not yet open.
- Knowledge policy: At the same time, the content is under a Creative Commons license (BY-SA. 4.0 copyleft license).
- Social responsibility: El Recetario is in the transition of becoming a consumer/ producer cooperative platform.

SMart IB <http://www.smart-ib.org>

SMart is an abbreviation for the French phrase, "Societé Mutuelle pour Artististes". SMart is a non-profit organization that was launched in Belgium in 1994 under the name of SMartBe. Through the ESempleo Program, founded by European sources and managed by CEPES Andalucía, SMartBe came into contact in 2011 with a cooperative business group from Andalucía that brought bringing together the social cooperatives AURA ETT, ACTÚA SERVICIOS, and A2A Formación, among others. Finally, the new Law 14/2011 of Andalusian Cooperative Societies introduced advanced societal models of social innovation, creating a legal environment in which SMart Ibérica could begin to operate in Spain in May 2013. Currently, the Spanish cooperative receives the economic support of the Belgian cooperative. The project has expanded well, with 3000 members in Spain and 800 in Catalonia.

- Governance: A governing board makes the decisions of the cooperative, and the users are invited once or twice a year to hold an assembly. Voluntary open participation.
- Economic model: Each member pays a 150 € initial share capital contribution and 7.5% services commission. With this capital, the organization pays members' bills in advance.
- Technological policy: There is not a technological platform running yet.
- Knowledge policy: The knowledge generated is not open.
- Social responsibility: The project promotes cultural and artistic activity.

Goteo <www.goteo.org>

Goteo is a crowd/match-funding platform constituted as a foundation. The project started through a sharing-oriented founding investigation in 2010, and the first version of the platform launched in 2011. Currently, Goteo has more than 90000 users, raising 4 million Euros.

- Governance: As a foundation, the decision-making process is carried by a small group of people.
- Economic model: Users pay a 4% commission, but the promoters intend to arrive at 0%.
- Technological policy: Software is subject to a copyleft license (AGPL).
- Knowledge policy: The platform data is freely downloadable in part.
- Social responsibility: In terms of social impact, all the projects which participate in campaigns must define the social responsibility of their actions.

Katuma <www.katuma.org>

Katuma is an Agro-food consumption platform based on commons platform economy values. The project was launched in 2017 and was developed by Coopdevs, a non-profit association focused on free and open software to promote social and solidarity economy projects.

- Governance: A membership cooperative governance is planned.
- Economic model: The intention is to found the platform with membership fees.
- Technological policy: The platform is developed with open software.

- Knowledge policy: The contents are under a Creative Commons (BY NC) license.
- Social responsibility: The project is focused on connecting producers and consumers in terms of social justice.

TimeOverFlow <https://www.timeoverflow.org>

TimeOverFlow is a platform of a time banking association, Associació pel Desenvolupament dels Bancs del Temps (ADBdT), which uses TimeOverFlow software, also created by Coopdevs. The association and software were developed and raised in 2012. Currently, 47 organizations use this platform with 5800 users. One of the main goals of the organization is its usability independently of the characterization of the organization.

- Governance: Annual assembly, they use Loomio groups as a framework of members' participation.
- Economic model: All economic information is published on the website. The project is supported by membership fees and a small number of monthly voluntary donations, which are not enough to invest in improving the project, this being just the developer's' task.
- Technological policy: Public domain license.
- Knowledge policy: Wiki space under public domain license.
- Social responsibility: A large number of organizations and users.

FreeSound <www.freesound.org>

The project started in 2005, promoted by Pompeu Fabra University. It has a research group with the objective of gathering free content for educational purposes and research. It was a success, winning prizes from the City Council (2005) and Google (2009).

Currently, the platform, which is hosted in a central server, has more than six million registered users and over 400,000 registered sounds.

- Governance: Open forum participation moderated by research members.
- Economic model: Growth has been deliberately slow to avoid any financial problems, which could force it to close. The majority of limited economic sources are from research. Promoters are studying new ways of funding based on different types of users or a Wikimedia donations model.
- Technological policy: Open source platform.
- Knowledge policy: Creative Commons license (CC BY) and data is open.
- Social responsibility: Most creators or producers use FreeSound to find sound sources.

XOBB <www.xobb.cat>

The project, constituted as a cooperative, is the result of matching two research groups from different disciplines, sociology and technology, within Universitat Autònoma de Barcelona (UAB). After the rejection of the national blind association, ONCE, the promoters, with the support of other associations for the visually impaired, got resources from a Barcelona City Council grant to finance the first prototype in Creu Coberta Street. Beacons allow blind people to find information about establishments (e.g., products, offers, and open hours).

- Governance: Periodic assembly meeting.
- Economic model: Everybody could use it for free, but if somebody gets economic profit from the network they must pay for it.

- Technological policy: The project, based on a replicable open digital infrastructure, is just starting.
- Knowledge policy: Open data.
- Social responsibility: The main objective of the project is based on inclusion.

eReuse <www.ereuse.org>

Computers today are just recycled, not reused. eReuse develops open-data and open-source tools and services to reduce the costs of refurbishing and reusing computers. It was created in 2015 by Pangea, an independent non-profit association, with 15 community organizations. eReuse launched a tool to trace the origin of reused material and see if it is recycled at the end of its life.

- Governance: The decision-making process of participation focuses on local sovereignty and global federation.
- Economic model: The possibility of an agreement with Abacus, in 2017, has allowed the project to get a new dimension by introducing machine cooperative to the recycling circuit. In that sense, there are good prospects for paid services growth (e.g., equipment redistribution, devices appraisal, or reporting information).
- Technological policy: Based on decentralized open-source software.
- Knowledge policy: Open data.
- Social responsibility: The project is based on reuse to decrease unnecessary production impact.

Sentilo <www.sentilo.io>

Sentilo is a platform to collect data from sensors. It was formed by the Barcelona City Council in 2012 in the framework

of the Internet of Things. The proposal was based on the scenario of exponential sensors growth when space would be needed with structured information on each sensor system. Ten other cities, like Terrassa, have subsequently implemented it.

- Governance: The organization works as a foundation and the participation model is open.
- Economic model: Some of the proceedings are published on the website.
- Technological policy: FLOSS (LGPL3).
- Knowledge policy: Open data.
- Social responsibility: One of the project's objectives is to avoid duplicate networks.

Pam a Pam <www.pamapam.org>

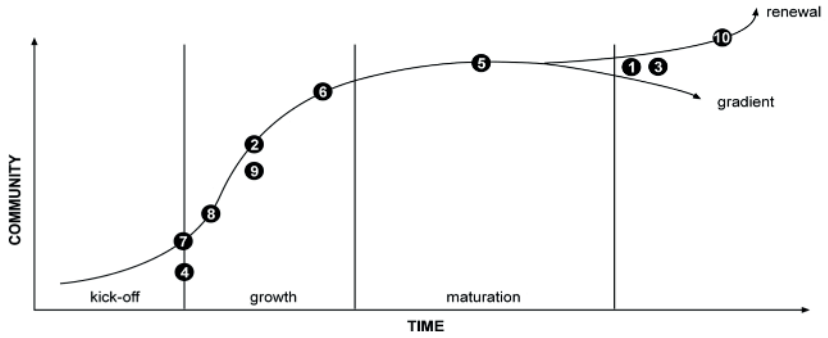
The platform, born in 2012, is a project by Setem and XES (two organizations linked to SSE) to promote responsible consumption. A community of volunteers maps the initiatives through a qualitative questionnaire. Currently, the project is in a renewal phase with a revitalization plan to face the difficulty of maintaining territorial community mobilization. At the same time, the promoters want to get a self-managed sustainability funding model, apart from subsidies, and legal independence from Setem.

- Governance: Periodic members' assemblies and open participation.
- Economic model: A grant from Barcelona City Council, proposed by Setem, allowed the initial founding. In 2014 a European grant permitted the incorporation of territorial facilitators and launched a new website that was more systematic and elaborate.

- Technological policy: FLOSS.
- Knowledge policy: Open data on demand. The new website will allow it to be downloaded.
- Social responsibility: The whole project is linked to the social and solidarity economy.

According to their own point of view, each case is positioned itself in the curve of growth (Figure 13), which represents the stages of evolution and growth of an organization, with an initial kick-off, deep growth, maturation with stabilization, and the renewal or gradient phase. The result shows that the majority of them, located themselves in a positive stage of their activity.

Figure 13. Summary of project stage evolution (1: El Recetario; 2: SmartIB; 3: Goteo; 4: Katuma; 5: TimeOverFlow; 6: XOBB; 7: FreeSound; 8: eReuse; 9: Sentilo; 10: Pam a Pam)



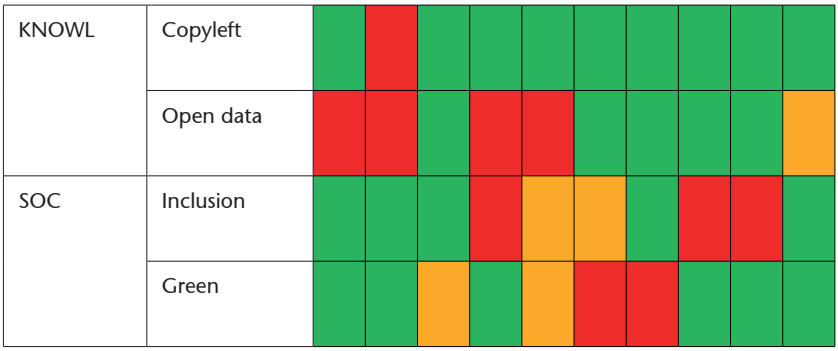
Source: Prepared by the authors.

Regarding the democratic qualities of sharing economy, a case comparison between the cases of the commons balance (Table 4) shows that none of the cases fulfils 100% of the five qualities. In spite of that, the majority of them accomplish aspects of the commons star platform economy review at a good level. Cases 3 (Goteo), 8 (eReuse), and especially ten (Pam a Pam), achieve in

a holistic approach achieving the majority of commons criteria. Two of these projects (Goteo and Pam a Pam) are in a post-maturation evolutionary stage. The qualities linked to the non-profit economic dimension and open participation in governance are the ones more cases fulfil, while technological decentralization, open data, and inclusion indicators (in these order) are the areas less fulfilled by the cases. The governance and economic model get the best evaluation, but open participation and non-profit organization have better valuation than cooperative governance and transparency, respectively. On the whole, case 2 (SmartIB), which is in the early platform development stage, has the least criteria accomplishment.

Table 5. Case comparison between the cases of the commons balance. Green: fulfilment, Orange: Partial fulfilment; Red: unfulfillment. Cases: 1. El Recetario, 2. SmartIB, 3. Goteo, 4. Katuma, 5. TimeOverFlow, 6. XOBB, 7. FreeSound, 8. Sentilo, 9. eReuse, 10. Pam a Pam

Dimensions	Sub-dimensions	1	2	3	4	5	6	7	8	9	10
GOV	Type of organization										
	Open participation										
ECON	Goal										
	Transparency										
TECH	FLOSS										
	Decentralized										



Source: Prepared by the authors.

9. Conclusions about the 10 paradigmatic cases

According to the application of the framework to the sample of ten cases, we observe that there is no case which fulfils all of the dimensions, but several modalities of being pro-democratic as a digital platform. Regarding business models, the majority of the ten cases studied depart from a grant or public funding model and instead have a grassroots character. Four of the projects were connected to H2020 European funds. The main problem of this model is project maintenance when the economic support ends. Only one of the ten cases mentioned here was awarded and used the services for entrepreneurship of Barcelona Activa, the Barcelona agency of development.

Regarding governance, several of the cases had the intention to get another legal constitution at the time of the study. The current legal formulas for economic association do not adapt well to commons platform economy activity. Several of these cases were provided by institutions, whether universities, like FreeSound and eReuse with the UPF, or public administrations, as in the

case of Sentilo being supported by the Barcelona City Council. Those that were legally constituted did so through an association (the simplest formula bureaucratically), a foundation, or a cooperative. In this sense, some associations (TimeOverFlow and Katuma, for example) manifested in the interviews the intention to become cooperatives. Others were already in the process of doing so (such as XOBB). We also observed other cases of sharing-oriented economy platforms (such as femProcomuns) that were constituted as cooperatives but were not analysed in this initial study. If the legal cooperative formula spreads among sharing-oriented economy platform projects, as this investigation has found, we can expect new bonds in the growth of cooperatives and the expansion of the social solidarity economy movement in the city of Barcelona.

Regarding technological policies, the majority of cases considered FLOSS. At the same time, almost all of them centralized their architecture. In the same sense, with regard to knowledge policies, open licenses were more often extended than open data.

The accomplishment of social responsibility criteria in the cases analysed was not regular. Some cases were highly connected to environmental uses (like eReuse or Katuma) while other favoured social inclusion (like XOBB). If we assess the ten cases together, both subdimensions —green and inclusion— were half fulfilled.

At the same time, our analysis reflects another relevant issue to consider for future research into the ecosystem dimension of the cases. Platform economy has an important presence in Barcelona. More than 1000 cases have been identified as commons platform economies (see directori.p2pvalue.eu). The model is also very adaptable. A total of 33 areas of activity where the model is present in Barcelona have been identified. Barcelona's

sharing-oriented platform economy has an important ecosystem dimension.

The ten cases analysed showed different levels of connection with the Social and Solidarity Economy (SSE) and Digital Commons framework, network, and values. On one hand, Goteo was the strongest project in the Digital Commons area. On the other hand, Pam a Pam was the most mature project with the SSE framework in terms of digital platform.

In spite of the strong ecosystem, the majority of initiatives start but remain at initial stages, as a fabric of ideas and training, or kick off and grow to a certain level of satisfactory activity. Frequently there is neither the expectation nor the intention to scale largely. The ten cases in our sample positioned themselves at a developmental or mature position in the curve of growth, even if they were not considered *mainstream* or established with the big public. This is consistent with the results of the P2Pvalue investigation over a sample of 300, which pointed to a normal distribution of *success* (many medium cases), instead of a power law distribution with few very successful and the majority unsuccessful.

To sum up, our investigation shows that, beyond the controversial and unethical unicorn economy platforms, an alternative model of sharing-oriented platform economy exists based on the democratic qualities of procommon. The nature of these pro-common alternatives is connected to the development of the platforms based on the principles of cooperativism. Nevertheless, the main challenge of these procommon platform economy projects is their scalability and sustainability.

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