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Sharing Cities

A worldwide cities overview on platform economy policies with a focus on Barcelona

Mayo Fuster Morell (ed.)
Dimmons Research Group

SHARE
BARCELONA
SHARING CITIES SUMMIT
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Ajuntament
de Barcelona

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Dimmons is a research group part of the Internet Interdisciplinary Institute (IN3) at the Open University of Catalonia (UOC). The central research line of Dimmons is linked to socio economical innovation, collaborative economy and commons. From this central line, the three main research areas of the group are economical development, public policies and collaborative methodologies. Dimmons research is based on combining rigor with frontair methodological innovation, action research, methodological pluralism and open knowledge.

www.dimmons.net

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Introduction

Mayo Fuster Morell, Dimmons UOC

The platform economy (also known as collaborative platform economy or sharing economy) is used as a *floating signifier* for interactions among distributed groups of people supported by digital platforms that enable them to exchange (matching supply and demand), share and collaborate in the consumption and production of activities leveraging capital and goods assets, and labour. It is growing rapidly and exponentially, creating great interest, and has become a top priority for governments around the globe.

However, it suffers from three main challenges:

1) platform economy occurs in a regulatory vacuum, with unsystematized policy reactions and uncertainty towards which policies may be more beneficial. Furthermore, collaborative practices are opening up a tremendous potential and opportunity for public innovation that is not being exploited.

2) Platform economy is creating high sustainability expectations for its potential to contribute to a sustainable development of society (Botsman & Rogers, 2010; Cohen & Kietzmann, 2014; Heinrichs, 2013), constituting a paradigmatic change (Rifkin, 2014). But it lacks a holistic framework for the assessment of its sustainability. Furthermore, the sustainable design of platform has considered questions of technological and economic aspects but has not integrated other sustainability relevant questions, such as environmental impact, gender and inclusion, or legal implications, lacking a proper multidisciplinary perspective to platform economy.

3) There is a confusion about the platforms which present themselves as collaborative while actually, they are not; and similar uncertainties and ambiguities associated with diverse models. The disruptive impact of the best known platform economy model, that of Unicorn *extractionist* corporation platforms like Uber and Airbnb, is provoking huge controversy (Codagnone *et al.*, 2016). Successful *alternative* and truly collaborative models exist, such as open commons, platform cooperativism and decentralized organizations based on a social economy and open knowledge, but these have received limited policy and research attention. Additionally, there is a lack of a classification system that helps to establish the difference between the different models. In sum, platform economy constitutes a paradigmatic change, but assuring a positive direction to this change requires that we target these three challenges in order to re-direct platform economy towards a sustainable future.

In order to contribute to address these challenges, this work primarily will provide an overview of current policy reactions and public innovations by cities and an analysis of the legal challenges platform economy open up. Second, the book will provide a quality balance of the platform economy. The *quality balance* is an analytical tool that helps to characterize the platforms, differentiate models by visualizing the democratic qualities of platform economy initiatives and provide insights of the sustainability implications of their design and performance from several perspectives. This commons balance considers the dimensions of governance, economic strategy, technological base, knowledge policies, and impacts and social responsibility towards the externalities of the platforms.

On the basis of the quality balance of platform economy, sharing or collaborative-oriented platform economy (as a type of platform economy) can be defined as a tendency, a set of qualities, and a modality of collaborative platform economy - regarding both the design and the performance of the process - characterized by a commons approach regarding the dimensions of governance, economic strategy, technological base, knowledge policies, and social responsibility of the externalizations impacts of the platforms. In this regard, the commons platform economy is characterized by: (1) favouring peer to peer relations —in contrast to the traditionally hierarchical command and contractual relationships detach from sociability, and mere mercantile exchange— and the involvement of the community of peers generating in the governance of the platform; (2) it is based on value distribution and governance among the community of peers, and the profitability is not its main driving force; (3) it developed over privacy aware public infrastructure, and results in the (generally) open access provision of commons resources that favour access, reproducibility and derivativeness; and finally (4) the responsibility with the externalities generated by the process.

The design of the commons balance is informed and based on a multidisciplinary analysis and state of the art of the platform economy from an economic, environmental, gender and inclusion, legal and policy perspectives, and an empirical analysis of most prominent cases of commons collaborative economy, as well as the empirical analysis of the case of Barcelona's commons collaborative economy ecosystem. The applicability of the commons balance will be illustrated with 10 cases of platform economy at Barcelona. In this regard, we provide firstan operationalization of the common balance, with a set of basic indicators applied to the 10 cases.

Third, the book provides a focus into Barcelona Case Study, regarding policies developed by the City Council by Álvaro Porro (Comissioner for Social Economy, Local Development and Consumption, Barcelona City Council) and a presentation of an analysis of the current stage of Barcelona sharing ecosystem and a contextualization of its historical roots.

Sharing Cities Summit 2018

This book is published on occasion of the Sharing Cities Summit 2018. The third edition of the Sharing Cities Summit took place in Barcelona 12-15 of November 2018. It follows the previous edition of the Sharing City Summit held in 2017 in NYC, and in 2016 in Amsterdam. The event gathers Mayors and Deputy Mayors from leading cities from around the world, and actors of the sharing ecosystem, to discuss how the continuous growth of sharing economies impacts the life and economic development of the cities. The participants considered what innovative measures can be taken to meet the challenges and opportunities we face, such as how to differentiate between digital platforms, based on the collaboration model of its users that is applied. The Summit was focus on defining a "Declaration of principles and commitments for a Sharing City", and stimulate concrete collaboration between cities. This book intends to be a useful resource to inform cities policies collaborations and provide an overview of Barcelona, the city hosting the Summit.

Organization of this book

This book is organized into three sections. Part one, "Sharing cities: Overview of platform economy policies" provides a chap-

ter on public policy innovations at the field of platform economy, a chapter on policy reactions by cities worldwide, and, finally, a chapter on legal analysis of the challenges open up by the platform economy at current regulations and legal frames, with a focus on how far it has extended new forms of intellectual property.

The second part, "Qualities and models of platforms", provide a multidisciplinary analysis and framework of the platform economy, in three chapters. First, an introduction to the whole section on qualities and models of platforms, and argumentation on the necessity to overcome current frameworks with a multidisciplinary perspective. Finally, it presents the democratic multidisciplinary balance of the platform economy, including an application of the commons balance in 10 cases from Barcelona. Then, in the frame of a multidisciplinary analysis and state of the art, there are two chapters with disciplinary analysis of platform economy impacts: Inclusion and discrimination perspective, with a focus on gender, and environmental sustainability perspective.

The third part provides a focus on the Barcelona ecosystem: A first chapter presents the policies developed by Barcelona City Council; a second one, maps a sample of 100 cases providing empirical insights with an analysis of the sample on the base of the multidisciplinary framework to assess platforms qualities and differentiate models presented in the previous chapter Finally, there is a historical presentation of the cultural and development roots of the vibrant collaborative oriented ecosystem in the city.

The research presented in the book was directed by Mayo Fuster Morell and developed by Dimmons research team, and supported by the Open University of Catalonia (UOC), Barcelona City Council, and European Commission with the European project DECODE: DEcentralised Citizens Owned Data Ecosystem (European Project no. 732546).

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Part I

Sharing cities: Overview of platform economy policies

Chapter I
Public innovation in platform economy policies: Platforms, policy labs, and challenges

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1. Introduction

1.1. Moving beyond a regulatory framework: Public policy innovation and the sharing economy

Interest in policy questions regarding the sharing-oriented platform economy is increasingly heightened by increased legal disputes and media controversies, particularly around the Uber and Airbnb cases (Codagnone *et al.*, 2016). The first wave of analysis on platform economy has focused on a live and polarized debate on regulation: laissez-faire self-regulation versus top-down application of the same regulatory requirements faced by incumbent industries (Edelman & Geradin, 2016). This body of literature is, to some extent, polarized between those radically in favour of limited intervention -mainly in cases of market failure that cannot be corrected by the platform or the market (Allen & Berg, 2014; Cohen & Sundararajan, 2015; Koopman *et al.*, 2015), and those in favour of some form of regulation (Cannon & Chung, 2014; Edelman & Geradin, 2016).

These policy-centric debates are largely focused around how policies must avoid stifling potentially beneficial innovation, but also ensure competition and consumer protection, preserve

labour rights and avoid the erosion of the tax base (Sunil & Noah, 2015). More nuanced and less radical approaches call for innovative and *smart* forms of regulation (Miller, 2016; Ranchordas, 2015; Rauch & Schleicher, 2015). Possible sources of innovation considered include the use of data-based regulation, which implies that companies will adopt an open data framework, and that regulation will be co-created by sharing economy organizations and governments to provide public services. However, little research has been done in this area. Furthermore, and more important, little attention has been given to the policy-making process itself, beyond the specific policies that could be adopted. This chapter has a radically novel perspective, bringing attention to the policy-making process and to public innovation instead of the more limited perspective, widely adopted until now, that focuses exclusively on regulation (or self-regulation).

There are several reasons to support choosing a public policy and public innovation perspective. On the one hand, the field of sharing-oriented platform economy has effects on and links to many policy areas which challenge existing governmental departmentalization and involve a major plurality of competencies. This approach that novelly raises several questions about not only what substantive policies to adopt, but also how administrative functioning could adapt to take advantage of and to respond to the platform economy, its effects and potentials (Pais & Provasi, 2015). Additionally, the innovative character of the platform economy (connected to the practices of co-creation and to digital support) could make it a particularly suitable sector for the deployment of innovative policy making and public innovation, and for the opening up of a new stream of policy innovation (Davidson & Infranca, 2016; Rauch & Schleicher, 2015).

It is evident that in order to transform this increasingly complex and interconnected reality, governments need to change and innovate their unidirectional, logical, and technocratic decision-making. Under these old systems, most democratic and participatory mechanisms are limited to citizen consultation processes. Moreover, it is important to reopen the public debate about the place of social participation and deliberation. Conducive to reflection, this idea suggests that public management is shared among all stakeholders and interested parties, through a model of shared governance, in which all sectors participate and collaborate in the search for solutions to current challenges (Zurbriggen & González, 2014). The sharing-oriented platform economy can be one of the mechanisms to address social, economic and environmental problems, as demonstrated by the city of Seoul, in South Korea. The mayor there proposes the sharing-oriented platform economy and a culture of sharing as a transversal axis to address environmental issues, unemployment and social cohesion in conjunction with the innovation plan for the city (Jungwon *et al.*, 2013). To achieve this, it was essential that the government activates the necessary mechanisms and infrastructure to promote the idea of sharing using public and private resources.

One way that administrations have tackled complex issues and innovated in the public sector is through participatory design or co-design, coupled with other disciplines and methodologies. Since, through the promotion of collaborative processes governments can achieve more democratic dialogues between different actors, have better informed and more effective policy practices. Citizens can contribute to decision making; in addition to transforming reality (Design Commission, 2014; Zurbriggen & González, 2014; Woods *et al.*, 2016). To discuss further the

innovation in the public sector, this paragraph is structured to consider: (1) the literary study of innovation processes in the public sector based on participatory design, (2) a description and example for the strategies and partnerships that the state is using to reflect, discuss and design public policies and services, systematized in three types (Platform policy Labs, Challenges), and (3) discuss conclusions that summarize the types of innovation and reflect on the value of these in decision-making processes in the public sector.

2. Innovation in public policies in the context of multiple crises

Different streams of scientific research point towards and demonstrates the need to rethink and to manage the mechanisms for formulating and designing public policies and services in new ways. Public administrations are facing new challenges in the context of crisis, and in order to really achieve sustainable development in times when the State's capacity to respond to the growth of poverty, inequality and the deterioration of the environment is increasingly being questioned (Aguilar, 2014; Design Commission, 2014; Kaaronen, 2016; Woods *et al.*, 2016; Tassinari & Baerten, 2013; Zurbriggen & González, 2014).

This idea of innovation has become more important in European Countries since the financial crisis that has made visible the negative effects of the neoliberal development model, in terms of social inequality, and on environmental terms. Over the last decade, many of the European states and other states around the world have had great difficulty coping with demands of society to

provide strategic services that respond to the complex needs of the moment (Design Commission, 2014; Zurbriggen & González, 2014). This struggle is reflected not only in the quality and coverage of public services but also in inefficient public spending (Aguilar, 2014; Cottam, 2015; Design Commission, 2014), in the absence of strategic and systemic planning with other sectors and administrations to distribute efforts (Aguilar, 2014); as well as the dehumanization of the systems, that blur the complexity of human relations and real problems (Cottam, 2015).

Many governments are rethinking the mechanisms for the formation and design of public policies and services. In order to overcome these increasingly complex and interconnected problems that have emerged in the economic, social and environmental areas, the State can not think or act under traditional logic schemes, which were designed for other types of reality (Cottam, 2015). This brings back the need to debate about what is understood by the public, and the forms of governance. Zurbriggen & González (2014) suggest that guiding the public discourse towards the concept of the Commons, in which there is a mediation between the State and society and lends itself to debate, reflection, social participation and deliberation. In this context, the sharing-oriented platform economy, based on collaborative structures and on commons, may have interesting ideas for rethinking public sector, decision-making processes and public policies (Fuster Morell, 2011). For instance, some researches on the free culture and digital commons movements have pointed out how far the commons model has been a source of inspiration and innovation for political movements like 15M in Spain (Fuster Morell, 2012).

This approach means citizens have a major role in the management and decision-making of "the public", like a sphere or space

of political community. No longer do such decisions correspond exclusively to the public administration (or the Market). Through a model of shared governance, all actors in society collaborate to seek responses to current challenges (Zurbriggen & González, 2014), co-producing public services and formulating public policies under a common vision that generates value. This position is supported by a conceptualization of so-called *social innovation* that is integrated within this discourse as an explanation of and a new engine for new forms of citizen participation and collaboration. Social innovation, understood as that force of counter-hegemonic change that acts where the government and the market fail to respond, can be critically important in the public sector not only because it opens up new mechanisms of collaboration, but also because it empowers citizens to propose more sustainable development alternatives that aim to modify power relations (Pradel *et al.*, 2013; Zurbriggen & González, 2014). Some administrations approach social innovation to initiate transformation processes and to look for alternatives that allow them to transcend linear and unidirectional models (Tassinari & Baerten, 2013; Zurbriggen & González, 2014), especially in the decision-making processes and the design of services and public policies.

From another perspective, Brugué *et al.* (2014) point out that public innovation can come from two approaches. The first one refers to innovation as the mechanism to improve the efficiency of services or policies, for example modifying the way to do things, rather than the essence of what is being done (Brugué *et al.*, 2014). On the other hand, the second approach refers to governance innovation as a substantially different way to understand and transform reality. Not only as a matter of influencing processes but of rethinking the problems themselves in terms of the values of sustainable development (Brugué *et al.*, 2014).

This implies a great administrative challenge. Innovating in the public sector requires creating institutional frameworks and infrastructures that enable interaction between different actors and allows the generation of practical knowledge (Woods *et al.*, 2016), or "socially robust knowledge which is not only scientifically reliable, but is also accepted and applicable in the social [and political] contexts in which the relevant issue occurs" (Kaaronen 2016). Kaaronen (2016) adds to the above the concept of "science-policy interfaces" that include "organizations, initiatives or projects that work at the boundary of science, policy and society to enrich decision making, shape their participants' and audiences' understandings of problems, and produce outcomes regarding decisions and behaviours" (Sarkki *et al.*, 2015). In other words, public innovation needs more inclusive processes that consider diversity, complexity and generate new forms of collaboration and/or participation of all actors (citizens, institutions, companies, public interest organizations and civil society) in public processes, such as decision-making in public policies or service design, especially where is possible to reach ad hoc organizational arrangements, such as platforms, labs, networks etc. (Zurbriggen & González, 2014).

Co-design processes are one way to generate practical knowledge from more democratic dialogues that take on value as they produce policy practices which are better informed and more effective; contribute to decision making; and, in addition, manage to transform reality (Design Commission, 2014; Woods *et al.*, 2016; Zurbriggen & González, 2014). Such practical knowledge should include both Techne (know-how) and Phronesis, which means "knowing how to decide the best course of action" (Woods *et al.*, 2016), in order to reduce the gap between theory and practice.

Over the last decade, a large number of studies have emerged, articulating shared governance and ways to of solving social problems in a creative way, with design methodologies for achieving collaboratively innovative processes (co-design) in the public sector. Sangiorgi (2011) suggests that the intersection between disciplines such as design, organizational development and participatory action-research can achieve change processes that activate citizenship transforming services, build capacities and cooperative projects; redistribute power in decisions, guidelines and forms of production (re-production); build the infrastructure and the (open source) platforms required to support collaborative participation (online and offline); promote imaginative new possibilities and visions for a better future reposing the welfare paradigm; and evaluating the impact and success of decisions in order to improve them (Woods *et al.*, 2016).

2.1. Models and sharing design typologies for public policies and services: Platforms, Policy Labs, and Challenges

The way public services and policies are designed is fundamental. Such design influences its purpose, function and level of quality (Design Commission, 2014). However, because social problems are increasingly complex and interconnected, there is no a single route for public innovation in creation and formulation of services and sustainable public policies under open, multidisciplinary, inclusive and sharing models. The challenge for governments is to know how to organize and combine the tools, methodologies and working models to achieve

greater impact, and, above all, to create a synergy between all stakeholders (Kaaronen, 2016).

These examples of typologies illustrate the different routes that some governments or other various types of organizations are implementing to generate practical knowledge to design services or public policies. Some people respond to more or less structured models of "political science interfaces" (Kaaronen, 2016), while others work more with complementary tools or strategies to other models. They represent different levels of sharing or innovative co-design, to the extent that some models are also more oriented towards a common approach (based of FLOSS, open data and favouring open collaboration at the platform), while others are more private and corporate logic based. However, all the typologies are based on the key element of co-design in moving towards shared governance, creating the necessary mechanisms to activate interaction and collaboration. Moreover, examples of each one, show how they manage to create partnerships between the public sector, citizens and stakeholders; and most of them are directly linked to co-design policies from the sharing-oriented platform economy.

In this part, we will discuss three types of policy innovations: (1) Platforms —exploring the cases of ShareHub Seoul (Korea), Oppla (European), ShareNL (Amsterdam), and Decidim (Barcelona); (2) Policy Labs —examining the cases of MaRS (Toronto), MindLab (Denmark), La 27 Region (France), PolicyLab (UK), Helsinki Design Lab (Helsinki), and NESTA ShareLab (UK); and (3) Challenges —considering the cases of Koom (France), Helsinki Challenge (Helsinki), and City Game Sharing (Amsterdam).

3. Platforms

Platforms are co-productive and deliberative platforms for the exchange of ideas and knowledge between citizens, scientists, policymakers and the rest of stakeholders. Platforms are developed by institutions or organizations (sometimes by the government) to create and support a network (online and offline), that interrelates the social, political and economic dimensions; they have the potential to be a means for experimentation and application of innovative tools. Platforms facilitate the production and dissemination of practical knowledge through different channels, and can also be a training medium. The frequent online and offline interaction of all actors brings together different perspectives and ensure discussion of complex subjects (trying to overcome thinking in isolation). Face-to-face meetings are usually carried out through workshops which, according to Kaaronen (2016), are an effective way to make policy recommendations and, at the same time, bring cognitive and social benefits, by focusing on building trust and skills (Kaaronen, 2016). One of the challenges of some of these platforms, especially those of the FLOSS type (whose management and maintenance depends on a collective), is to achieve a continuity in the time that allows formulation of sustainable public policies; without jeopardizing their political neutrality by being funded by pressured third parties (in Kaaronen, 2016; Zamparutti *et al.*, 2012).

3.1. ShareHub Seoul

Theme: Hub for the sharing economy
Website: http://english.sharehub.kr/
Base: Seoul

Year of foundation: 2013

Commons orientation: This hub is based on a commons approach, including open collaboration over the platform.

The Office of Social Innovation of Seoul created the Sharing City project in 2012, in order to deal with different social, economic and environmental problems of the city. It promotes the sharing-oriented platform economy to create new jobs and increase incomes, reduce pollution, consumption and unnecessary waste, but above all, the hub has helped people to regain confidence in institutions, improving the relationships between citizens and government, and assisting to recover a sense of community. To achieve this sense of community, the Government focused on creating the necessary bases and infrastructure through implementing five main policies: (1) Promotion of the sharing model, (2) Economic support to companies and enterprises, (3) Improvement of laws and institutions, (4) Creation of a system of incentives for each district, and (5) Opening up of public facilities (including data). Basically, the decision-making process was handled through the creation of different advisory committees, one focused on policies and another on institutions.

To support the promotion of the sharing model and to help everyone to understand the value and the meaning of the platform economy, the Seoul city government and Creative Commons Korea, created the ShareHub platform to promote sharing culture, provide data about the collective economy and to make policy recommendations that support collaborative organizations and companies. This platform has different communication channels (online and offline) which help to connect the government, sharing-oriented platform companies and citizens. Through the web, these actors share information such as newsletters, lists of companies offering shared services and events related to the culture of

sharing and policy development. The Hub organizes face-to-face meetings aimed at entrepreneurs, activists, policy-makers and citizens, where they share ideas, build new ones, and offer training for themselves regarding the platform economy.

3.2. Oppla

Theme: Ecosystem services, natural capital and nature-based solutions

Website: http://oppla.eu/

Base: European

Year of foundation: 2016

Commons orientation: It is based on a commons approach, based open collaboration over the platform.

Oppla is an open platform, which brings together knowledge and best practices about European natural capital and ecosystem services. It was developed in 2016 from the cooperation of two research projects funded by the 7th Framework Program of the European Commission. The site operates through the collaboration of 60 universities, research groups, agencies and companies (OpenNESS and OPERA). Its objective is to simplify the way knowledge is shared, obtained and created to better manage environmental resources. It is designed to respond to the different interests and needs of stakeholders, offering multiple services online and offline for free. Among the online services, the platform has a forum ("Ask Oppla") for open collaboration and distributed (crowd-sourced) calls for action where all users can be involved. The platform is also a medium to disseminate environmental solutions. It features a "knowledge-Marketplace" where participants can receive guidance, software tools, and

access to an open database and to other useful resources to disseminate the results of projects. It also has a space to foster networking and Interaction among the users worldwide.

Offline services, including generally workshop-like events, help users work together to develop solutions to current challenges. One such event was called "Transforming the Culture of Environmental Decision-Making", that aimed to identify common themes, different perspectives and strategies that allow the generation of change regarding environmental issues. The main results of these events are reports developed by multiple authors, as well as articles for further discussion.

3.3. ShareNL - Amsterdam

Theme: Sharing Economy
Website: http://www.sharenl.nl/
Base: Amsterdam
Year of foundation: 2013
Commons orientation: Not based on commons principles but follows a private consultancy model. It is not based on open knowledge, but FLOSS and open collaboration are used through the platform.

ShareNL is an organization promoting the knowledge and collective awareness of the sharing economy. It was founded in recognition of the lack of a commonplace for cities, individuals, governments, organizations and other stakeholders to exchange and to build an overview regarding this field at different levels. Through talks, workshops, consulting, research and events, ShareNL facilitates the exchange of knowledge and experiences between cities and serves as a pilot project for the lessons and reflections for

resilient approaches to urban challenges and new economic models. Some of the projects that have been developed are in beta stage and include Amsterdam Sharing City; the Sharing City Alliance, a networking space for developing of the platform economy in cities; a platform for the sharing economy; a bookstore; and a Lab for platform economy innovation. However, it is not based on commons principles but follows a private consultancy model.

3.4. Decidim

Theme: Barcelona participation platform
Website: https://www.decidim.barcelona/
Year of foundation; 2016
Base: Barcelona
Commons orientation: It is based on a commons approach, based on FLOSS, open data and collaboration throughout the platform.

Decidim is an open source platform where Barcelona citizens can participate and collaborate in the building of their community in a more democratic and transparent way, by making specific proposals or supporting existing ones. The platform is a direct channel of communication between citizens and the government where it seeks to build community. People who are interested in improving and monitoring the quality of decision-making processes within the city, districts or neighbourhoods (as well as the platform itself) are brought together. Through the platform, citizens can read all proposals, monitor all the documents regarding the process, and know all the data generated around them and to vote for them. They can also make proposals and comment on existing ones. Also, interested people can participate in events to assist in

decision-making and in the development of proposals. All active proposals have their own development phases. Most face-to-face meetings take place in public spaces, ranging from debates to workshops that allow for reflection and for the co-design of proposals. These meetings are facilitated through participatory design tools and methodologies. The platform is based on a commons approach, based on FLOSS, open data and collaboration.

3.5. Procomuns

Theme: Forum of Commons Sharing Economy
Website: http://procomuns.net/
Year of foundation: 2016
Base: Barcelona
Commons orientation: It is based on a commons approach, open data and collaboration through over face to face meetings.

Procomuns is an annual forum about the Commons Sharing Economy. Each year face-to-face and virtual meeting spaces are organised to discuss the value of the Common model in the sharing-oriented platform economy for Barcelona, Catalonia and the whole of Europe. Procomuns is also an opportunity to discuss frameworks that should assist the governments and others to sign to co-design mechanisms for public policies to promote the development of proposals, solutions, and strategies to advance the platform economy connected to frameworks like the Social and Solidarity Economy while facing new challenges.

Procomuns is organized by BarCola (Barcelona Col·laborativa) together with the Barcelona City's Department of economic promotion, Barcelona Activa, and the Dimmons research group from of the IN3, Open University of Catalonia (UOC). During

the forum, different actors from the participating sectors discuss public policies and challenges for their sector: experts, researchers, decision-makers, entrepreneurs, cooperative members, makers and citizens interested in the platform economy. Among its main goals are the need to democratize the economy, to preserve common assets and to overcome some of the challenges of today's platform economy (sustainability, governance, gender issues, etc).

Along with its different editions, Procomuns has organized several presentations and lightning talks to discuss what is happening in the sector, as well as co-creation sessions and activities to collaboratively define outputs. Parallel to this, an open content online space for documentation allowed participants to re-feed the lines and principles of the platform economy while they were discussed. In the 2016 edition, the main outcome of the co-creation process was a document that compiled more than 130 policy proposals reflected in a public policy statement of recommendations for governments. In response to these proposals, in the 2017 edition, the city council presented the action plan that is moving forward. During the 2017 edition, new ways of articulating and growing the sector, such as the "Commons balance", an instrument for the differentiation of models, were identified. Participants also discussed and explored possible alliances between the business sector and the social economy linked to open knowledge.

4. Policy Labs

Policy Labs are an emergent and powerful methodology for innovation in several areas (Tonurist *et al.*, 2017), yet still limited, and even more limited in the field of policy design (McGann

et al., 2018). Different policy labs are already in place, but our knowledge of this emerging phenomenon remains very limited (McGann *et al.*, 2018; Bailey & Lloyd, 2016; Kimbell, 2015). The setting up of civic labs to drive innovation in collaborative technologies is suggested as one of the key strategies for rethinking digital policies in the city (Saunders & Baeck, 2015).

Policy Labs —a variant of Living Labs—[1] are specialized research bodies for public services design and public policies formulation in an experimental way. Their reference are user-centered design and participatory design for activating the interaction of all actors (citizens, civil servants, public, policy-makers and other stakeholders) to produce practical knowledge that enables the development of bottom-up proposals consistent with real needs at different levels –local, regional or national– (Fuller & Lochard, 2016; García *et al.*, 2016). Unlike Living Labs, most Policy Labs are initiatives undertaken by members of a government, supported by external designers and public innovation experts.

Although each has its own organization, structure, objectives and programs, most apply design methodologies, focusing on strategic design and services (Huybrechts *et al.*, 2016), which also include studies for ethnographic research, contextual research, mapping, prototype testing, usability testing, and generative methods (García *et al.*, 2016). Fuller & Lochard (2016) point out that these laboratories, in addition to co-designing and re-imagining public policies and programs, also develop a broad range of activities such as preparing prospective studies, or creativity and learning activities, through which they seek to empower all participants. On the other hand, there are also voices who are argu-

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1. More info: https://en.wikipedia.org/wiki/Living_lab

ing for the need to ground design with deeper understandings of political theory (Escobar 2018). As well as the need to create better assessments of the benefits of using design in the context of policymaking, which is showing to impact the modulation of organisational ways of knowing and performing competence (Bailey & Lloyd 2016).

Currently, in some living labs, participatory design processes are being integrated into the concept of infrastructuring, as a way of dealing with complex problems, through establishing long-term working relations with diverse actors (Huybrechts *et al.*, 2016). When speaking about infrastructure processes it is fundamental "to set up, enable, and foster (physical and abstract) democratic spaces that give room for to different and conflicting voices and where actions are taken to mediate these controversies or conflicts" (Bjögvinsson *et al.*, 2012; Huybrechts *et al.*, 2016; Karasti, 2014). This process can be approached from different perspectives, according to the particular needs, some IT systems for work organisation, community settings, societal information infrastructures or formation of communities (Huybrechts *et al.*, 2016). These laboratories are valuable because of their ability to articulate requirements (needs and/or desires) from all participants in the form of more democratic dialogues. Then the spaces that are generated allow mediating between different perspectives, many times (Huybrechts *et al.*, 2016).

4.1. MaRS Solutions Lab

Theme: Sharing Economy regulation
Website: https://goo.gl/f4scKC
Headquarters: Toronto

MaRS is an entrepreneurship accelerator focusing on energy, environment, financing, health, labour and education sectors. Its objective is to bring together different parts of society, such as educators, researchers, social scientists, businessmen and business experts, to bridge the gap between what people need and what the government provides. Within their services, they offer *System Change* where they develop different programs together with strategic alliances to promote social impact. One such program is the MaRS Solutions Lab, which is a laboratory for public and social innovation that helps address complex social challenges that require systemic change. One of its objectives is to understand the challenges from the perspective of citizens; bringing together all stakeholders to develop, prototype, and scale new solutions and bring change in society; as well as to work hand-in-hand with governments to create public policies and services.

Consistent with this approach, MaRS Solutions Lab, together with the Province of Ontario and the City of Toronto, developed the project: "Shifting Perspectives - Redesigning regulation for the sharing economy" as a strategy to help build a sharing-oriented platform economy that benefits the city. To do this development many case studies were generated which not only involved the government but also many other stakeholders. This is how MaRS Solutions Lab, based on participatory design methodologies, brought together participants from different walks of life to prototype and co-design an Action Plan for a Shared City (Steenhoven; Burale; Toye & Buré, 2016).

The Plan of Action contemplates 5 steps: (1) To develop a vision for the sharing economy as a city coherent with the identity and the strengths of the city; (2) Mapping of underutilized assets; (3) Identify opportunities; (4) Definition of actions in relation to each identified opportunity; (5) Support the strategy with adequate

resources and structures to help ensure implementation, such as establishing an advisory board, learning from other cities for creating a sharing-oriented platform economy fund.

Furthermore, the project also focuses on understanding the existing regulation from the perspective of users through mapping experiences, to gain a deeper understanding of the challenges. For this mapping, after a series of in-deep interviews, representatives of the three levels of government (municipal, provincial and federal), industry representatives and companies from the platform economy, agencies and other experts were summoned to work together for three days of workshops. In the end, effective regulation was developed to create public value, to support innovation and to reduce administrative burdens, mainly in the area of housing and transport (Steenhoven; Burale; Toye & Buré, 2016).

4.2. Mind Lab (to be closed in 2018)

Theme: Growth Through Sharing Economy
Website: http://mind-lab.dk/en/
Location: Denmark
MindLab it has been a space-laboratory for public innovation that involved citizens and companies in the process of creating solutions for the welfare of society; it focused on the design of policies and services, strengthening spaces for collaboration and communication; and helped to monitor different areas of the public and business sector. MindLab was running as part of three Ministries (the Ministry of Industry, Commerce and Finance; the Ministry of Employment; The Ministry of Education) and one municipality (the Odense City Council), and

collaborated with the Ministry of Economy and Interior. As you can read in its webpage, Mindlab MindLab is closing down by the end of 2018, and it is not accepting new projects in 2018. A part of the activities will be carried on in the new Disruption Task Force. Besides the information located on its webpage, you can read a short review of the closure process, with interviews with former directors, in the magazine *apolitics* (Guay, 2018).

This Lab applied methodologies based on design thinking to help decision-makers to address public issues from creative and collaborative perspectives, as well as participation from citizens. In general terms, their first step in a co-design process was to understand the environment, the situation and the culture of the problem to be addressed. For this MindLab used ethnographic tools: participant observation, notes, sketches, informal conversations or interviews. The objective of this stage, rather than to validate a hypothesis, is to discover, describe and seek inspiration (Zurbriggen & González, 2014). After this, the next step was to move on to the co-creation stage, which usually was developed through workshops involving all the stakeholders (government, companies, organizations, citizens, etc.). This represented an approach more oriented to searching for solutions inspired by creative thinking (towards *desirable* outcomes) than in analytical thinking (*possible* outcomes); to experimenting to visualize possible solutions; and prototyping to generate models that can be validated (Bason, 2010; Zurbriggen & González, 2014).

Within this type of interventions, it highlights the project Growth Through Sharing Economy, which received support from the Ministry of Business and Growth of Denmark to capture growth opportunities across the platform economy through legislation. Since this new form of economy raises

questions about consumer safety, labour rights, the legality of certain services, to make an approximation to this field, MindLab helped the ministry to understand why and how Danish society shares its cars, apartments, tools, etc. Conducting qualitative interviews with producers and consumers of the platform economy, MindLab generated a series of portraits illustrating the benefits and dilemmas of the sector. Through these interviews, they showed evidence about the "social contract based on trust among the people involved". From this idea, MindLab developed a series of workshops with employees of the Ministry of Business and Growth, where the objective was to develop a strategy or proposal about how to ensure high protection, so that the new legislation can offer balanced support to social contracts (and supplementary regulations in the event that these social contracts are not sufficient).

4.3. Other Policy Labs cases

4.3.1. State of changes - International

Website: https://states-of-change.org/

States of Change has been initiated by NESTA, and is a collective brought to life by its faculty, its government partners and a wider community of practice. The initiative is supported by NESTA, The Australian Centre for Social Innovation, the Victoria State Government, the Gov Lab Austria, and more than other 20 institutions, from countries across the world (Bangladesh, USA, The Netherlands, Colombia, Portugal…). The goal of the initiative is to bring together the world's best public innovation practitioners and experts, working to enhance

the quality, coherence and reach of public innovation learning, and to ultimately improve lives for citizens across the world. Main activities are developed throw learning programmes and research & development projects.

4.3.2. La 27 Region - France

Website: http://www.la27eregion.fr/en/

The goal of La 27e Région is to play the role of "public transformation lab". To this end, it mobilizes the capabilities of multidisciplinary teams composed of designers, idea generators, and social scientists from many fields (ethnography, sociology, participant observation) and engages in ground-level actions (do-it-yourself projects, adult education actions, etc.). Both of these approaches prioritize the concrete experience of users, civil servants and citizens which serve as the starting point for re-examining public policy.

4.3.3. PolicyLab - UK

Website: https://openpolicy.blog.gov.uk/

Policy Lab works toward bringing new policy tools and techniques to the UK Government. Is are a creative space where policy teams can develop the knowledge and skills to develop policy in a more open, data-driven, digital and user-centered way. It has also developed a toolkit[2] to help fulfil this purpose.

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2. More info: https://www.gov.uk/guidance/open-policy-making-toolkit

4.3.4. Helsinki Design Lab

Website: http://www.helsinkidesignlab.org/

Although the project is currently inactive, Helsinki Design Lab was one of the first successful examples of a policy lab-oriented to help government leaders see and discover the "architecture of problems." With a goal to assist decision-makers to view challenges from a big-picture perspective, and provide guidance toward more complete solutions that consider all aspects of a problem. Under the concept of strategic design, it developed a toolkit under the title of *Receipts for Systemic Change*.[3]

4.3.5. NESTA ShareLab – UK

http://www.nesta.org.uk/nesta-sharelab-fund

ShareLab provides a space for people to explore how sharing-oriented digital platforms can have a social impact. This project from NESTA aims to gather ideas and create connections between innovators. The Projects with the highest potential success are provided with funding and support to develop their ideas in collaboration further. Another relevant resource developed by NESTA in collaboration with IDEO is a practical guide for Designing for Public Services:[4] brings together a collection of practical tools and methods for using design in public services in one place.

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3. More info: http://www.helsinkidesignlab.org/pages/studio-book
4. More info: http://www.nesta.org.uk/publications/designing-public-services-practical-guide

5. Challenges

Another relevant format is introduced challenges or games held as public competitions, organized (or sponsored) by public entities. Thanks to the Internet, new media and, above all, the possibility of incentives (monetary and/or personal recognition) there are more initiatives based on the possibility of activating participation from a wide range of social actors to imagine more sustainable ways of solving complex problems (Kaaronen, 2016). Many of these challenges have succeeded in drawing the attention of those in charge of forming and designing policies and public services, aware of the needs for different perspectives on any given issue and the value behind the interconnection of proposals, and practical knowledge. Three examples are described below. The first one is interesting because it not only activates the participation of citizens but also its counterpart, allowing for the city council or companies also to take action.

5.1. Koom

Theme: Small challenges for sustainable development
Website: http://www.koom.org/
Location: France
Koom is a platform that proposes sustainable development challenges (of an environmental, social, and/or economic nature) so that citizens and organizations, public and private can visualize the impact of the collective action, and at the same time expand the collective capacity to tackle different issues. Koom is developed by individuals and is supported by *France s'engage*

project.[5] Through the platform, users can see all the proposed actions and act on those that particularly interest them. They can also share their actions, propose challenges and measure the impact of collective actions. The challenges are based on the concept of compensation, for example: if 500 citizens buy from local cooperatives, the city council will undertake 15% of its procured provision of food for canteens from the same source.

5.2. Helsinki Challenge

Theme: A call to action to change the World
Website: http://challenge.helsinki.fi/
Base: Helsinki

Helsinki Challenge is a sharing-oriented platform between the scientific community and artists, entrepreneurs, public officials (decision-makers) citizens and others stakeholders, to create solutions to contemporary challenges using collaborative methods and co-design the well-being of the future. Helsinki Challenge is designed as an alternative to doing science on a competitive basis and to accelerate ideas; sharing, in this case, the agenda of the United Nations 2030 program for sustainable development. As a part of this endeavour, Helsinki Challenge brings together its 17 objectives in three themes: a sustainable planet, population changes and urban futures. The first challenge (a sustainable future) began in 2016, with a call to academia, public/private companies, public officials, associations and other participants to with proposals. Before the end of the year, the jury selected 20 teams, which

5. More info: http://lafrancesengage.fr/

began an acceleration process and received support in defining the challenges, as well as creating a value proposition that has a real social impact to help build a community.

5.3. City Game Sharing

Theme: Role-playing regarding urban challenges
Website: http://www.sharenl.nl/sharing-city-game/
Location: Amsterdam

This is a game designed by ShareNL as an approach to the co-design of urban challenges to generate interactive and playful solutions through the lenses of various stakeholders, and different fictitious cases describing reality. In this way, through a role play scheme, participants (government officials, public policy-makers, public servants, citizens, entrepreneurs etc.) can become aware of different perspectives to help solve these urban challenges, while experiencing the creative potential of working collaboratively. The game proposes seven fictitious cases and each case must be solved by a group of 5-10 people. These players play a specific role in the case, in order to represent the diversity of stakeholders within the urban context. New players are challenged to find solutions from the perspective of a shared city, according to disputes behind the case.

6. Conclusions

Today, governments are increasingly interested in rethinking how to make decisions when managing the public sector and formulating public policies, taking into account the complexity

and interconnectivity of current issues. The literature highlights several forms of shared governance, where the debate about the public policy is directed towards a common place, where there is a mediation between all the stakeholders, and allows for the co-creation of spaces for debate, reflection and deliberation (Zurbriggen & González, 2014). Therefore, the challenge for states is to create an institutional framework and the necessary infrastructure that allows for interaction and articulation between different stakeholders to generate *practical knowledge*, which is, the knowledge that can be translated into public policies or services for more informed, efficient, and sustainable development.

Participatory and human-centred approaches to the design of public policies articulated with other disciplines are one of the possible ways to face these challenges, through a common vision that generates value, insofar as it can create *practical knowledge* from more dialogues. And public services that respond to common visions on issues affecting a large part of society has occurred, including issues like the environment, economic models, health, and education, among others.

The diversity of examples that help illustrate the tools that states can use, some typologies (platforms, labour policies and challenges) were proposed. Many of these cases refer to collaborative processes that range from processes of reflection and analysis to processes of decision making through the common platform economy. These typologies share the participatory design approach within their objectives, involving most stakeholders in their deliberative and design processes, however, not all of the processes discussed are conceived as open structures.

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Chapter II
Sharing Cities: Overview of public policies of platform economy

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1. Introduction

The platform economy brings opportunities and challenges for public agencies. On the one hand, the sharing economy may provide avenues for sustainability;[1] social bond and inclusion; technological, entrepreneurial and social innovation, open knowledge for everyone, and citizens empowerment as producers or members of a community of users that municipalities can harness to meet their own objectives.

Nonetheless, mounting evidence points to the "disruptive" effects of some multinational platforms that work under extractivist and monopolistic models, threatening the local economic fabric. They might represent unfair competition for the professional and economic sectors whose regulation they do not abide by, such as avoiding local taxation. The negative impacts are also felt in the neighbourhoods where these platforms operate. They put more pressure on already strained resources and infrastructures such as housing, thus triggering the constitution of social movements.

Additionally, platforms contribute to reinforce existing socio-spatial divides. They may increase racial biases and economic inequalities, with areas capturing all the wealth, as many practices are based on

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1. By reducing waste and increasing efficiency by sharing idle assets or labor, thus easing pressure on natural resources.

renting assets–income is thus derived from the ownership of assets. Combined to evidence of workers precariousness, unclear long-term sustainability and trust and security concerns, municipalities have been forced to tackle some of these pressing challenges. When partnering with platforms, cities have been careful to ensure platforms actually leverage and support sharing to improve the community.

The following report intends to give a brief overview of the different dimensions of the governance of the sharing economy implemented by municipalities, analyzing the different roles and tools developed so far. An increasing number of cities go beyond monitoring and regulating the platform economy to actively promote and partner with some local initiatives, when they foster innovation, sustainability and inclusion. In order to do so, we have drawn examples from all over the globe. It does not intend to be exhaustive either representative but to provide an overview of city reactions and point to examples of cases of city policies by dimensions.

The following section will provide an overview of what cities are doing. It differentiates four governance dimensions: the city as a monitor, as a regulator, as a promoter, and as a collaborator. We could also mention the city as an innovator, but we are not developing this part as the chapter on public policy innovation already reflects in detail on policy-making innovations in the field of sharing.

2. Policies by the different dimensions of governance

We have distinguished four main dimensions of governance that cities can combine, which are not mutually exclusive:

- *The city as a monitor*, meaning the city monitors the development of sharing practices and initiatives to decide how to intervene;
- *The city as a regulator*, meaning the city sets and adapts its rules;
- *The city as a promotor*, meaning the city intervenes directly by promoting sharing services and providing spaces, and indirectly by designing infrastructure, services and incentives for sharing economy activities;
- *The city as a collaborator,* meaning the city partners with platforms or organizations to deliver new services to the citizens.

2.1. The city as a monitor

Research and impact monitoring are key to fully understand the scope and effects (positive and/or negative) of sharing practices and platforms on the city, thus allowing cities to decide if and how to intervene. Some possible ways to proceed and relevant cases of city policies are: mapping initiatives, research projects and, toolkit to help authorities assess if an initiative requires or government intervention.

a) *Mapping initiatives*
Gothenburg's Smart Map[2] (SmartaKartan) has been co-designed as part of a civil-public partnership between the association Collaborative Economy Gothenburg and the City of Gothenburg's Consumer and Citizen Services Administration. Building on the momentum of the Global Sharing Day 2014 event and Shareable's MapJam events from 2014-2017, the map

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2. Adapted from http://smartakartan.se/about/

highlights 100 initiatives that foster community and sustainable living, ranging from 'bike kitchens', exchange groups and clothing exchange days, give-away shops, and digital platforms. Anyone can submit an initiative which will then be reviewed. The map helps smaller initiatives get visibility and connect the online with the offline sharing community. To be on the map, initiatives must comply with the following criteria:

1) Be open to everyone, or limited to a particular block or group of residents.

2) Items and services are provided free of charge (or at the same cost as of itself).

3) A local community.

4) Facilitate urban commons and access rather than ownership.

5) Promote renting, sharing, exchanging, borrowing and giving, rather than buying and selling.

6) Promote exchange between private individuals.

7) International companies are not allowed if they are not a coop.

In Vienna[3] the City Administration, the University of Economics Vienna and the i-share Forschungsverbund have collaborated to create, among other things, an overview of Sharing-projects in their city, highlighting local and regional initiatives. It includes a participatory process, in which citizens are asked for their sharing activities and the possibility to inscribe their initiatives on a map.

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3. Adapted from https://www.sharing-economy.at/

In Barcelona Dimmons research group (UOC), based on 1,000 current cases of commons-based peer production identified in the city of Barcelona by the P2Pvalue directory project, has mapped a selection of 100 platform economy initiatives.[4] The selection has ensured the inclusion of a mix of platform experiences to reflect the heterogeneity of the collaborative digital platforms, taking into account projects promoted by different type of actors (public administration, companies, cooperatives, communities without legal format…), areas (cultural, tourism, mobility...), goals (knowledge co-creation, community engagement, business…) and profit and non-profit oriented. From the initial list of more than 1,000 cases identified, we used different "matching" criteria to ensure the diversity of the sample. Thus, the selection takes into account local cases and platforms with global activity, including Barcelona.

This approach matches with a vast number of cities, where local and global platforms develop their activity in the city spectrum. Additionally, in order to improve the robustness of our sample, we ensured the systematization of the sampling. We selected the most relevant 100 cases on the basis of: (1) Projects with activity in Barcelona; (2) Projects based on or supported by a digital platform; (3) Projects based on collaborative production; and (4) Projects with a significant level of activity of participation —platforms which have at least reached the level of having registered and active accounts by users, so in some stage of community engagement.

See also : Milan's[5] repository.

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4. Barcelona cases list (http://dimmons.net/wp-content/uploads/2018/05/cases_list.pdf).
5. http://www.milanosmartcity.org/joomla/images/elenco_sharing_economy%20aggiornato_novembre2015.pdf

b) *Research on current practices*

In Ghent,[6] from March to June 2017 peer-to-peer expert Michel Bauwens conducted a three-month research and participation project on the 'commons city of the future'. The research entailed:

- A mapping of 500 or so commons-oriented projects per sector of activity (food, shelter, transportation, etc), through a wiki, which is available at the site http://wiki.commons.gent.
- 80+ one to one interviews and conversations with leading commoners and project leaders.
- A written questionnaire that was responded to by over 70 participants.
- A series of 9 workshops in which participants were invited per theme, 'Food as a Commons', 'Energy as a Commons', 'Transportation as a Commons', etc.
- A Commons Finance Canvas workshop, based on the methodology developed by Stephen Hinton, which looked into the economic opportunities, difficulties and models used by the commons projects.

The result of that research is a Commons Transition Plan, describing in 23 proposals the possibilities and role of the City of Ghent (as a local authority) in reinforcing citizen initiatives. With this, the City wishes to give further shape to a sustainable and ethical economy in Ghent, becoming a 'partner for the commons'.

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6.   Adapted from http://commonstransition.org/commons-transition-plan-city-ghent/

In 2013, Vancouver[7] supported The Sharing Project which enabled researchers to survey and analyze Vancouver citizens to determine how people share in Vancouver and to highlight opportunities. Over 9 months, 30 individuals were interviewed through personal interviews and then focus groups, and over 700 people through open and then a random panel online surveys. The "Sharing Tour" was also organized to engage the community. The city's CityStudio, an innovation hub where city staff collaborates with academics and community members, conducted research on some Sharing-related topics: a Shareable *mapjam*; Britannia FoodShare; Recreational Sharing Libraries, and developing new community gardens.

c) *Toolkit to help authorities assess if initiative requires government intervention*

Amsterdam[8] has developed a process wheel and a checklist to collect more information on initiatives and assess the possible social and economic impacts.

2.2. The city as a regulator

Online platforms have been mostly disruptive and challenging cities sovereignty and current regulations in three fields: accommodation-sharing, affecting the hotel industry and local housing markets; mobility, affecting taxis and public transportation and labour through freelance or "gig" work. After monitoring those disruptions on their local communities, cities have adopted different

7. Adapted from One Earth, 2015 & http://ponderresearch.co/wp-content/uploads/2015/03/TheSharingProject_Report.pdf
8. Adapted from City of Amsterdam (2016).

regulatory approaches, that aim at mitigating the negative consequences while preserving innovation (Ganapati & Reddick, 2018).

The three main approaches are: *regulate*, which covers a large spectrum from adapting to the new environment to bans; *don't regulate*, which privileges self-regulation; and, *wait and see*, which means more information is needed before any intervention. Additionally, cities can adapt their codes to foster certain practices. Below, we develop different regulatory tools developed regarding accommodation-sharing, mobility and vehicle-sharing, and labour.

a) *Accommodation sharing*

Accommodation sharing–commonly known as Short-term rentals (STRs)–has created many challenges for cities, from not complying to current zoning, building codes and safety regulations, to putting more pressure on a strained real estate and rental market in major cities, to creating noise disturbances for neighbors or for local governments to being unable to collect taxes. Following a classification used by Miller (2016), here are some of the measures taken so far:

- *Use definitions.* The regulatory response to the Short-Term Rental (STR) Market begins with the language, whether it defines a unit in the STR Market, or clarifies if a legal STR Market rental changes the use of a building. For instance, London[9] home-owners wishing to let out entire properties for more than three months a year are likely to need "material change of use" planning permission from their local authority, and will then need to provide Airbnb with evidence of this approval.

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9.   See: https://www.airbnb.co.uk/help/article/1379/responsible-hosting-in-the-united-kingdom

- *Licenses, registries and information sharing.* A growing number of cities are requiring hosts to apply for licenses to be allowed to put their accommodation on Short-term rental apps. The City of New Orleans[10] has defined three license types (temporary, accessory or commercial), depending on who is occupying the place (an owner-occupant, an owner or an occupant), who needs or not to be present on the site or available during the rental (the owner-occupant, the owner, the occupant or an in-town property manager), how many rooms can rented, how many guests can be hosted.

  Each has a different application and registration process but all must pay a yearly fee and display their license somewhere visible. Additionally, all licensed properties must comply with safety measures (such as smoking detectors and fire extinguishers) and liability insurance.

  All licenses can then be found on New Orleans's registry, accessible online. Some cities add further requirements. In San Francisco, the city notifies any homeowner association that has requested notice of application for licenses.

  Portland requires all accessory short-term rentals to maintain a "guest logbook," which must include the names and home addresses of guests, their license plate numbers if travelling by car, dates of stay, and the room assigned to each guest. The log must be available for inspection by city staff upon request. Hosts also need to complete safety inspections and display permits in the STR unit and permit numbers in all advertising.

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10. All information on New Orleans, LA STR regulations (https://www.nola.gov/short-term-rentals/).

- *Area-based caps or bans.* In Austin,[11] no more than 3% of the single-family detached homes within each census tract can be used for STRs that are not owner-occupied. In New Orleans,[12] all temporary and accessory STRs are prohibited in the French Quarter, only commercial STRs can operate in some specific areas.
- *Day limits on STR market use.* Many cities have capped the number of days when the accommodation can be rented. In New Orleans,[13] accessory STR Temporary. Another possibility for cities is to cap the number of nights, especially for entire-home listings with no prior need to obtain a license but an obligation to report to the city. In Amsterdam[14] entire home listings can be rented for no more than a total of 60 nights each calendar year. To help implement it, Airbnb has introduced a *day-counter* to help hosts track and limit home sharing activity, notifies hosts when they are about to reach the limit and takes down the ad once the limit is reached.
- *Hosting platform required to inform posting host of applicable law.* The San Francisco[15] ordinance requires any web platform hosting an STR Market rental to first inform the posting host of the applicable legal provisions governing the transaction. Failure to comply with this provision subjects the hosting platform to a potential penalty of $1,000 per day.

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11. See: https://www.austintexas.gov/sites/default/files/files/STR_status_and_Recommendations_Aug_17_2015_final_draft.pdf
12. See: https://www.nola.gov/short-term-rentals/
13. Íbid.
14. See : https://www.airbnb.fr/help/article/1624/i-rent-out-my-home-in-amsterdam--what-short-term-rental-laws-apply?ibbe=0
15. Adapted from Miller, 2016

- *Arrangements to collect local taxes*. In New Orleans,[16] STRs are subjected to the Hotel/Motel Sales Tax (4%), Hotel Occupancy Privilege Tax (0.50$ per night of rental) and an additional assessment to benefit the City's Neighborhood Housing Improvement Fund (1$ for every night of rental occupancy). Airbnb directly collects and remits these taxes and fees to the City of New Orleans while for other platforms, the license holder is responsible for collecting and reporting the taxes and fees directly to the city on a monthly basis.

- *Online rental platforms have to report to the City data on their hosts*, which allows cities to verify whether hosts are licensed or not. In Amsterdam,[17] Airbnb has to share with the city aggregated information on the impacts of home sharing. Vienna has reached an agreement with 12 platforms to share data with the city.

- *Good-neighbour regulations*. Some cities are also specifically requiring that STR Market units comply with those "good neighbour" regulations that are already typically applied in many residential zoning districts. Such regulations include: noise ordinances, parking regulations; and trash guidelines.

- *Administrative enforcement*. In New Orleans,[18] in case of violation of Short Term Rental standards, penalties can include: revocation of the Short Term Rental license, daily fines for every day a violation continues, liens against the property, and disconnection of electrical service to the subject property. The city has also

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16. See: https://www.nola.gov/short-term-rentals/
17. See https://www.amsterdam.nl/nieuwsarchief/persberichten/2016/persberichten-1/amsterdam-and-airbnb/
18. See: https://www.nola.gov/short-term-rentals/

created several tools (online form, email or phone line) for residents to report violations.

- *Rent control and the STR Market.* In some cities, landlords looking for higher rents have used the excuse of rent-controlled tenants posting rooms on Airbnb as a reason to evict them. San Francisco[19] has amended their rent control ordinances to prevent landlords from trying to evict the resident of a rent-controlled unit "solely as a result of a first violation".

- *Partnerships beyond regulation.* In Milan, Airbnb has agreed to cooperate for major events or in the case of a housing emergency and help promote digital literacy initiatives for people at risk of marginalization. In Portland,[20] Airbnb has agreed to offer free smoke detectors and carbon monoxide detectors to operators who request this, work with the City to train STR operators on how to help with disaster relief, and make it easier for STR operators to donate earnings to local charities.

b) *Mobility and vehicle sharing services*

Transport Network Companies (TNCs), also known as ride-hailing companies, are the terms used to refer to companies such as Uber, Lyft, and the like. Taxis have felt their competition the most and asked cities to intervene by imposing them the same regulations or lifting taxi requirements. There are also contradictory studies on whether TNCs reduce or increase the number of cars on the streets, thus alleviating or creating more congestion and emissions. Similarly, they can connect with public transit to help solve first-mile-last-mile issues or replace it. Until recently, Uber refused to provide data on its rides, which prevented cities from being able

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19. Adapted from Miller, 2016.
20. Adapted from One Earth, 2015.

to answer the aforementioned questions. Some regulatory measures so far have been:

- *Licenses for drivers and/or vehicles.* In Singapore,[21] drivers are required to obtain a Private Hire Car Driver's Vocational Licence (PDVL). To get it, applicants have to pass a PDVL 10-hour course. Before the training, applicants must take a compulsory medical check-up and provide English certification. Cars used for Private Hire have to be registered with the Land Transport Authority and display decals identifying them as such.
- *Requirements for drivers and vehicles.* In Washington DC,[22] TNC drivers are at least twenty-one-years-old, have no criminal record, have adequate insurance, and have their vehicles inspected on a yearly basis. Vehicles must be 10 years or newer among other requirements. Some cars must allow access for disabled passengers.
- *Requirements for the apps.* New York City[23] council passed a bill to enforce a minimum hourly rate of 15$ for app drivers plus a supplement to mitigate against rest time.
- *Level playing field: update of existing regulation.* Toronto[24] has adapted its regulation to align some requirements of Private Hire with the taxis. Safety checks, background checks, base fair, and liability insurance for Private Hires were aligned on taxis regulation. Taxis are allowed to use surge pricing when using an app.

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21. Adapted from Lee Kuan Yew School of Law, 2017.
22. Adapted from Rancordas 2015, p. 465.
23. http://www.hurriyetdailynews.com/new-york-moves-to-cap-uber-app-ride-vehicles-135630
24. https://www.thinkinsure.ca/insurance-help-centre/uber-and-ride-sharing-now-legal-in-toronto.html

- *Fees on ride-hailing apps.* Many cities are now taxing (by ride or kilometre travelled) ride-hailing rides in exchange of being allowed to operate legally.
  - Since 2016 São Paolo,[25] ride-hailing drivers have been operating in exchange for prepaid fees of 0.10 reals ($0.03) per vehicle/ kilometre travelled. The collected revenue helps the city maintain the road network and other public infrastructure.
  - Portland[26] lifted its ban in 2016. Now passengers of ride-hailing cars (and taxis) have to pay a 50-cent ride fee. It helps pay for city enforcement efforts, such as spot inspections of cars and incentives to companies and drivers to choose wheelchair accessible cars.
- *Caps on licenses.* New York City[27] has capped the number of vehicle-for-hire licenses at the current number of around 80,000, unless they are wheelchair accessible, for a year.
  Partnerships with platforms.
  - To tackle a declining ridership and first-and-last-miles gaps, transit riders can use the Dallas's[28] GoPass app to book an Uber or Lyft ride, to encourage multi-modal trip planning.
  - To provide specialized services for the disabled and the elderly, Boston's[29] Massachusetts Bay Transportation Authority subsidized a program with Airbnb and Lyft for customers with

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25. Adapted from Shareable, 2017, p. 174.
26. Adapted from https://www.nytimes.com/2018/02/18/nyregion/uber-lyft-public-transit-congestion-tax.html
27. http://www.hurriyetdailynews.com/new-york-moves-to-cap-uber-app-ride-vehicles-135630
28. Adapted from One Earth, 2015.
29. See: https://www.uber.com/info/mbta/

disabilities. Riders pay the first 1 or 2$ and the MBTA covers the rest of the trip's price for up to 40$.

– Several cities are implementing data collection with TNCs to adopt the city's transportation network and ensure social justice. São Paolo's[30] decree requires TNCs to share their data (origin and destination, distances travelled, price, etc.).

– Portland[31] in its 120-day pilot program negotiated access to the origin and destination data, date, time and duration of each trip, and data about volume and geography. This helps determine hot spots and neglected parts of the city.

• *Adapting planning codes to foster new practices such as carsharing.* To encourage the development of carsharing, some cities are updating their Planning Code. In San Francisco,[32] newly constructed buildings incorporating residential uses, existing buildings being converted to residential use and some non-residential developments must dedicate a percentage of their parking spaces to certified carshare operators. The San Francisco Municipal Transportation Agency guaranteed 900 (of 281,000 on-street space) for use by customers of car-sharing firms. The policy ensures that spaces are located in all socioeconomic areas by requiring that at least 30 per cent of spaces are in the city's periphery and by offering lower prices for those spots.

Other cities have added other measures to the ones aforementioned. In Sydney,[33] car-sharing operators must offer fuel-efficient and low-emissions vehicles, make the cars available via a

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30. Adapted from Shareable, 2017 (p. 174).
31. Adapted from One Earth, 2015.
32. Adapted from Shareable, 2017 (p. 72) and https://www.sfmta.com/sites/default/files/projects/2017/Carshare_eval_final.pdf
33. Quoted from Shareable, 2017 (p. 77).

24-hour web- and phone-based booking system, and provide a monthly report on the use of car-sharing parking spaces.

See also: Antwerp,[34] Bremen,[35] Ghent[36] and Copenhagen's[37] city planning for *carsharing*.

c) *Labour and sharing services*

Some cities are trying to strengthen the protection of freelance workers, even if it is a national competence. For instance, New York City[38] passed the "Freelance Isn't Free Act" in November 2016. The Act mandates contracts for gigs paying over $800, either by itself or when aggregated with all contracts for services between the same hiring party and a freelance worker during the immediately preceding 120 days. It also increases penalties for clients found guilty of late or non-payment and protects from retaliation. In order to create a standardized service agreement for freelancers, a model of Freelance Contract[39] has been created.

2.3. The city as a promotor

To leverage the potential of the platform economy, its wider visibility and adoption by citizens, city governments can devise and implement many policies. They may support the sharing of

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34. Eijnden van den, 2017.
35. Íbid.
36. Íbid.
37. Íbid.
38. Adapted from https://www1.nyc.gov/assets/dca/downloads/pdf/about/Freelance-Law.pdf
39. Model of Freelance contract (https://www1.nyc.gov/assets/dca/downloads/pdf/workers/Model-Contract-Freelance.pdf).

public infrastructure and data, help promote local initiatives to local citizens and the business sector, mentor start-ups and companies through entrepreneurship programs.

a) *Sharing of government spaces or public infrastructure (rooms, land) or data*

A first possibility is for the municipality to share its own idle spaces and data. If many civic assets are traditionally meant to be shared (such as gardens, libraries, etc.), idle capacity in municipal spaces can be used to support community events and social organizations or for urban farming.

• Spaces:

In Seoul,[40] Seoul Metropolitan Government has run the website "Reservation for Public service" (yeyak.seoul.go.kr) since 2005. This website allows Seoul citizens to book one of the 1200 facilities, which include sports facilities, and, community service centres as well as education programmes. 100 000 bookings were made in 2015.

In Maribor,[41] the Municipality owned a disused office building, which became Weaver an alternative office building. They decided to host projects to promote cooperatives and social innovation development. The beneficiaries renovated themselves the building voluntarily and have a contract of free rent for five years that binds them to pay for all operating costs.

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40. Adapted from CCKorea, 2015 (p. 48-49).
41. Adapter from: http://newideasforoldbuildings.eu/2015/09/24/weaver-tkalka/

- Land:

In Vancouver,[42] the City has provided a variety of spaces: space for community gardens in parks, at community centres and in vacant lots; space for community kitchens and swap events at community centres; and light industrial land for a new Green Recycling Hub where resources, office and warehouse space are shared.

Founded in 2001 in New York City,[43] 596 Acres reclaimed vacant plots through low-income neighbourhoods for communities to gather, grow food and play. The programme encouraged locals to get permission to transform the lots into gardens, parks or farms, giving the plot's identifier in the city's land title register and stating the phone number of the responsible agency to contact. Each lot is managed autonomously. NYC municipal government declared most of the reclaimed lots of community spaces.

In Eugene,[44] Oregon Opportunity Village Eugene was created in 2013 to provide tiny houses to homeless people. The city gave the project a plot of land and a 12-month lease, which was subsequently extended for two more years. None of the tiny homes met the city's code for a dwelling or a residence, but they were given an exemption after a safety inspection.

- Data:

Considering that opening data would foster collaboration across agencies in the city and as part of its smart and resilient city strategy, Rotterdam[45] has opened over 500 geospatial data-

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42. Adapted from One Earth, 2015 (p. 199).
43. Adapted from World Economic Forum, 2017 (p. 12).
44. Adapted from Shareable, 2017 (p. 42-43).
45. Adapted from Shareable, 2017 (p. 159).

sets. Some are open by national law, such as large-scale topography and building information, but many additional datasets have been opened by the local administration, including aerial photos, 3D city models, underground infrastructure such as cables and pipelines, and more. All datasets, except geospatial ones, are available on one single platform for open data: http://rotterdamopendata.nl. Datasets are reviewed before being uploaded, regarding privacy, formats, etc. A public-private partnership is being created to improve the Open Data Store of Rotterdam.

"In 2010, the city of Montevideo[46] passed a resolution to make all data processed by the city administration (and not subject to privacy concerns) public. Since the resolution was enacted, an open-data portal was launched and over 50 datasets are now freely available. To bypass the burden of building its own new portal, Montevideo uses the national open-data portal that has been built upon the open-source software CKAN developed by the Open Knowledge Foundation, a global standard which is easily replicable. This policy spurred the development of many new apps that are using the data (...): public transport timetables, a map facilitating bicycle commuting, an app showing what taxes are spent on, and tools for finding recycling bins are joined by other more creative uses, like a map showing that only 10 per cent of streets are named after women."

See also: Seoul[47] has created two websites to open its data, one to share public data "Open Data Plaza", the other for administrative information "Information Communication Agora".

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46. Quoted from Shareable, 2017 (p. 220).
47. Adapted from CCKorea, 2015.

b) *Promotion of the platform economy/ of local initiatives*

Promotion policies aim at giving more visibility to platform companies that contribute to the city's goals, foster sharing practices among citizens and create an ecosystem, not only local but also national and international. Some possible ways are:

- *Ordinances to frame the promotion policies.* In 2012, the Seoul[48] Metropolitan Council passed The Sharing Promotion Ordinance, that defines sharing as one of the responsibilities and duties of the Mayor. Citizens and enterprises shall also actively participate in fostering and promoting sharing areas and practices. The ordinance contains provisions that offer legal grounds to implement it.

  Other cities, such as Amsterdam,[49] have adopted action plans to define the vision they want to defend, draft policies, and establish stakeholders. See also, Vienna's[50] position paper.

- *Creation of label for companies.* To help sharing enterprises and organizations build brand recognition and gain public trust, the Seoul[51] Metropolitan Government has designated officially some companies as sharing enterprise/organization. From 2013 to 2016, 64 companies and organisations, most of them not even 5 years old, received the designation.

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48. Adapted from CC Korea, 2015 (p. 35-36).
49. See: https://amsterdamsmartcity.com/projects/sharing-economy
50. https://www.wien.info/media/files-b2b/share-economy-in-wien-stadt-wien-en.pdf
51. Adapted from CC Korea, 2015 (p. 41).

1) Financing initiatives

i) Grants and subsidies

In Seoul,[52] companies designated as « sharing companies » by SMG, an organization or enterprise can receive project grant subsidy worth around 20 million Korean Won, which is stipulated in Article 9 of the Ordinance (adapted from CC Korea).

The City of Vancouver[53] provides grants for Sharing Economy start-ups and operations, such as the Vancouver Tool Library or ShareShed, an app that connects people wanting to rent outdoor equipment with people looking to rent theirs out.

Milan[54] has accredited 49 coworking spaces that received funding for improving their spaces and vouchers of up to 1500€ for coworkers who use them.

ii) Grants and spaces

Malmö[55] has provided funding and space to STPLN, a multipurpose maker space, located in the old docks that belong to the city. It encompasses several parts: a bike repair studio, a free drop-in co-working space, a *makerspace*, a community textile workshop, an arts and education centre for creative remaking and "upcycling", and a low- and high-tech crafts workshop. Additionally, STPLN can be used by groups that want to pursue other projects or need space or tools. STPLN is run as a non-profit independently from the City. Since its opening, STPLN has received long-term basic funding from the City of

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52. Adapted from CC Korea 2015.
53. Adapted from One Earth, 2015.
54. Adapted from Bernardi, 2015.
55. Adapted from Hult & Bradley, 2017.

Malmö, while additional funding for specific time-limited projects has to be sought from other sources.

iii) Match-funding

In 2015 Milan[56] tendered a crowdfunding platform (Eppela) before launching a call for high impact social projects. Projects that reached half of the budget they were asking for were eligible for a subsidy covering the other half (within a limit of 50 000€ per project).

See also: Barcelona's match-funding with Goteo in the chapter on Barcelona's city council policies.

2) Providing spaces.

i) *Opening of a physical space for information and networking.* In March 2016, the Municipality of Milan[57] opened Cohub—the house of collaboration, a physical space to promote information, training and networking on the sharing economy for both operators and citizens.

ii) *Providing spaces for incubating projects.* The municipality of Milan[58] supports collaborative production spaces. It provided public spaces to create an incubator for fab-lab and *makerspaces*, one for start-ups with high social impact (with a stream devoted to the sharing economy) and one for cultural start-ups and initiatives.

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56. Adapted from Bernardi, 2015.
57. Adapted from Bernardi, 2015.
58. Ibid.

3) Education, outreach and networking

i) *Platform to provide information on the sharing economy.* Seoul[59] has created ShareHub, an online and offline platform that connects users to sharing services, publishes sharing related news, and is the online information hub for the city's Sharing City Seoul project. Operated by the nonprofit C.O.D.E. (formerly Creative Commons Korea), it served several million visitors in its first five years.

Vienna has created a website (www.sharing.wien.at) to compile all relevant information (mapping, regulation, city's policies, etc.) on one site.

ii) *Conferences and seminars for the general public.* In 2017, Milan[60] and Airbnb launched a course for residents over 50 for them to learn more about the sharing economy. Participants met and chatted with other residents that use platforms such as Airbnb, Bla Bla Car and Gnammo, talked with the representatives of some of the Social streets in Milan and the FabriQ startups and challenged each other to understand how to plan a trip through the different platforms.

iii) *Information campaigns for the general public.* Seoul[61] organized two information campaigns in 2013. The first, "Seoul Sharing week", was co-organized with sharing economy companies and organizations and ran 21 programs to provide opportunities for citizens to experience sharing activities. The second was the "Share and Photo exhibition" which invited people to take photos and share them

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59. Adapted from CC Korea, 2015.
60. Adapted from https://www.airbnbcitizen.com/first-sharing-economy-school-milan/
61. Adapted from CC Korea, 2015.

online so that their creative works can be used in various areas (education, publication, and culture, etc.). In addition, photo workshops were organized for people to experience sharing by taking pictures in public parks, alleyways, etc. They resulted in both an online and offline exhibitions.

Many private sharing economy providers, in particular providers of accommodation, are not sufficiently aware of the legal framework. The city of Vienna[62] has created a communication campaign to inform on regulations. It has created an animated video in analogy with the videos on the approval of trade facilities. The tenants of community-owned apartments received information on regulations to be observed and the media received information diagrams.

iv) *Meet-ups with entrepreneurs*. Amsterdam organizes monthly meet-ups with the ecosystem to keep informed, identify needs and provide support to other stakeholders.

v) *Books and reports*. Seoul[63] has produced guides on Sharing and ShareHub's annual report on the state of the city's sharing city policy.

c) *Entrepreneurship programmes*

Local governments can choose to help companies emerge in the sharing economy while strengthening the local economic fabric. The Sharing Economy Startup School in Seoul[64] was started by OEC, a centre for entrepreneurship, and the Seoul Metropolitan

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62. Adapted from https://www.wien.info/media/files-b2b/share-economy-in-wien-stadt-wien-en.pdf
63. Adapted from CC Korea, 2015.
64. Ibid.

Government, to help people develop a model to realise their business idea around the sharing economy. The School reviews business ideas around sharing economy, verifies ideas of would-be entrepreneurs and provides startup consulting every year since 2013.

SMG commissioned the overall management of the school to OEC, except determining the number of sessions and objectives of the courses. OEC develops curriculums and teaching materials while SMG provides funds and supports promotional efforts. The program consists of 5-6 weekly workshop sessions and 20-30 participants have completed the course each year.

See also: Barcelona's La Comunificadora in the Chapter on Barcelona's City Council Policies.

2.4. The city as a collaborator

The city can also partner with existing companies or platforms to deliver services more collaboratively.

a) *Partner with actors developing and supporting platforms and services*
In Seoul,[65] the Seoul Metropolitan Government worked with Socar, a carsharing company, to create SMG's car-sharing service called "Nanum Car." In this partnership, the SMG provides open public parking lots to Nanum Car service providers and a 50% discount on parking fees; an incentive to autonomous gu district offices to also offer their public parking lots to Nanum Car service; no traffic tax for large shopping malls that provide their parking lots to Nanum Car service. Socar not only provides car-sharing

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65. Adapted from CC Korea, 2015 (p. 116).

services but also gives benefits to ensure the service is inclusive and does not deter from using public transportation. Thus, low-income families and people with disabilities can use the service for free or at a discounted rate and people who often use public transportation may receive free coupons.

In Amsterdam, the city connected the Shareyourmeal (Thuisafgehaald), a platform for sharing home-cooked meals to the Amsterdam City Pass, which focuses on stimulating people with low incomes or receiving a state pension (about 1 in 4 residents) to participate in cultural and sports activities thanks to free access. The initiative was thought as a way to help bridge the digital gap, get an affordable meal from home cooks in their neighbourhood, and create social inclusion. Launched in November 2017, the city selected an area with both active cooks on the platform and pass-holders. The target pass-holder group received an invitation letter to participate in the program and a financial incentive: once a week for three months, pass holders could get a meal for 1€ instead of the usual 6€, as city hall covered the 5€ difference. Digital coaching was offered though little used, while the phone line was unexpectedly heavily used by pass-holders for their requests. Over 900 meals were shared in three months, with 162 individual users, and 60% of the cooks are still in contact with users they met during the pilot.

3. Public policies by other actors
of the ecosystem beyond city governments

Sharing ecosystem is composed of the platforms. In which it can be distinguished the node around platforms more profit-oriented and platforms more collaborative oriented, such as platform

cooperatives or commons-oriented. The administrative government also play a role in the regulation and promotion as exposed in the previous section. According to a research carried out in Barcelona, 50% of the companies and enterprises of the sharing ecosystem are not platforms themselves, but offer services to the platforms (Fuster Morell & Espelt, 2018). They can be consultancies, networks, research groups, specialised media or third sector foundations and associations, and lobby industries.

Third sector actors composed of foundations and associations in the field of sharing have a central position in connecting the private sector, start-ups, public agencies and the local community. Some have played a lobbying and consulting role, drawing the municipalities' attention to the challenges and opportunities of the platform economy and helping them develop policies, such as Shareable in the United States, Procomuns at Catalonia has created highly participative forums on sharing policies, or ShareNL with Amsterdam. The international network Ouishare has created some tools for cities to approach sharing practices and done research on their impact on cities. Others have helped implement some cities' ambitious strategies to become sharing cities, such as Creative Commons Korea, now C.O.D.E, which helped implement Seoul's Sharing City information and communication strategy.

Some countries, such as the UK, Denmark, Sweden, have developed national programmes with pilot cities bringing together different stakeholders. A good example is Sharing Cities Sweden with four testbeds in Gothenburg, Malmö, Stockholm and Umeå, that allow the cities' administrations, the university, the private sector and civil society, to devise, develop, implement and monitor different programs.

Last, national sharing economy associations have emerged, especially in Asia and Europe, created by main industry players.

They lobby for policy and regulation changes, organize networking events and support the development of the sector. Some, like the Sharing Economy Association Japan, have a specific Sharing city program, to support cities in understanding the sector and develop policies.

4. Collaborations among cities (tourism networks, Sharing Alliance, summits...)

Municipalities have started working together to handle different fronts. On the regulation side, 13 European cities have come together to lobby the European Commission for more favourable regulations. The cities of Amsterdam, Berlin, Bordeaux, Brussels, Cracovia, Lisbon, Madrid, Paris, Reykjavik, Valencia, Vienna, and the German Cities Association. It mainly focuses on claims on data access by cities from the platforms. City networks, such as Eurocities, has incorporated sharing as part of its agenda of topics.

The Sharing Cities Alliance, stemming from ShareNL (see the previous section), is a city network that fosters city-to-city collaboration on sharing economy policies. Best practices are shared on their online database and through online seminars and a magazine. So far, the cities of Amsterdam, Barcelona, Copenhagen, Dallas, Ghent, Gothenburg, Malmö, New York City, Seoul, Singapore, Tel Aviv, The Hague, Toronto and Washington have joined the Alliance. Finally, the Sharing Cities Summit held in 2016 in Amsterdam, in 2017 in New York City and in 2018 in Barcelona, enables cities to share experiences and build common lines of actions.

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Chapter III
A legal analysis of the platform economy
Guido Smorto, University of Palermo & Marco Ciurcina, NEXA

1. Introduction

In these last years, *sharing* and *collaboration* are increasingly becoming a critical modality of production, and sharing-based solutions are developing fast at the very core of the economy, both at local and global level. As a result, more and more valuable resources are allocated by relying on social relations, in ways that coexist with, and in some cases outperform, price-based and government-funded systems (Benkler, 2002; Benkler, 2004).

However, despite the scale of the phenomenon, with the rise of commercial peer-to-peer platforms (so-called *unicorns*), the legal debate on the *collaborative economy* has come to focus almost exclusively on those for-profit business models facilitated by online platforms for the temporary usage of goods and the provision of services by private individuals.[1] In its early days,

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1. In its 2016 Communication, the European Commission defined it as "business models where activities are facilitated by collaborative platforms that create an open marketplace for the temporary usage of goods or services often provided by private individuals". See Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: European agenda for the collaborative economy, SWD(2016), 184 final (hereinafter referred to as *Communication*). "The term *collaborative economy* is often interchangeably used with the term *sharing economy*. Collaborative economy is a rapid evolving phenomenon and its definition may evolve accordingly". See Communication, p. 3, ft. 7. In addition, a plethora of other expressions is used in the current discourse as synonyms or with slight changes in their meaning: not only sharing or collaborative, but also peer-to-peer (p2p), on-demand or gig economy, and the list could be even longer.

the sharing-oriented platform economy has made its entry in the public discussion almost exclusively for the conflict between new entrants and those incumbents which are mostly affected by the ongoing changes (e.g. taxi companies and hotels against ride-sharing services and short-term rentals). In all these cases, the dispute is broadly the same. Taxi drivers and hoteliers blame collaborative companies for operating illegally, and for not guaranteeing the quality of the service provided and the safety of consumers, so enjoying an undue competitive advantage over those ones who must comply with the rules. The most frequent reply is that the platform economy offers tech services fundamentally different from conventional ones, and that applying rules for professionals to casual and amateur activities would penalize these new wave of wealth-generating economy. And even if the bipartisan appeal is to "level the playing field" —to review the regulatory framework by establishing fair rules —it is far from clear how such a field should look like.

However, more recent years have seen a growing awareness on the fact that the advent of the so-called platform economy is having a more profound impact on many regulatory issues. Accordingly, the legal debate has broadened beyond the clash between incumbents and new entrants, to tackle societal challenges arising from collaborative practices.

Along this path, this chapter aims at identifying the emerging legal issues stemming from the advent of the sharing-oriented platform economy, in order to categorize the wide array of competing and sometimes conflicting aspects that regulators should be considering when facing these new innovative practices. The chapter first describes how the advent of the platform economy challenges the current legal framework, at both local and global level; then, it addresses the main legal issues related to market

regulation; in its second and final part, it analyzes those aspects of the sharing-oriented platform economy that go beyond market regulation, in order to categorize different models of platform economy and their respective positioning with regard to a commons oriented economy.

2. Towards a sustainable, inclusive and participatory platform economy in the city

One reason why the wave of innovation connected with the rise of the sharing-oriented platform economy significantly differs from previous ones is that it heavily relies on distinctly urban conditions. As the very scale, proximity, amenities, and specialization that mark city life is precisely what enable collaborative practices to flourish (Davidson & Infranca, 2016), the platform economy is having an overwhelming impact on cities, transforming urban environments in many ways. Collaborative services not only put into question how urban transportation and tourist accommodation are planned, but also disrupt traditional local services, influence housing affordability and redesign city spaces, putting into question land-use regulation, zoning laws, licensing, local taxes, and so on thus making existing local rules obsolete. Ride-sharing and short-term rentals are just the most noticeable examples of a more general trend.

From a legal perspective, while market regulation is primarily for European and State law, local authorities may play a pivotal role with special regard to those aspects of the platform economy that go beyond the mere market efficiency to take into account other relevant societal goals. First of all, it is funda-

mental to take distributional effects seriously, by regulating the platform economy in ways that do not create a disparate impact on different segments of population or lead to discrimination or unequal access to products and services. Further, while promoting collaborative practices, it is also crucial to avoid the risk of commodifying a growing share of municipal collective resources, thus considering city services, and the city itself, as a simple objects of consumption. Finally, a central issue in the local governance of platform economy is fostering active participation in decision making, with cities encouraging and supporting people to cooperate together over the long run, helping them to overcome collective action problems, through practices and tools developed to enrich this inclusive decision making process. Only if cities will play such an active role, it will be possible to realize a truly sustainable, inclusive and participatory collaborative economy (Smorto, 2016).[2]

However, this distinctive impact of the platform economy on cities raises fundamental concerns about the allocation of regulatory responsibilities. While it has been observed that such a distribution across thousands of local governments is generating a kind of natural experimentalism, where local variations are the natural byproduct of how the platform economy is being

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2. A Declaration for a commons collaborative economy was approved in Barcelona in March 2016. It aimed first to highlight the importance to distinguish several models of sharing-oriented platform economy, to define a commons-oriented model within the platform economy, and to provide policy recommendations for the public administrations. For the complete version, see: http://procomuns.net/en/policy/. A set of recommendations was proposed by the Barcola group (Barcelona Col·labora) and the collaborative peer production initiatives under its umbrella, informed by the research developed by the Dimmons research group (http://dimmons.net/) of the Open University of Catalonia (UOC) through the European project P2Pvalue (https://p2pvalue.eu/).

shaped (Davidson & Infranca, 2016), current literature too often assumes that cities have legal power to rule these markets, and that the regulation of the platform economy is largely a municipal issue. Yet, this description does not always reflect what cities can really do. The degree of choice enjoyed by local authorities significantly differ from a legal system to another, as it depends on many variables, from the level of decentralization of each legal system to the existence of supranational constraints, such as in European Single Market. In most legal systems, rules governing collaborative practices are not municipal, leaving little room for effective intervention by local authorities. And even if local governments generally enjoy a regulatory capacity in significant fields —zoning, local transportation, licensing, and the like— other important features of the platform economy are in large part subtracted to them, such as contract and labor law, competition regulation, data privacy protection, and to a large extent taxation.

3. The platform economy and the European Single Market

The platform economy deeply affects not only urban environment but, at a supranational level, the effective functioning of the European Single Market. For this reason, in these last years the European institutions have being working at a common framework for the platform economy. The Single Market Strategy was adopted in October 2015, announcing that the Commission would have developed "a European agenda for the sharing economy, including guidance on how existing EU law

applies to collaborative economy business models" as part of the Commission's Digital Single Market Strategy.[3] From September 2015 to January 2016 a public consultation was carried out within the Internal Market Strategy for Goods and Services, to gather the views of public authorities, entrepreneurs and individuals.[4] In March 2016 an Eurobarometer survey on collaborative platforms was also published.[5] In June 2016 the European Commission published its Communication *European agenda for the collaborative economy* with the aim to provide legal guidance and policy orientation to public authorities, market operators and interested citizens. And in June 2017 the European Parliament adopted a Resolution on the collaborative economy.[6]

As stated by the Commission, the difficulties so far faced by European collaborative platforms vis-à-vis their US counterparts can partly be justified by cultural and linguistic differences and unequal development in different countries, but are also exacerbated by a fragmented regulatory environment and divergent regulatory approaches. And this divergence, both at national and local level, results in a high degree of confusion that still surrounds rights and obligations, thus deterring people from participating in the platform economy and discouraging investments for the dangers of future legal challenges.[7] For these rea-

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3. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A Digital Single Market Strategy for Europe {SWD(2015) 100 final}. Brussels, 6.5.2015. COM(2015) 192 final.
4. Public consultation on the regulatory environment for platforms, online intermediaries, data and cloud computing and the collaborative economy, 24/09/2015.
5. Flash Eurobarometer 438 - March 2016. "The use of collaborative platforms".
6. European Parliament resolution of 15 June 2017 on a European agenda for the collaborative economy, 2017/2003(INI).
7. See: European agenda for the collaborative economy - Supporting analysis {COM(2016) 356 final}, Brussels, 2.6.2016 SWD(2016) 184 final: "While societal

sons, the European Commission identified the development of a harmonized legal framework for the sharing-oriented platform economy as a priority for the Single Market and published its Communication to offer legal guidance and policy orientation to public authorities, market operators and interested citizens, on how existing EU law should be applied to the platform economy, in order to reap benefits and to address concerns over the uncertainty about rights and obligations of those taking part in the platform economy, and to encourage a balanced and sustainable development.

Notably, despite the strategic role played by European institutions in defining the rules for the sharing-oriented platform economy, when dealing with regulating the platform economy at the local level the European legal framework for the platform economy is often ignored. As a result, in quite a number of cases measures taken by cities to regulate the platform economy may result at odds with supranational law.[8] In order to avoid these risks while taking effective measures at local level to control the impact of the platform economy on the urban environment, a multi-layered analysis is strongly desirable, in order to to help local authorities to develop an effective legal strategy in tune with European law.

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drivers play an important role in the development of the collaborative economy (e.g. population density), internet technology is the most essential driver of the new economy". Thus, the platform economy appears to be developing more quickly in EU Member States with high levels of internet access and usage, but less in others.

8. In preparation of its Communication, the European Commission contracted a number of Analytical Papers to scrutinise the existing regulatory framework for the sharing-oriented platform economy in Europe, in order to to give a view on its compatibility with EU law, in relation to both the peer providers and the online platforms. All these papers can be downloaded at: http://ec.europa.eu/growth/single-market/services/collaborative-economy_en

4. A first challenge: market regulation

4.1. Distinguishing peers and professionals

The first challenge for regulating the platform economy is related with the massive provision of services, traditionally offered by professionals, by a wide range of very diverse individuals who offer their good and services, thanks to online collaborative platforms. Usually described with different neologisms (*produser*, *prosumer*, *pro-am consumers*), a new economic agent is emerging, who accumulate in itself production and consumption, in a gradual overcoming of the distinction between producer and consumer (Bruns, 2008; Lastowa & Hunter, 2006; Leadbeater, 2008; Tapscott & Williams, 2008).

Since the line, once very clear, between producers and consumers is more and more confused, it is increasingly difficult to define distinctive rules for professionals and non-professionals. Many traditional rules governing markets are deeply challenged, as laws designed to regulate sales of goods and provisions of services by professionals are, in most cases, inadequate when these activities are carried out by non-professionals. The constant emphasis, placed by collaborative platforms, on the emergence of a new economy based on social ties, where the economic return plays a marginal role, not only responds to a marketing strategy that aims to enhance the orientation to a community-oriented p2p service (so called *sharing washing*), but it also helps to point out the differences and distance so-called peers from professional services and their rules. The widespread conclusion is that lighter rules for those people who, occasionally and non-professionally, exercise an economic activity should be adopted. However, a case-to-case assessment is needed in order

to assess the true nature of the provider. If a lighter regime is surely reasonable for those who occasionally rent their house or car, making some extra money, the same cannot be said for organized economic activities with considerable economic returns, as in the case of who *shares* hundreds of premises, or works full-time for a collaborative platform.

Under European Union law, such a debate between professionals and amateurs should be viewed in the context of Treaty fundamental freedoms and the Service Directive, which prescribe that any national measure on market access requirements which prohibit, impede or render less attractive the exercise by EU nationals of the freedom of establishment in any European country must be regarded as a "restriction".[9] As such, restrictions are permitted only if it is equally applicable to the national and the foreign, justified by some legitimate public interest objective and proportionate to that objective.[10] In sum, any restriction to the free provision of services must be appropriate for ensuring attainment of a clear objective, should not go beyond what is

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9. Consolidated version of the Treaty on the Functioning of the European Union (2012) C-326/49, art. 56 (ex Article 49 TEC) and art. 49 TFEU (ex Article 43 TEC); Directive 2006/123/EC on services in the internal market (Services Directive). According to the Court's case-law, art. 56 TFEU. See: Case C-544/03 Mobistar versus Commune de Fléron [2005] I-07723; Joined Cases C-369/96 and C-376/96 Arblade [1999] I-08453; Case C-165/98 Mazzoleni and ISA [2001] I-02189; Case C-49/98 Finalarte [2001] I-00787; Case C-350/07 Kattner Stahlbau [2009] I-01513.

10. The Services Directive contains a long sequence of what may constitute an "overriding reason relating to public interest" and well-established case-law of the Court of Justice mentions many others —consumer protection, the protection of (urban) environment, town and country planning, and adequate supply of housing, especially for the less affluent local population and socially weak individuals. Thus leaving the room to Member States to take into account such objectives in regulating the platform economy.

necessary for that purpose, with a link between the national measure and the invoked justification.[11]

Following these principles, Member States must avoid any overt or covert discrimination when regulating the platform economy. This requires not only the elimination of all discrimination on grounds of nationality for providers of services who are established in another Member State, but also the abolition of any restriction, which is liable to prohibit or further impede the activities of a provider of services established in another Member State where he lawfully provides similar services, even if it applies without distinction to national providers of services and to those of other Member States.[12]

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11. "National measures liable to hinder or make less attractive the exercise of fundamental freedoms guaranteed by the Treaty must fulfil four conditions: they must be applied in a non-discriminatory manner; they must be justified by imperative requirements in the general interest; they must be suitable for securing the attainment of the objective which they pursue; and they must not go beyond what is necessary in order to attain it": Case C-55/94 *Gebhard v Consiglio dell'ordine degli avvocati e procuratori di Milano* [1995] I-04165. See also Case C-79/01 *Payroll and Others* [2002] I-08923; Case C-442/02 *Caixa Bank France* [2004] I-08961; Case C-157/07 *Krankenheim Ruhesitz am Wannsee-Seniorenheimstatt* [2008] I-08061; Case C-140/03 Commission v Greece [2005] ECR I-04505; Case C-243/01 Gambelli [2003] ECR I-13031.

12. On the conformity to European law of different legal treatment on the basis of residence, which may be liable to operate to the detriment of nationals of other Member States, see Case C-224/97 Ciola v Land Vorarlberg [1999]. Art. 20, Services Directive, provides: "1. Member States shall ensure that the recipient is not made subject to discriminatory requirements based on his nationality or place of residence. 2. Member States shall ensure that the general conditions of access to a service, which are made available to the public at large by the provider, do not contain discriminatory provisions relating to the nationality or place of residence of the recipient, but without precluding the possibility of providing for differences in the conditions of access where those differences are directly justified by objective criteria". Before Services directive explicitly took into account residence, European Court of Justice ruled on this point: "National law of a Member State cannot, by imposing a requirement as to habitual residence within that State, deny persons established in another Member State the right to provide services, where the provision of services is not subject to any special condition under the national law applicable." Case 33/74 Van Binsbergen

Further, the call for proportionality not only points to distinctive and less restrictive rules for peers. At the same time, it imposes a drastic revision of rules for professionals. While private individuals offering services via collaborative platforms on a p2p and occasional basis should not be automatically treated as professionals, since such an extension would produce a disparate impact on the latter, the Commission also urged national authorities to review existing national legislation and to simplify procedures and formalities for professionals, in order to avoid unfair competition among comparable categories of economic agents.

4.2. Assessing platforms liability

A second crucial aspect for regulating the platform economy in Europe is assessing the nature of online platforms that connect peers, in order to appropriately identify who provides the service —whether the peer or the platform itself. On this note, it is worth noting that most collaborative companies depict themselves as networks or *marketplaces* that facilitate the exchange of goods and service by providing so-called *transactional services*.[13] Such a definition bears important legal consequences, since rules for service

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[1974]. The ECJ concluded that "by retaining rules requiring patent agents established in other Member States to be enrolled on the Italian register of patent agents and to have a residence or place of business in Italy, in order to provide services before the Italian Patent Office, the Italian Republic has failed to fulfil its obligations under Articles 49 EC to 55 EC". Case C-131/01 Commission v. Italy [2003].

13. Airbnb defines itself as *two-sided market*, http://designairs.com/designing-two-sided-markets. *Cfr. also* Uber Guidelines for Law Enforcement Authorities: "Uber is a technology company that has developed an app that connects users (riders) with driver partners who provide transportation to the user", https://www.uber.com/it/legal/data-requests/guidelines-for-law-enforcement/en/. Even when platforms provide tools to reduce risks and offer guarantees (insurance, security deposits, alternative

providers are dismissed as immaterial and public authorities are supposed to enforce regulation only against individual providers: only peers would be subject to these legal obligations and responsible for ensuring safe and reliable services. Thus excluding that the platform is part of the p2p transaction or otherwise responsible for the conduct of the parties.[14]

Nonetheless, the narrative of platforms as marketplaces not always accurately reflects their true role in the transaction. In some cases, platforms are truly open infrastructures that facilitate the matching of supply and demand among its users. But in many other cases they maintain a tight control on the transaction, lay down the rules of the exchange, exercise a strict supervision on information and communication, often influencing or even deciding the price.

Under EU law, the assessment on whether these p2p platforms are service providers or not, thus enjoying a liability exemption, must be based on the e-Commerce Directive. This important piece of legislation establishes a special liability exemption when online platforms deliver an "information society service", and limit themselves to "providing an intermediary service, neutrally, by a merely technical and automatic processing of data".[15] While the ordinary regime for service providers

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dispute resolution mechanisms) such remedies are always presented as voluntary, with no formal assumption of legal obligations.

14. *Cfr*. Uber Terms and Conditions (8-4-2015), art. 5 (Disclaimers; Limitations of Liability; Indemnity), https://www.uber.com/legal/usa/terms; Airbnb Terms of Service (6-7-2015), (Disclaimer) https://www.airbnb.com/terms/.

15. In this case, platforms cannot be subject to prior authorisations or any equivalent requirements for the underlying services, and enjoy a limited liability regime. See art. 4(1) of the e-Commerce Directive. Internet intermediary service providers should not be held liable for the content that they transmit, store or host, as long as they act in a strictly passive manner. The Directive distinguishes:

applies in principle when they play "an active role".[16] Given the variable nature of online collaborative platforms, the development of well-defined principles is essential for a case-by-case appraisal on the nature of the collaborative platforms.[17] On this note, the Communication issued by the European Commission in June 2016 states that the intermediary responsibility must be assessed with greater rigor when it exercises a strict control on private parties' bargain to mitigate it in case users enjoy greater autonomy.[18] On the contrary, collaborative platforms are subject to market access requirements applicable to relevant sector-specific regulation, including business authorisation and licensing requirements, only if deemed as providers.[19]

Mere conduit service providers (art. 12), *Caching* providers (art. 13) and *Hosting* providers (art. 14).

16. According to C-324/09 *L'Oréal/eBay* [2011] I-06011, the service provider plays an active role if "it provides assistance which entails, in particular, optimizing the presentation of the offers for sale in question or promoting them".

17. See: Communication, p. 8: "Whether or not collaborative platforms can benefit from such liability exemption will need to be established on a case-by-case basis, depending on the level of knowledge and control of the online platform in respect of the information it hosts."

18. See: Article 2(a) of Directive 2000/31/EC (e-Commerce Directive), and Article 1(1)(b) of Directive 2015/1535. *Cf.* Communication, p. 5.

19. Along these lines, the Commission lays down several factual and legal criteria that can play a role in this ad hoc assessment, based on whether the collaborative platform: a) set or recommend the final price to be paid; b) set key contractual terms, other than price; c) own the key assets used to provide the underlying service. In addition, other relevant factors are also mentioned by the Communication, based on whether: the collaborative platform incurs the costs and assumes all the risks related to the provision of the underlying service; an employment relationship exists between the collaborative platform and the person providing the underlying service. When most criteria are met, there are strong indications that the collaborative platform exercises a significant influence or control over the provider of the underlying service, thus acting as a service provider employing peers to performs the offered services. While the contrary is true when a small degree of influence and control are exerted.

4.3. Protecting consumers

As illustrated above, peers who occasionally provide services or share their goods are not full-time, large scale professionals, and since professionals are radically different from peers, extending rules which were originally conceived for a professional provision of goods and services, to peer-to-peer services would determine a disparate impact at the expense of new business models, erecting insurmountable barriers to entry in these growing markets. On the other hand, the emergence of a peer-to-peer economy, where private, non-professional individuals provide services to customers, may lead to safety, health, environmental concerns. Balancing the two somehow conflicting aspect —having rules different than those applicable for professionals and protecting consumers— is one of the most challenging aspect of the platform economy.

The combination of these two aspects —a lighter regime for both peer providers and for platforms— is a central issue with regard to customer protection. Under European law, consumer and marketing legislation is based on the distinction between *trader* and *consumer*, as EU consumer law applies only to those who qualify as *trader* and engage in *commercial practices* vis-à-vis consumers.[20] This means that while EU consumer and marketing legislation clearly applies to traditional business-to-consumer transactions, in

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20. Directive 2005/29/EC on Unfair Commercial Practices; Directive 2011/83/EU on Consumer Rights; Directive 93/13/EEC on Unfair Terms in Consumer Contracts; Directive 2013/11/EU on alternative dispute resolution for consumer disputes; Council Regulation (EU) 524/2013 on online dispute resolution for consumer disputes. A trader is a person "acting for purposes relating to his trade, business, craft or profession"; a *consumer* is a person acting "outside his trade, business, craft or profession". See: Article 2, Directive 2005/29/EC (Unfair Commercial Practices Directive).

addition to sector specific legislation, things may be radically different in platform economy, thus leading to the need to conceive new ways of protecting customers in the platform economy.

5. Beyond market regulation: who wins and who loses in the platform economy?

The legal consequences of the platform economy are not limited to market regulation, and other relevant issues must be taken into account to tackle those aspects of the platform economy which affect crucial societal goals. In this paragraph we briefly address the most relevant ones, before making a few comments and suggestions in the final remarks.

5.1. Workers protection

When dealing with the legal treatment of the platform economy a widely recognised concern is workers protection. Collaborative services typically rely on an indefinite number of peer providers —contributors that are formally external to the firm. And while some observers underline the new opportunities for complementing income with maintaining flexibility, on the opposite side many accuse platform economy of relying on underemployed job-seekers in order to pay very low wages, exploiting economic vulnerability in times of crisis and deepening existing inequality.

Service providers are usually deemed as independent contractors, not eligible for benefits reserved to employees (e.g.,

minimum wage, hours regulations, insurance, health benefits, retirement plans, vacations). And quite predictably, this has lead to a number of litigation on the classification of peer as employees or independent contractors. While several arguments have been formulated for or against each of the two cases, it has been widely observed that none of the known categories appears to comply fully to the economic reality of the platform economy. As famously stated by a Californian judge called upon to decide one of the first cases in this issue, asking the jurors to decide whether ride-sharing drivers are employees or independent contractors of the platform means handing them a square peg and ask to choose between two round holes.[21]

While labour law falls under State law, the European Union has developed certain minimum standards in the field of social policy and the Court of Justice has defined the concept of worker for the purpose of applying EU law. In principle, whether an employment relationship exists or not has to be established on the basis of a case-by-case assessment, considering the facts characterizing the relationship between the platform and the underlying service provider, and the performance of the related tasks, looking cumulatively in particular at the following three

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21. Both decisions are issued by the *District Court Northern District of California* on March, 11th 2015: Douglas O'Connor *et al.* v. Uber Technologies, Inc. *et al.*; Patrick Cotter *et al.* v. Lyft Inc. For a first comment see: *Judges say labor laws outdated to deal with sharing economy firms*, R Street Institute, 12-3-2015 (http://www.rstreet. org/2015/03/12/judges-say-labor-laws-outdated-to-deal-with-sharing-economy-firms); J. Boudreau, *We Need to Move Beyond the Employee vs. Contractor Debate*, Harvard Business Review (8-7-2015). Available at: https://hbr.org/2015/07/we-need-to-move-beyond-the-employee-vs-contractor-debate

essential criteria: the existence of a subordination link, the nature of work and the presence of a remuneration.[22]

5.2. Wealth distribution

The platform economy has significant effects on wealth distribution even if, so far, its impact has not been investigated enough and evidence is mixed. Some studies conclude that peer-to-peer activities potentially benefit the below-median-income part of the population, as they would allow people to avoid buying capital goods, by instead renting or borrowing from strangers, and give the opportunity to non-owners to affordable access goods and services. Further, they would offset purchase costs by allowing goods to be shared and borrowed in new ways, so helping economically-distressed owners (Fraiberger & Sundararajan, 2017; Dillahunt & Malone, 2015). Others emphasizes that the growth of platforms have contributed to an intensification of the trend toward inequality, both as it relates to the 1-99% split and to shifts within the broad middle class and working classes. Platforms are said to have increased the incomes of the upper portion of the bottom 80% of the income distribution in two distinctive ways. Well-off and highly educated providers are using the platforms to increase their earnings, doing manual work that is traditionally done by people of low educational status (so called *blue and pink collar*), thus determining a *crowding-out* effect,

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22. *Cf.* COM(2010) 373 Reaffirming the free movement of workers: rights and major developments. Point I.1.1. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1453133735571&uri=CELEX%3A52010DC0373. See also: COM(2010) 373 final, pages 4-6.

thus disproportionately and providing earning opportunities for people who are already well-educated and relatively well-off (Schor, 2017).

5.3. Discrimination

Collaborative practices may also determine a disparate impact on different segments of the population. Empirical findings show that most of these providers are racially *white* and native-born, in contrast to the people of color and immigrants who disproportionately do this manual work in the conventional economy (Schor, 2017). Similarly, customers of p2p services are often young, skilled, educated, upscale consumers, as the technological feature of the new economy may create a potential technological hurdle that impede or deter access to a significant part of the population, leaving these opportunities to an elite of digitally connected young citizens, while excluding the rest.

A related concern regards denial of market access to disadvantaged individuals or groups. While traditional services are often required to serve poor areas and disadvantaged people (e.g. taxies must be equipped to accommodate customers with disabilities, and to apply the same rate based on distance regardless of the area) collaborative firms are largely responsive only to market forces: they accept rides only if profitable, they do not take expensive steps to accommodate customers, and they often limit their operation area to the city center, leaving the unprofitable suburbs to traditional public services and loss-making collaborative services to the city. The risk is that many collaborative services may be unavailable to poor urban residents, people with disabilities, underserved communities.

5.4. Housing affordability

Housing affordability is another question for the platform economy, as in many urban areas the rising short-term rentals are diminishing the availability of long-term rental houses in the market, especially affordable ones. The platform economy is giving rise to the commodification of goods that were not sold on the market until the recent past, from spare rooms to cars and tools (Bauwens, 2014), with visible consequences on urban environment, creating a challenge for those cities that intend to maintain their decision power over the destination of its areas (residential, touristic, etc.) instead of just being subjected to market forces due to the distribution of *guests* via short-term rentals. Blaming short-term rentals to take apartments off the market, many cities —from Barcelona to Berlin— have imposed rules to limit the possibility to rent on short term basis.

5.5. Big data

Finally, many data-driven collaborative companies gather a vast amount of information in order to coordinate supply and demand and to monitor and sanction conducts. This enormous ability to collect personal data has not only obvious consequences for the personal privacy of users and customers, but it also raises important concerns for the dominance exercised by online platforms, as these companies may leverage their users to pressure local authorities to obtain political influence. And cities run the risk of depending on new collaborative firms to provide essential city services or to obtain relevant data.

6. Free licences and digital commons

At the hearth of the debate about digital commons and platform economy, free software and other digital works available to all play a special role. Free software and other digital commons were shaped by the collaboration practises and tools (including legal tools, particularly, free licenses) created and refined by the communities of human beings, companies and other entities during the past decades, starting from the 80s, when digital technologies begun to spread.

Such practices and tools were carefully designed to foster collaboration, distribute wealth and minimize the risk of value extraction by entities exerting an unfair level of control and influence on other subjects. Free software and other digital commons come from the communities of people trained in their creation and from the practices and tools created by such communities. Such digital commons, practices and tools became unavoidable terms of reference for the creation of new digital commons.

Looking at the issue from a legal perspective, it's useful to start from the beginning, that is from free software communities: the first communities that shaped practises and tools (including legal tools) fostering the creation of digital commons. *Free software* means software that respects users' freedom and community. Roughly, it means that the users have the freedom to run, copy, distribute, study, change and improve the software. Thus, "*free software* is a matter of liberty, not price".[23] The fact that the free software is eventually distributed for a price does not change its nature.

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23. See: https://www.gnu.org/philosophy/free-sw.en.html

"A program is free software if the program's users have the four essential freedoms:

- The freedom to run the program as you wish, for any purpose (freedom 0);
- The freedom to study how the program works, and change it so it does your computing as you wish (freedom 1). Access to the source code is a precondition for this;
- The freedom to redistribute copies so you can help your neighbor (freedom 2);
- The freedom to distribute copies of your modified versions to others (freedom 3). By doing this you can give the whole community a chance to benefit from your changes. Access to the source code is a precondition for this."

"A program is free software if it gives users adequately all of these freedoms".[24] The availability of the source code (that is, the version of the software that can be analyzed and modified by developers) is central to the notion of free software. To run on computers, the software has to be translated into machine language capable of running on computers. This is made by an interpreter program or by a program that compiles the *object code* (the software version that can be interpreted by the computer but that is impossible to understand for developers).

Free software licenses are the legal tools that have been used since the 1980s to promote free software development and distribution: they are legal acts by which the author licenses copyrights (and patent rights) to allow users to enjoy the freedoms provid-

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24. See: https://www.gnu.org/philosophy/free-sw.en.html

ed by the free software definition. Therefore, for a program to be free software, it is enough that the right holder distributes it under the terms of a suitable license: a free software license.

In 1989, Richard Stallman wrote the first version of the GNU-GPL license,[25] unifying similar licenses he used for earlier versions of his programs. Nowadays the GNU-GPL license is adopted by a large number of projects and it is at the heart of the free software movement. Wide adoption of this license is partly due to historical reasons (it's the license created by Richard Stallman, the founder of the Free Software Movement) but also to practical reasons: the engineering of this license favored for the spreading of free software.

In fact, the GNU-GPL provides that the user is allowed to modify and redistribute software licensed under this license provided that the modified version is in turn licensed under the terms of the same license. It is the *copyleft effect*[26] that proved to be very attractive and favored the spreading of free software.[27] To put it briefly, copyleft licenses foster sharing: whoever wants to modify the software and distribute it (or, sometimes, allow its remote use) can do so provided that he in turn gives the users the same freedoms that were granted to him. This is a hacking[28] of law that triggers virtuous spreading of free software by protecting users' freedom.

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25. That was followed by a second version in 1991 and a third version in 2007.
26. Copyleft as opposite to copyright.
27. The copyleft effect is not essential to the notion of free software. Actually, there are free software licenses that are not copyleft licenses.
28. A hacker is a person that finds (and enjoys finding) creative solutions to problems. This term is popular among developers.

In 1998, a group of developers founded the Open Source Initiative[29] with the express aim of avoiding the emphasis on the ethical aspects of free software which, in their view, hampered the understanding and use of free software by IT companies. They used the term *open source* and adopted the Open Source Definition[30] that, substantially, reproduces the free software definition with a different formulation.

The term open source focuses on the requirement of access to the source code of the software: the Open Source Initiative does not mention ethical aspects and focuses on the development model of free/open source software. Nowadays there are many free software licenses (although the most commonly used are relatively few: the 10 most common licenses are adopted by more than 90% of free software projects).[31]

As a whole, the free software socio-technological system consists of a large number of programs[32] and the range of relationships that are built with these programs between a large number of people (developers and users), companies, public and non-profit organizations. People who develop and use free software can do it on their own or in the interest of companies or organizations they work for. It is unusual for companies to choose to develop or use free software for ethical reasons. It is more typical with people who act on their own and (assuming that their goals can qualify as ethical goals) with public and non-profit organizations.

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29. See: http://www.opensource.org
30. See: http://www.opensource.org/docs/definition_plain.php
31. See: http://www.blackducksoftware.com/oss/licenses#top20
32. More than 650.000 projects are listed in the website https://www.openhub.net/explore/projects

It is a fact that in the early 1980s the creation of free software was based on ethical reasons as a reaction to the emergence of the new paradigm of proprietary software. Richard Stallman says: "My work on free software is motivated by an idealistic goal: spreading freedom and cooperation. I want to encourage free software to spread, replacing proprietary software that forbids cooperation, and thus make our society better".[33]

Free software is not just an alternative to proprietary software: free software, unlike proprietary software, is part of a digital commons available to everyone. The software is to the emerging information and knowledge society as water[34] is to the agricultural and pre-industrial society: a fundamental *res communis omnium* that needs to be fostered and protected to ensure the flourishing development of society. The free software materializes a social and cultural ideal shared by an important part of developers and users: it is a tool that eliminates access barriers to IT resources for all human beings.

But it is a fact that starting from that original ethical drive, free software socio-technological systems have evolved. Today entities with very different goals from those who gave birth to the original design of free software are participating in these systems. Certainly free software licenses played a key role in the growth of free software socio-technological systems. Free software development projects (sometimes institutionalized within a legal entity, sometimes not) have been organized around free software licenses, and such free software development projects

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33. See: https://www.fsf.org/licensing/essays/pragmatic.html
34. The evocative image should not induce to forget the differences between water (which, although it is a public good, is a material asset and therefore subject to exclusive use) and software (that, as an intangible asset, can be used by anyone without limiting the use by others).

interact among themselves and exchange data, functions and code, sometimes in an organized way, sometimes not.

It is therefore possible to suppose that free software licenses work as means of communication apt to foster stigmergic behaviors: the free software licenses have been the generative/genetic code of the socio-technological system that self-organized around them and that, as a whole, are not centrally coordinated (Elliot, 2006). Why did this happen with free software? Certainly, the answer to this question is a matter of reflection that requires assessments from different perspectives and disciplines. From the mere legal perspective, however, it is possible to contribute some reflections.

Free software licenses have been effective in solving problems typically handled by legal acts (laws, contracts, etc.); that is, they can be used to eliminate uncertainty, minimize transaction costs and reallocate risk:

- Free software licenses are well known and recognized in the communities of free software developers and users (the fact that a program is available under the terms of a certain free software license makes it easy for the users to identify their rights and obligations);
- Use of a free software license, instead of a license drafted *ad hoc*, reduces the costs associated with the adoption of the license;
- If a program is available under the terms of a free software license, the user can reasonably assume that the distributor did not deliberately include code in violation of third party rights.

In short, free software licenses are efficient in producing trust among the people involved in the socio-technological systems

that are built around them and from the legal efficiency of the free software licenses arise social, economic, and other relevant effects. Some further considerations from a legal perspective could be useful. Even if it seems reasonable to assume that copyleft clauses are desirable for communities of developers particularly motivated by ethical goals of protecting users' freedom and encouraging sharing, such ethical goals are not shared by all developers in all circumstances. The interest of some stakeholders to avoid the copyleft effect led to creation and adoption of different non-copyleft and weak copyleft licenses.

In some cases, it has been found that free software licenses did not effectively solve problems resulting from the use of free software: when this has happened, communities have sought solutions and adaptations that could continue to guarantee the growth of the socio-technological system of free software. For example, free software licenses are objectively inappropriate to radically solve the problem posed by patent rights.[35] For this reason, a few years ago a patent pool involving the major players in the industry that awards all Linux kernel users a license on the patents held by all the members of the pool was established.[36]

There are other legal frameworks that may be involved with use and distribution of free software (such as trademark rights, right to technological protection measures, or right on secret information). In some cases, a solution for the management of

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35. Free software licenses provide for express or implied license of patent rights. Some licenses provide for additional legal techniques of some effectiveness. For example, the MIT license provides for a retaliation clause in case the user claims patents; or, the GPLv3 license provides for clauses to prevent patent-related agreements.
36. It refers to the Open Invention Network (see: https://www.openinvention-network.com/).

these legal frameworks was found within the free software licenses or with the adoption of new legal acts. In other cases, communities of developers and users adopted and refined community practices and technologies that maximize freedom and collaboration: software versions management systems, bug reporting systems, open formats, license compliance and enforcement practices, etc.

The free software model has inspired attempts to reproduce its dynamics in other areas of human activity and has led to the creation of new licenses for digital commons made of non-software works (newspapers, books, music, videos, databases, electronic designs, etc.). For example, the Creative Commons Attribution Share Alike license[37] is currently used for Wikipedia[38] and the Open Data Commons Open Database License[39] is used for the Open Street Map project.[40] More recently, efforts are being made to create digital commons related to the production of material objects (electronic cards and other material objects). Fostering the creation of digital commons that include *inter alia* personal data, requires taking into account the rules on the protection of personal data, particularly the Regulation (EU) 2016/679 of the European Parliament and Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Directive), which will take effect on May 25, 2018.

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37. It is one of the Creative Commons Public Licenses, made by the Creative Commons Corporation —a US non profit corporation.
38. See: https://www.wikipedia.org/
39. See: https://opendatacommons.org/licenses/odbl/
40. See: http://www.openstreetmap.org/copyright

One of the main aims of new General Data Protection Directive is to empower subjects to have full control of their personal data. The new regulation develops data protection rights as "informational self-determination", in such a way that privacy become more closely connected to freedom of expression and to the idea of autonomy of individuals. The General Data Protection Directive defines rights and recommends tools fostering a vision of an individual who can control his own data deciding the context in which share it, tailoring the data life-cycle for his own purposes, taking it private and confidential, sharing it within a closed context or group, or deciding to share it as common good in a privacy-aware environment.

Working for the creation of digital commons including personal data will require shaping new legal tools that comply on one side, with the free software community's values, and, on the other, with the provisions of the General Data Protection Directive. Shaping of such new legal tools would benefit from considering the economic structure of personal data markets and shaping incentives to foster individual behaviors converging towards the collective creation of new digital commons that include inter alia personal data.

7. Conclusions

The sharing-oriented platform economy can be a powerful tool of economic inclusion and opportunity and developing peer-to-peer schemes to encourage people to connect with each other may have a profound positive impact on the urban environment. On the other side, the unprecedented opportunity to

create new commercial services, with little or no control by the city, may result in a massive disregard of local regulation and expose the urban environment to the risks of congestion and overconsumption. Accordingly, cities should decide on a case-by-case basis to promote or discourage different causes of action, incentivize certain directions or limit or even prohibit directions that are deemed detrimental to society.

Market regulation is the first step of such a strategy, with the aim of preventing market failures and, even more deeply, of avoiding the profound readjustment of the rules of the game that is taking place on the role and the limits of self-regulation, thus escaping the risk that these changes may result in a massive deregulation (Cohen & Sundararajan, 2015; Koopman, Mitchell & Thierer, 2014; Baker, 2015; Sundararajan, 2016). However, addressing market failures is clearly not enough and other crucial aspects must be taken into account.

As growth strategies themselves may contribute to inequality (Elkin, 1987), it is also vital to evaluate the impact of the platform economy on different social groups, geographical areas and gender in order to promote a sharing-oriented platform economy that is also inclusive. In this perspective, regulation must be provided in ways that grant effective, equal access, putting collaborative firms under public obligation to accommodate every customer, do not create a disparate impact on different segments of city inhabitants, thus preventing diminution in house affordability, discrimination or unequal access to products and services that are essential to the city and its inhabitants. Free software and other digital commons can play a significant role in fostering collaboration, distributing wealth and minimizing the risk of value extraction by entities exerting an unfair level of control and influence on other subjects. Thus also enhancing data protection

rights as "informational self-determination", where individuals gain full control over their own data.

Finally, policies for the platform economy must be crafted in collaborative ways. Fostering active participation in decision making is another central issues for the platform economy and cities should find ways to involve as many citizens as possible in policy making and urban planning, especially those segments of the population more directly affected by a certain course of action. Having this in mind, local governments should adopt ways to encourage and support people to cooperate together, reaching the vaster and involved audience. Also collaborative platforms may play an active role in this process helping to create an appropriate legal framework.[41] In fact, only through the full involvement of all actors the full potential of the innovative value that collaborative practices can bring in a specific environment will be finally captured.

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41. A few months ago, Airbnb announced for the first time that it would enforce a legal limit on the number of nights a year a host in London and Amsterdam can rent out a home. See: "Airbnb regulation deal with London and Amsterdam marks dramatic policy shift", The Guardian, Dec. 3rd, 2016 (https://www.theguardian.com/technology/2016/dec/03/airbnb-regulation-london-amsterdam-housing).

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Part II

Qualities and models of platforms

Chapter IV
Qualities of the different models of platforms

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1. Introduction

Uber is a platform for matching those drivers with a car with those in search of a ride. After seven years, the company is estimated to be worth $62.5 billion. Fairmondo is a platform that matches those offering ethical products with those searching for these. In three years, it has grown into a community of more than 12.000 users, and two million products. Both are examples of the sharing-oriented platform economy —also known as the sharing economy— but they represent different modalities: Uber is a private, incorporated company that maximizes profit (known as the unicorn model of platform economy), while Fairmondo is a member-owned cooperative, based on open source and environmentally friendly products, that maximizes community building (known as the sharing-oriented platform economy model). What differentiates them? May they drive us towards diverse sustainable future scenarios? Do these different platform economy modalities have diverse policy implications?

The term *platform economy* (which only under particular conditions can be considered sharing, collaborative and commons-oriented) refers to the exchange (matching supply and demand), share and collaborate in the consumption and production of capital and labour among distributed groups

supported by a digital platform. It is growing rapidly and exponentially and has become a top priority for governments around the globe (i.e. European Commission, 2016). However, it suffers from important challenges. We would like to highlight and address two: (1) platform economy is creating high sustainability expectations for its potential to contribute to a sustainable development of society (Algar, 2007; Botsman & Rogers, 2010; Cohen & Kietzmann, 2014; Heinrichs, 2013), and for its potential to contribute to the democratization of the economy (Fuster Morell, 2016). However, sharing-oriented platform economy lacks a holistic framework for the assessment of these sustainability and pro democratization qualities. Furthermore, the sustainable design of platform has considered questions of technological and economic aspects but has not integrated other sustainability relevant questions, such as environmental impact, gender and inclusion, or policy implications, lacking a proper multidisciplinary perspective to platform economy.

There is a confusion about the platforms which present themselves as sharing-oriented while actually, they are not; and similar uncertainties and ambiguities associated with diverse models. The disruptive impact of the best-known platform economy model, that of Unicorn *extractionist* corporation platforms like Uber and Airbnb, is provoking huge controversy (Codagnone *et al.*, 2016). Successful *alternative* and truly sharing models exist, such as open commons, platform cooperativism, or decentralized organizations based on a social economy and open knowledge, with examples like Fairmondo, but these have received neither policy nor research attention. Additionally, there is a lack of a classification system that helps to establish the difference.

Table 1. Examples of platform economy models[1]

Platform economy models	Open Commons	Unicorn mode	Platform cooperativism

Source: Prepared by the authors

In order to contribute to address these challenges, this chapter primarily provides a commons balance of the sharing-oriented platform economy. The commons balance is an analytical tool that helps to characterize the platforms, differentiate models by visualizing the commons qualities of platform economy initiatives and provide insights of the sustainability implications of their design and performance from several perspectives. This commons balance considers the dimensions of governance, economic strategy, technological base, knowledge policies, and social responsibility towards the externalities of the platforms.

2. A commons balance in order to distinguish between models: open commons and platform cooperativism models of platform economy

The sharing-oriented platform economy —also given, among many others, the labels of sharing-oriented consumption (Botsman & Roger, 2010), access-based consumption (Bardhi &

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1. Wikipedia (wikipedia.org); Goteo Crowdfunding (goteo.org); Uber car service (uber.com); Airbnb rentals (airbnb.com); Fairmondo marketplace (fairmondo.uk); Stocksy, freelance artists (stocksy.com).

Eckhardt, 2012), or commons-based peer production (Benkler, 2006)— is used as a *floating signifier* for interactions among distributed groups of people supported by digital platforms that enable them to exchange (matching supply and demand), share and collaborate in the consumption and production of activities leveraging capital and goods assets (i.e. money, time, skills and equipment, cars and real estate, among others), as well as labour (i.e. skills, time, knowledge or interest, among others).

The several available characterizations of sharing-oriented platform economy point to the diverse range of activities it involves (Cohen & Muñoz, 2016; Hamari *et al.*, 2016; Martin, 2016; Schor & Fitzmaurice, 2015; Schor *et al.*, 2014). Some of the differentiation characterized concerns interaction modalities (i.e., peer-to-peer —P2P— versus business-to-consumers —B2C), type of activity (i.e., renting, buying or sharing, among others), and type of asset being exchanged (i.e., capital versus. labour). However, the differentiation based on the sharing-oriented, pro-common interest, and economic democracy quality —or how value is governed and distributed— have not aroused enough attention or empirical interest. This remains the case despite the rhetoric around sharing and collaboration that brings together highly profitable companies alongside voluntary gift-giving exchange, which has generated controversies in the media (Codagnone *et al.*, 2016). In this contribution, we aim to provide a framework for distinguishing between models.

The model of some of the platforms raises criticism concerning their governance and the way value is generated and appropriated, with the argument being made that, while users bring to the platforms some of the fundamental assets that create value, the profits derived are appropriated by the restricted group of platform owners, thus degrading labour, exacerbating inequal-

ity and commodifying daily life (Schor, 2016). Some authors claim that the majority of commercial platforms are improperly described as part of the "collaborative economy" (Belk, 2014). Others point to the relevance of other value governance modalities and the potential of sharing-oriented platform economy to generate alternative modalities of economic enterprise based on shared value (Scholz, 2016). Furthermore, there is the risk of expanding economic logic to larger areas in society, inserting commodified exchange into areas that were previously under a social relation logic (Morozov, 2015).

To have a proper understanding and a tool to distinguish the diverse democratic models and types of value governance of platform economy, their potential policy implications, as well as their effects, may help to inform appropriate policies, actors in the field, and technological development. However, empirical analysis of platform economy (with the exception of Couchsurfing and Wikipedia) and public debate are focused mainly on the most visible *unicorn* modality, and primarily on a limited set of cases (mainly Airbnb and Uber, as well as labour markets such as TaskRabbit or oDesk) (Cheng, 2016). Still, there is some work developed on the common model and more recent platform cooperativism models.

2.1. Commons model: Commons-based peer production

There is already an area of studies focused on the open commons model, known as commons-based peer production (CBPP) (Benkler, 2006). Some authors see CBPP as a precedent to the sharing-oriented platform economy frame (such as Fuster

Morell, 2016), while others (such as Botsman & Roger, 2010) ignore this previous trajectory. In fact, current investigations under the label of platform economy have not engaged or been crossed with the extensive CBPP literature. This contribution aims to help to feed that gap. In 1990, in an article called "Neither market nor hierarchy: network forms of organization", Walter W. Powell identified a third emerging form of the organisation of production —that is, networks (Powell, 1990)— distinct from the traditional two models considered by economic theory: firms and markets (Coase, 1937; Williamson, 1975). Since then, a rich literature on new forms of economic enterprise has been developed, especially in the sectors more intensively dependent on knowledge, creativity, and innovation such as those impacted by the Internet and digital revolution (Castells, 1996, 2006).

Various challenges have been highlighted in the flows of value production, consumption, circulation, and distribution that often escape the ability of traditional systems of accounts and statistical surveys to measure (Brynjolfsson & Saunders, 2009; Cowen, 2011). During the 2000s, a new literature contributed to enlarging the evidence and understanding about the emergence of unconventional forms of production, with studies inspired by the unexpected success of initiatives like Free/Libre and Open Source Software (FOSS or FLOSS) and Wikipedia (Raymond, 1999; Benkler, 2002; Weber, 2004). The EU's own research maintained leadership in this field with projects such as FP5's FLOSS, FP6's FLOSS METRICS, and FP7's FLOSS Include, among several others. To frame these new unconventional forms of production, several proposals have been advanced with concepts such as *P2P networks* (Bauwens, 2005), *cloud culture* (Leadbeater, 2010), *produsage* (Bruns, 2008), *free culture* (Lessig, 2004), *open culture* (Stalder, 2005), *open content communities* (Reagle, 2010), *epis-*

temic communities (Tzouris, 2002), *wikinomics* (Tapscott & Williams, 2006), *open source production* (Anthony; Smith & Williamson, 2007), *recursive publics* (Kelty, 2008), and *online creation communities* (Fuster Morell, 2010).

However, Yochai Benkler —partly relying on the work on the traditional commons developed by the 2009 Nobel Laureate Elinor Ostrom (1990)— in 2002 proposed, and in 2006 systematised, a new concept aimed at grasping an emerging and distinctive model of production: Commons-based peer production, or CBPP (Benkler, 2002, 2006). Benkler created the term *CBPP* to describe forms of production in which, with the aid of the Internet, the creative energy of a large number of people is coordinated into large, meaningful projects without relying on traditional hierarchical organisations or monetary exchanges and rewards (Benkler, 2006). According to Benkler, four conditions favour the emergence of CBPP: low capital costs; the centrality of human capital; the decline of communication costs; and the public nature of the good concerned. Additionally, CBPP is more effective if applied to jobs that can be split into small tasks and independent modules (granularity and modularity), and where the value of the monetary reward is small relative to the value of either the intrinsic hedonistic rewards or of the social-psychological rewards.

CBPP theory has been developed further by other authors (e.g. Aigrain, 2012; Bollier, 2008; Fuster Morell, 2010; Griffiths, 2008) as a framework to describe new productive activities that take place on the Internet, outside the logic of market and state, with characteristics such as: openness to participation (Fuster Morell, 2010), strong inequality in the distribution of the contributions among the whole community (Ortega, 2011), decentralization (Crowston & Howison, 2004; Lanzara & Morner,

2004), modularity and granularity (Benkler, 2006), no coercivity and coordination based on stigmergy (Siefkes, 2010), transparent process (Bauwens, 2007), intellectual communal property (Wark, 2004), and value dimensions beyond monetary conceptions (Fuster Morell et al, 2016).

Most of the research on these conditions have been developed only for the case of FLOSS (Crowston & Howison, 2006; Lanzara & Morner, 2004; Schweik & English, 2012; Weber, 2004). The empirical research was then expanded to the case of Wikipedia (Kittur, Suh, Pendleton & Chi, 2007; O'Neil, 2009; Ortega, 2011; Reagle, 2010; Viégas, Wattenberg & Mckeon, 2007). Hill (2012) provided a qualitative analysis of why Wikipedia was able to succeed in contrast to other apparently similar attempts to build an encyclopaedia. However, this research has failed to take into account the diversity of types of CBPP, concentrating mainly on FLOSS and, later, on Wikipedia. Particularly, little attention has been paid to the distinction between models and how far common-based peer production differs from platform capitalism.

In the last decade, there has been an expansion of CBPP to areas of activity other than the initial ones (mainly, FLOSS projects and projects using Wikis), like citizen science, product design, and management of common spaces and open data sources. As part of this expansion, there has also been a *hybridization* of CBPP with cases that seem to retain some commonalities with CBPP, but differ in others, while also adopting aspects from other types of formats, such as corporate-based platform economy and traditional market formats that question whether they can actually be qualified as CBPPs, something which also applied to the term sharing-oriented platform economy (such as Airbnb or Mechanical Turk).

This opens up the need to deepen and review the initial conceptualizations of CBPP on the basis of its latest developments, and set criteria in order to clarify a phenomenon that has become richer and more diverse (Arvidsson & Peitersen, 2013). The initial and very basic characterization of CBPP as a distinctive form that differs from traditional markets and firms —not operating like traditional command and mercantile exchange— is not enough. Additionally, it would be good to go deeper into our understanding of CBPP in order to be able to define it in terms of how it actually operates, and not to define it in terms of how it does not operate. In this regard, the commons balance aims to provide a characterization and analytical tool which help to distinguish CBPP from other forms of market innovation not based on commons or sharing-oriented logic, even if they claim it.

2.2. Platform and open cooperativism model

Studies of social economy and cooperatives point to their growing diffusion and some of their social and economic sustainability qualities. Making up almost 12% of the entire employed population of the G20 countries, cooperatives generate partial or full-time employment involving at least 250 million individuals worldwide. According to official data from 74 countries, 26.4 million of these people work in cooperatives (as employees or worker-members) and more than 223 million producers organize their production together within the scope of cooperatives (Roelants *et al.*, 2014). According to data from 2013, the largest 300 co-operatives and mutuals in the world reported a total turnover of 2,360 billion US dollars (World Co-operative Monitor, 2015). Social economy studies point to the major resil-

ience and better working conditions of the cooperative models as compared with traditional firms (Roelants *et al.*, 2012; Birchall & Ketilson, 2009), according to econometric evidence on the comparative behaviour of worker cooperatives and capitalist firms (Burdin & Dean, 2009).

There is also a contrast between the behaviour of cooperatives and the overall trends in the industries within which they operate, with a stabilizing effect on employment (Delbono & Reggiani, 2013). It has also been observed that labour-intensive activities tend to be the sectors where cooperatives function best (Cheney *et al.*, 2014), with member-owned businesses tending to provide jobs where the labour market has not provided these (Birchall, 2012; Bonin *et al.*, 1993; Díaz-Foncea & Marcuello, 2014). This has also been observed in comparisons of data on the number of capitalist firms and of cooperatives created annually, which concluded that the creation of worker cooperatives is determined by the unemployment level (Díaz-Foncea & Marcuello, 2015). This evidence would suggest that platform cooperatives could be a model for expansion in sharing-oriented platform economy, particularly through labour platforms, which may generate better social sustainability and equality effects especially in cities with high unemployment.

The term *platform cooperativism* was suggested as such and started gaining traction in 2015 after it was popularized by Scholz and Schneider (Scholz, 2016; Scholz & Schneider, 2016). According to Scholz, the main characteristics that define a platform cooperative are: collective ownership; decent payment and security of income of its workers; the transparency and portability of the data created; appreciation and recognition of the value generated in the platform activity; collective decision-making; a protective legal framework; transferable protection of workers and the

coverage of social benefits; protection against arbitrary conduct in the rating system; the rejection of excessive supervision in the workplace and, finally, the right of the workers to disconnect (Scholz, 2016).

In short, according to Scholz, on the one hand, platforms must be shaped around the values of cooperativism, and on the other, digital tools must amplify the scalability and the social and economic impact of cooperative organizations. However, due to its novelty, it remains still largely unstudied. At the same time, Fuster Morell (2017) means that the very construction of technology platforms is not a minor issue and those platform cooperatives should adopt open software and licenses. In short, to create a self-managed governance that allows the articulation of a development community around the digital commons (Fuster Morell, 2015) must approach to an *open cooperativism* (Bauwens, 2014) as an antithesis of the unicorn and corporate platforms.

Platform cooperativism is the most popular term, but not the first one to point to a match between cooperativism and digital commons. Previous similar research on new forms of cooperativism such as *open cooperativism* (Bauwens & Kostakis, 2014) and also studies of how the digital environment opens up new possibilities for the cooperative tradition (De Peuter & Dyer-Witheford, 2010; Murray, 2010) are of relevance in this relatively new field. Furthermore, Murray (2012) points to the potential of cooperativism and new forms of mutualism for public service reform. There is also a proliferation of relevant books and other contributions from a theoretical framework perspective, but mostly lacking an empirical methodology.

Como developed an exploratory analysis, based on interviews with cooperatives, first in Italy (Como, 2015) and then in nine European countries, of the attitudes of cooperatives towards

sharing-oriented platform economy, and an online survey mapping of cooperatives that are implementing innovations in the platform economy field (Como *et al.*, 2016). The interviews found a prevailing positive attitude on the part of the interviewees from cooperative organizations towards the idea of developing innovations with platform economy, although critical views were also present in some countries like Italy and the Netherlands. Federations of cooperatives in the UK, Austria and Belgium have programmes to stimulate cooperative platforms (Como *et al.*, 2016).

2.3. Beyond CBPP and platform cooperativism: A multidisciplinary framework of platform economy platforms

As presented, the CBPP or commons tradition is not a response to the corporate cooptation of the sharing-oriented platform economy: it pre-dates and inspired it. Actually, it has overcome various waves of capitalist innovation: from the Web 2.0 to the emergence of YouTube and Facebook in response to the dot-com crisis in 2000, and the *extractionist* platform economy including Uber and Airbnb in response to the 2008 crisis. These forms adopt the sharing-oriented discourse and mode of production of digital platforms, but at the same time turn their backs on the use of free, transparent technology, on the role of the community of creators in the governance of the process, on the collective ownership of knowledge, and on the distribution of the value generated among those who contribute to create it. The platform and open cooperativism model is a frame that actually was a response to the corporate *extractionist*

unicorn models of platform economy, and wanted to provide new responses to the question they created, and in concrete to the lack of economic models for individual sustainability at the CBPP frame.

The tradition of the CBPP or digital commons poses the challenge of the sustainability of the individuals who contribute to the common good. Some of the models that are being designed and implemented in response to this challenge were described by Philippe Agrain (Agrain, 2012). In the commons, there is tension between the desire to maintain the predominantly non-commercial nature of projects and to emphasise other, non-monetary sources of value on one hand, and the need to secure income for those who contribute on the other.

The option of setting up cooperatives has also been an alternative in the CBPP digital commons —particularly in the world of free software —although foundations have been a more common model of institutional organisation. Another issue is the need to create legal figures that can allow for the fact that online sharing-oriented production generates patterns of very different levels of participation (in which 1% usually generate the majority of the content, 9% contribute occasionally, and 90% participate passively as the *audience*). Another challenge of the CBPP is to move towards decentralisation, which does not seem to adapt very well to the traditional cooperative membership model.

Scholz's approach to platform cooperativism and open cooperativism puts the spotlight on the labour conditions of the people who contribute to digital platforms, and on the creation of cooperatives as a means to guarantee ownership. These are certainly key issues, but they push important aspects of the CBPP digital commons into the background. On one hand, open knowledge, knowledge as a common good, and the public

dimension of sharing-oriented production through the use of licenses (like Creative Commons) that guarantee access to the resources; on the other, free technology —platforms based on free software— as a means of communal control of the means of production in a digital environment.

CBPP and also platform cooperativism share other limitation, we would like to contribute to overcoming with the commons multidisciplinary balance. The CBPP, platform and open cooperativism frame consider inequality in terms of class, income, and education, but it does not consider other sources of discrimination and inequality in his critique of the corporate platform economy or in his proposed alternative. This is actually one of the weak points of this frame its limited gender perspective. This actually tends to be the rule in discussions around the platform economy and critiques of the hegemonic economic approach, which are not the only characteristic of CBPP and open cooperativism. There is little emphasis on the links or dependence between the platform economy and the domestic and care economies, or on the feminist reading of the phenomenon. The same can be applied to the environmental impact. There are very little connections done among environmental questions, CBPP and open cooperativism.

It aims to be an attend to integrate the aspects that CBPP and platform cooperativism draws attention to (cooperativism as a means to ensure democratic governance of economic activity and the conditions of sharing-oriented production that respect basic rights), while keeping in mind the strengths of other processes, including the digital commons —which emphasises the importance of the public and the commons, as well as free infrastructure—, the feminist economy, and the circular environmentally friendly economy. And from there, to develop a new social, feminist, environmental commons economy. The confluence of these diverse

sources of socioeconomic innovation, and the economic activity each articulate might provide a framework for a large-scale economic transformation. This rationale drives us to build a commons multidisciplinary balance of the platform economy, which does not leave aside technological and knowledge policies, and also considers gender, environmental issues, and other sources of externalization of negative effects, as well as their implications for policy.

3. A commons balance in order to assess the sustainability of the platform economy

A more recent frame of studies on platform economy, departing from Botsman & Rogers (2010) characterization of platform economy swaying away from the sharing-oriented consumption practices, provide a state of the art on how far there has been applied a sustainability analysis. In contrast to CBPP and platform cooperativism frames, since the initial characterizations of sharing-oriented platform economy, its potential to contribute to a sustainable development of society (Botsman & Rogers, 2010; Cohen & Kietzmann, 2014; Heinrichs, 2013) has been pointed out. Nonetheless, the empirical evidence of the expected socio-economic and environmental effects of sharing-oriented platforms is still limited, fragmented and inconclusive. Only 9% of the platform economy literature has focused on the potential benefits, costs and welfare impact of sharing-oriented platforms (Codagnone *et al.*, 2016).

The framework of sustainability in the platform economy has combined social, economic and environmental sustainability dimensions (Botsman & Rogers, 2010). The ex-ante analysis

around impact has considered such aspects as consumer welfare, job creation and employment opportunities for independent contractors, job security and quality, and environmental impact, but has lacked in the majority of cases a holistic analysis of the integration of sustainability into society, community and economy perspectives (Bina & Vaz, 2011). Ex-post empirical research remains partial and dispersed.

From a social dimension, Richardson (2015) points to platform economy sustainability as a source of change and of reduction in social inequalities (Dillahunt & Malone, 2015; Fraiberger & Sundararajan, 2015; Reich, 2015). Some studies conclude that peer-to-peer activities potentially benefit the below-median-income part of the population more than the above-median-income one and that sharing firms can be used as a means to redistribute income. Schor's empirical work has documented how the market orientation and organization of sharing-oriented platforms are critical characteristics shaping their potential for providing sustainable alternative economic arrangements (Schor & Fitzmaurice, 2015).

From an environmental perspective, Demailly *et al.* (2016) argue, based on extensive surveys and interviews in the sharing-oriented platform economy sector, that although platforms and their users may be moved by sustainable development, various rebound effects like compulsive acquisition behaviour around capital assets also take place, something corroborated by other empirical analysis (Parguel *et al.*, 2016). However, sharing-oriented mobility could contribute to reconciling environmental and social demands within a positive narrative of reclaiming urban space and deploying innovative solutions (Brimont *et al.*, 2016).

The multi-disciplinary approach to sustainability is optimal, embracing the complexity of the phenomenon impacts, but chal-

lenging methodologically (Heinrichs, 2013). An initial research strategy for approaching sustainability in platform economy was based on the use of secondary data and sustainability indicators adopted from corporations' sustainability literature (Delai & Takahashi, 2011). However, this strategy has several limitations. There is no consensus about what sustainability indicators to use (Delai & Takahashi, 2011), and frequently the indicators are not adapted to such platform economy features as the non-monetary character of some activities, *micro-entrepreneurs* (Schor, 2014), and rebound effects reducing positive contributions (Heinrichs, 2013).

Another limitation of the current work, in terms of platform economy economic sustainability, is that it has focused only on the impact of the unicorn models in car sharing (Fraiberger & Sundararajan, 2015; Firnkorn, 2012; Hall & Krueger, 2015), on rental industries and tourism accommodation (Fang *et al.*, 2016; Neeser, 2015) and on online labour (Agrawal *et al.*, 2013; Horton & Golden, 2015), as well as on the contrasting impact of the unicorn model and the current incumbents (Zervas *et al.*, 2016). Furthermore, this work is sometimes presented by stakeholders involved in the controversies. For example, Uber and Airbnb have released dozens of reports, but their reliability cannot be independently validated because the methodologies are not transparently illustrated and data is not made accessible to researchers (De Groen & Maselli, 2016; Kässi & Lehdonvirta, 2016). In contrast, we will connect with the study of sustainability in commons-oriented modalities (Ostrom, 2009).

We will develop a framework of sharing-oriented platform economy sustainability that aims to integrate environmental, socio-economic and gender equality, political, and Internet sustainability dimensions. In contrast to previous work in the

field of platform economy, we will consider other three critical dimensions to sustainability: *gender* as a source of inequality, *digital sustainability* of the internet as a commons, and *political sustainability* on the other. While sharing-oriented platform economy literature considers the Internet as a given immutable resource, hosting the platforms that support sharing-oriented economy, the *net environmental* approach points to the Internet as a living process and an ecosystem (Holman & McGregor, 2005) of common resources that needs to be preserved in terms of its fundamental principles of net neutrality, decentralization and openness (Boyle, 1997). How far the models contribute to the regulatory requirements and to policy system quality will also be considered as part of the sustainability frame.

4. Commons multidisciplinary balance of platform economy

In this section, we will present the framework of the commons multidisciplinary balance of the sharing-oriented platform economy. Here we present the first version of the framework. The design of the commons balance is informed and based on a multidisciplinary analysis and state of the art of the platform economy from an economical, technological, environmental, gender and inclusion, legal and policy perspectives. There was carried out an empirical analysis of most prominent cases of commons platform economy, as well as the case of Barcelona sharing-oriented platform economy ecosystem, with data collection from a 100 cases sample and the specific analysis of 10 singular cases of sharing-oriented platform economy of

Barcelona. You can see more details of the cases characterization in the chapter "Wide approach to 100 platforms with impact in Barcelona, and zoom to 10 paradigmatic cases" of the present publication.

The commons multidisciplinary balance considers the dimensions of governance design, economical strategy, technological base, knowledge policies, and social responsibility regarding externalization impact of the platforms. The commons balance is an analytical tool that helps to visualize the commons qualities of sharing-oriented platform economy initiatives, differentiate models, and provide insights into the sustainability of their design, and to inform technological development. The starting point is the recognition of the platform economy as a very diverse and dynamic field. In light of this, the metaphor that represents what we see in front of us is more about mapping a plural galaxy than drafting a two-sided field. We are not aiming to establish —with the delimitation criteria— two sides with a clear line of delimitation of what sharing-oriented platform economy is and what it is not. We are aiming to map the diversity of platform economy expression typologies and the various ways in which sharing-oriented platform economy differs from other models. These diverse platform economy typologies result from several combinations of elements that constitute platform economy, rather than one single formula.

Figure 1. Commons balance of platform economy
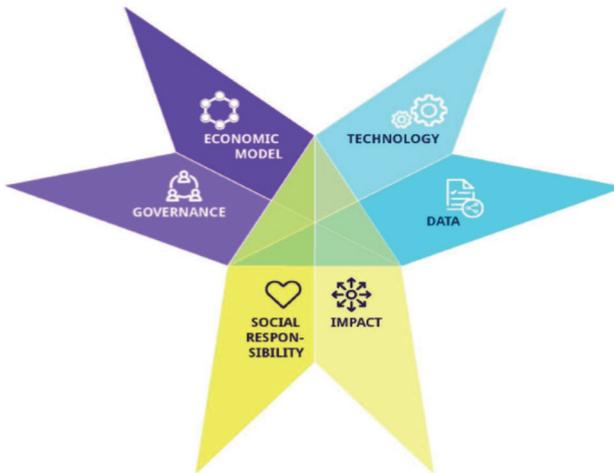
Source: Prepared by the authors.

The commons qualities of the sharing-oriented platform economy are articulate around 5 dimensions (see Table 2 to view the specific indicators connected to each dimension):

- Governance: Regarding democratic enterprises and involving the community generated the value in the platform governance. Regarding decision-making model of the organization; mechanisms and political rules of the digital platform participation.
- Economic model: Regarding whether the project financing model is based on a private capital, an ethical finance, or a distributed found (crowdfunding or match-funding); the business models; mechanisms of economical transparency; how far the profitability is driven by the whole plan; distribution of value generated; and equity payment and labour rights. To ensure equitable and timely remuneration, and access to benefits and rights for workers (maximization of income,

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salary predictability, safe income, protection against arbitrary actions, rejection of excessive vigilance at the workplace, and the right to disconnect).

- Knowledge policy: Regarding the type property as established by the license used (free licenses or proprietary licenses) of the content and knowledge generated; type of data (open or not), the ability to download data (and which formats), and the promotion of the transparency of algorithms, programs and data. Privacy awareness and the protection property from personal data and prevent abuse, as well as the collection or share of data without consent. Guarantee the portability of data and reputation.

- Technological policy: Regarding the mode of property and freedom associated with the type of software used and its license (free or proprietary) and the model of technology architecture: distributed (using blockchain, for example) or centralized (software as a service).

- Social responsibility regarding externality impacts: These dimensions related to any source of awareness and responsibility regarding the externalities and negative impact such as social exclusion, and social inequalities, regarding the equal access of people with all kinds of income and baggage in an equitable and impartial way (without discrimination) to gain access to the platform; the inclusion of gender, compliance with health standards and safety standards that protect the public; and the environmental impact,[2] and the impact in the

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2. Promote sustainable practices that reduce emissions and waste, taking into account the rebound effect that they can generate, as well as the most efficient use of resources, the origin and production conditions of the goods and services they offer (i.e. if favoring proximity); and minimizing resource management, and recycling capacity.

policy arena, and the preservation of the right to the city of its inhabitants and the common good of the city; the protection of the general interest, public space, and basic human rights, such as access to housing.

On the basis of the commons balance of platform economy, sharing-oriented platform economy can be defined as a tendency, a set of qualities, and a modality of sharing economy —regarding both the design and the performance of the process— characterized by a commons approach regarding the dimensions of governance, economic strategy, technological base, knowledge policies, and social responsibility of the externalizations impacts of the platforms. In this regard, sharing-oriented platform economy is characterized by (1) favouring P2P relations —in contrast to the traditionally hierarchical command and contractual relationships detach from sociability, and merely mercantile exchange— and the involvement of the community of peers generating in the governance of the platform; (2) it is based on value distribution and governance among the community of peers, and the profitability is not its main driving force; (3) its developed over privacy aware public infrastructure, and results in the (generally) open access provision of commons resources that favor access, reproducibility and derivativeness; and finally, (4) the responsibility with the externalities generated by the process.

4.1. Commons balance operationalization and data analysis

In order to operationalize the commons balance, we built a codebook of 150 indicators. Of these 150 indicators, we

selected those which represented a good overall indication of each dimension and were easy to collect. These are presented in Table 2. We applied the codebook to 10 cases in order to test the indicators.

Table 2. Indicators of the five dimensions of commons quality of platform economy

Governance model	Type of economic enterprise	Cooperative, foundations or SME with a system involving the community in contributing to the digital platform in the decision making.
	Open participation at the digital platform	Possibility to participate at the platform so as to contribute to the contents of the initiative.
Economic model	Goal	The main objective of the project and/or organization is not profitability.
	Transparency	Everybody in the organization (or out of them) has economical information about it.
Knowledge policy	Open content	Free license. The contents can be reused.
	Open data	Open data licence. Everybody could get and use the data platform.
Technological policy	FLOSS	The platform is developed in Free/Libre and Open Source Software.
	Decentralized	The software can be federated and/or hosted in different servers.
Social responsi-bility	Inclusion	The platform has features to favour the inclusion of socially disadvantaged groups. The project has an active gender inclusion policy.
	Green	Initiative with features and awareness of care and promotes environmental impact reduction.

Source: Prepared by the authors.

4.2. Application to different models of the platform economy

In the following table, we applied the commons balance with the basic indicators of each of the dimensions to the three models of platform cooperativism.

Table 3. Open commons and platform coops versus unicorn models

	Open Commons	Unicorn	Platform coops
Type of governance	• Foundations and non-lucrative associations with participatory systems • Informal self-managed communities	• Multinationals or start-ups • Centralized governance	• SME & cooperative • Participative governance
Type of economy	• Crowdfunding • Value distributed	• Venture capital; value extraction • Oriented on optimizing profit for their investors; minimizes costs and taxation • Optimization of the profit detrimental to labour rights	• Crowdfunding • Value distributed
Type of technology	• Free and Open Software (replicable)	• Proprietary software • Software as a Service closed source	• Free and Open Software (replicable)

	Open Commons	Unicorn	Platform coops
Type of knowledge	• Open data • Free-libre licenses (Creative Commons, etc) Open Knowledge	• Closed or owned data, user data commodification, user policies and rights could be abusive or hardly abusive • Knowledge patented, under copyright	• Vary
Social responsibility	• Irregular: Circular economy, gender policies • Social inclusion	• Lack of indicators but scandals of abuses • Negative environmental impact • Negative social impact on communities • Rarely caring on social exclusion issues or responsible exploitation of natural resources	• Irregular: Circular economy, gender policies • Social inclusion

Source: Prepared by the authors.

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Chapter V
Inclusion and discrimination at the platform economy: A gender focus

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1. Introduction

In the study of the relationship between sharing economy and gender, there is currently a significant gap between what is known and what is wished to be known (Schoenbaum, 2016). There are few contributions to the debate and the majority of the articles that discuss the issue do it in a more generic framework linked with overall discrimination in the platform economy model. Only at the start of 2016 was a first, more specific paper on gender and sharing economy published by Naomi Schoenbaum. However, this contribution focuses on the relevance that gender identity takes in sharing-oriented platform economy rather than exploring the participation from a quantitative and qualitative perspective.

Since its origin, the sharing-oriented platform economy was greeted as a more open, inclusive, democratic and ecological model when compared to the traditional economy (Botsman & Rogers, 2010; Gansky, 2010). Virtually all exchange sites and digital platforms within the sharing economy explicitly advocate for open access and equality of opportunity (Schor *et al.*, 2016) and, with a focus on the gender dimension, this model has been celebrated as a flexible alternative to traditional employment for those with family responsibilities, especially women (Singer, 2014). Nevertheless, the sharing-oriented platform economy pre-

sents challenges for gender equality (ibid.) and different authors argue that this model reproduces gender, race and class hierarchies and biases (Edelman *et al.*, 2014; Schor, 2014).

2. Gender identity shaping interaction in the platform economy

Different scholars have in fact observed that the presence of photographs and names can reveal identity traits like race and sex, by producing a personalization of the transaction and, in consequence, allowing discrimination (Edelman *et al.*, 2014; Schoenbaum, 2016). Another element that makes the platform economy a context liable for gender discrimination is that transactions take place in contexts without structural features (such as laws or social norms)[1] that constrain discrimination (Schoenbaum, 2016).

In this framework, the thesis of Schoenbaum (2016) offers an interesting contribution that analyzes in a more in-depth way the internal dynamic of a sharing-oriented platform economy. She argues that in this model, the gender identity takes more relevance to both buyers and sellers due to the increased intimacy of the economic transactions. The transaction between buyer and seller in a more personal space makes these transactions intimate, giving access to private information that is not typically

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1. As Schoenbaum (2016) argues, the publicness of interacting in the traditional economy makes buyers and sellers more likely to be subject to the pressures of social norms, including the norm of nondiscrimination while the transaction is online in the sharing economy, with no one watching, makes it easier to act on discriminatory preferences, without any sense of being monitored.

shared with others (ibid.). In this way, sharing models contrast with the goal to reduce the salience of gender identity in the labour market while, at the same time, extending existing gender discrimination laws to the platform economy may not alleviate these troubles due to the particular contexts in which the platform economy takes place[2] (such as homes, cars, etc.).

By assuming that market transactions present more risks and considering that in sharing economy many of these transactions occur through a digital platform (ibid.), the issue of trust becomes central[3] to explain how gender discrimination operates in sharing-oriented platform economy. Thus, one of the more usual tools to mitigate the risks is to make the transaction more personal; with this, many companies (such as Airbnb, TaskRabbit, etc.) require descriptions of users and providers, such as photos, names, or characteristics and also, in some case, to post a photo of their own home or car. At the same time, the intimacy of some services can lead consumers to be more comfortable with workers of a particular gender identity (such as for the gynaecologist) (Lewin, 2001). This mechanism is reinforced in the platform economy where the intimate nature of the transaction makes it more vulnerable to gender identity preferences (Wortham, 2014).

Thus platform economy firms, reproducing gender stereotypes, such as the image of women as a more reliable, caring

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2. Platform economy transactions often transcend the boundaries of home and market in that they occur in a seller's or buyer's private space. In consequence, there are significative limits to the laws that have the transformative effect that it has had in the traditional economy and to put in place a regulation for gender equality (Schoenbaum, 2016).
3. Also, Botsman & Rogers (2010) cited trust as the primary inhibitor to many participating in the sharing-oriented platform economy but they have not related this question with gender issues.

and reassuring, use gender identity as a risk-reducing mechanism that confers trust and that orients preferences. Intimate workers identities can represent a powerful signal. Results show that both males and females prefer a female service provider when the nature of the exchange is more intimate —such as for sharing a home or a car (Schoenbaum, 2016). Another study, performed by Roy (2016), explored the issue of trust in sharing-oriented platform economy but from a different perspective. She hypothesized that the reason why there are more men engaged in the platform economy is that they are more likely to trust strangers than women. By testing this hypothesis determined the contrary; women are more risk-averse than men, as demonstrated also by Borghans *et al.* (2009). Thus, the lowest percentage of women is not due to feminine features such as their attitude to risk but rather to structural dynamics.

3. Participation of women in sharing-oriented platform economy

By speaking about the participation of women in the platform economy we can observe that it can vary significantly in relation to the nature of the exchange. A study conducted by Schor *et al.* (2016) on different types of sharing models reveal that the participation of women depends by production area. Take as an example the case of CraftWorks, a coworking project. It is possible to observe that several areas of production remain relegated to the boundaries of masculine space, in which women can hardly enter, and the feminine area, revealing the stigma associated with performing activities traditionally associated with femininity

(Schor *et al.*, 2016). The authors show also a gendering of practices: the interviewed participants frequently reference the difference between consuming and making. This difference reflects the traditional cultural opposition between active and passive (Bourdieu, 1999); while the passive trait is associated to woman that in the case of a platform economy is often a consumer, the active trait is instead related with man, that, in a sharing model, is the person that produces, that actively engages with tools and materials (Schor *et al.*, 2016).

In another platform economy case studied by Schor *et al.* (2016), linked to food production, the authors observe the prevalence of women in an area that is traditionally considered feminine. However, in the case of *wintrepreneurs*, scholars argue that there is a stratification in terms of gender, race and class (ibid.). This brings back to the discourse of the gendered division of labour as a mechanism that divides the production area in relation with the gender identity of one person (Bourdieu, 1999) and that, in a sharing economy, is reproduced.

There is a significative presence of women in the sharing-oriented platform economy model but the area in which they are more represented and the role that they hold is, often, an expression of a gender discrimination. Also, the analysis of Roy (2016) supports this thesis: while the demographic analysis of major platform economy services shows that there is no gender disparity when it comes to using the services, from the service provider side instead there is a gender disparity as has been demonstrated by industry analytics.

So, gender discrimination joined with the racial one, leading the authors (Schor *et al.*, 2016) to speak of the paradox of openness in relation to the sharing-oriented platform economy. In fact, observing the racial and gender composition of some

sharing models results in what the authors call the "paradox of openness and distinction" between actual practice and the sharing-oriented platform economy's widely articulated goals of openness and equity.

4. Instrumentalized gender sensibility

As for the environmental issues with greenwashing (Demailly & Novel, 2014; Voytenko *et al.*, 2016), it is not to exclude that some firms use and instrumentalize gender sensibility as a brand to attract more people. It could be the example of Uber or other car-sharing services as Lyft and Sidecar. In particular, in the case of Uber, the firm discovered the preference of some consumers for a female car-service, and in 2014 offered a new service specifically with cars driven by females. Despite that Uber has promoted itself as a job creator and a driver of gender equality, the data shows a different situation. The sex informal segregation is in particularly marked among drivers for ride-sharing services (Jaffe, 2015) In fact, women constitute 30% of Lyft's drivers, 40% of Sidecar's drivers and only 14% of Uber's drivers. So, while Uber claims to be a job creator, it has been a job creator almost entirely for men (ibid.).

On the other hand, it is necessary to take into account the considerations of Schoenbaum (2016) about gender discrimination in ride-sharing services. The safety of drivers is a central issue: many female drivers were victims of sexual harassment and physical fondling by riders (Huet, 2015). Thus, the safety concerns contribute to the segregation of ride-sharing services not only because women avoid driving due to these concerns,

but also because these concerns —and women's attempt to address them— end up making driving less lucrative for women. In fact, the busiest times of the week for ride-sharing are nights and weekends, when drivers can make more money (Greenfield, 2015). But these are also the times when riders are the most likely to be intoxicated. As a consequence, female drivers who opt not to drive during these times due to heightened safety concerns have a lower income (Schoenbaum, 2016) and also fewer references that are fundamental to continue to work, because firms routinely remove drivers with a low rating (Greenfield, 2015).

However, for Schoenbaum as for other scholars, more analysis of the situation is necessary to assess the effect of the platform economy on female welfare, and their work tries only to illustrate some challenges that the platform economy presents for gender equality without stigmatizing sharing models. Until now, the tools to address this model in a more gender-equal way are very limited. Scholars agree that market responses alone have thus far been inadequate to constrain the salience of sex in the platform economy, and rather have often had the opposite effect.

Schoenbaum (2016), who analyses the sharing economy in particular from a legal perspective, is quite a critic with respect to the role of anti-discrimination laws in these specific contexts for the reason already illustrated. However, she purposes to ban the access to intimate information both for buyers and sellers when conducting a transaction and avoid any kind of discrimination (ibid.). While, from other scholars, there are only more generic proposals to address sharing model in a more democratic and open economy, but there is a lack of ideas on how to intervene on gender discrimination.

5. Gender inclusion and commons platform economy: worth a picture more than corporate models?

The commons sharing economy is older than the corporate modalities of sharing-oriented platform economy, so it has a longer history. In this regard, it has received more research attention. Gender inclusion and the commons sharing economy has been investigated in depth, and the results do not provide a very positive picture. For instance, the proportion of women in FLOSS[4] is estimated to be less than 5% (Ghosh, 2005), while the proportion of female in proprietary software is around 30%. Overall, it has been argued that FLOSS is founded on a sexist culture (Reagle, 2012). Furthermore, editors at Wikipedia are estimated to be between 12-26% female (Antin et al, 2011; Hill et al, 2013).

The gender gap is not only a growing concern for researchers, but also for the DSI communities themselves. For instance, the Wikimedia Foundation has launched a Grant program (Inspire Grants: Gender Gap Campaign) focused on funding projects that aim to reduce the gender gap in Wikimedia projects (Wikimedia Foundation, 2015). There are multiple initiatives that collaborate with FLOSS communities in order to promote gender equality, such as UNESCO's program (UNESCO, 2014), and grassroots initiatives such as the Ada Initiative (Soper, 2015).

Research on the connection between reward systems and gender inclusion points interesting results. There is evidence that, contrary to other types of rewards, gratitude-rewards are

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4. FLOSS: Free/Libre and Open Source Software.

appreciated by female collaborators, and in fact, they tend to thank others more frequently (Iosub *et al.*, 2014). Besides, incorporating thanks is considered to be a reason for there being twice the amount of female engagement in Wikihow than in Wikipedia (Fuster Morell, 2010).

6. Conclusions

The birth and diffusion of the sharing-oriented platform economy put into place several challenges from different points of view. In this section we focused in particular on the gender dimension of the sharing economy, observing that although it is supposed to be open and inclusive nature, it reproduces gender discrimination. If there is a relevant participation of women in the sharing sector, it is also true that they are prevalent in production areas traditionally associated with femininity. At the same time, some scholars show that women are more relevant in the consumption sphere (passive) rather than in the production sphere (active) in which they are principally men, reproducing a sexist stigma. If there is evident a gendered division of labour in the platform economy, it is also a show of discrimination with the role of women in collaborative businesses. In fact, speaking again of the sharing sector, the percentages of women to the higher levels of governance is really low and completely unbalanced in favour of the male component.

As argued, part of the problem is linked with the limits of a law to intervene to guarantee a legal framework in which sharing-oriented companies can operate, and to protect people from every kind of discrimination. On the other hand, there are posi-

tive signals in the interest of scholars to investigate the issue and even more frequent programs to address the platform economy in a real open and inclusive model.

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Chapter VI
Environmental sustainability of the platform economy: an open debate

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1. Introduction

Several scholars agree on the lack of attention reserved by the academy to the relationship between platform economy and sustainability (Daunorienè *et al.*, 2015; Voytenko *et al.*, 2016; Xuemei & Qiang, 2016). There is a significant gap of studies on the issue (Daunorienè *et al.*, 2015), while the supposed benefits created by this model remain scientifically unverified (Parguel *et al.*, 2017; Schor, 2014; Voytenko *et al.*, 2016). Surely, a problem shown by more scholars regards to the difficulty to identify indicators to measure the sustainability in platform economy.

Since its origin, sharing-oriented platform economy was greeted as a sustainable alternative to the currently unsustainable economy (Heinrichs, 2013; Martin, 2016; Stokes *et al.*, 2014; Wosskow, 2014), and portrayed as a more open, inclusive, democratic and ecological model in what regards to the traditionally economy (Botsman & Rogers, 2010; Gansky, 2010). However, not all scholars agree with this optimistic interpretation of sharing-oriented platform economy and recent works conclude that it does not necessarily exhibit these qualities (Bardhi & Eckart, 2012).

Nevertheless, a deep link between sustainable values and collaborative consumption is neglected in the research area (Binninger, 2015). In the last years, several studies have tried to

focus on the impacts of this model from a social, economic and environmental perspective. Observing the debate on environmental impacts of platform economy, we face two mainstream interpretations: one that underlines the benefits of this model, and another that supports the idea that platform economy, producing more consumption, increases the pressure on the environment instead. We can conceptualize and synthesize these different points of view through the opposition between who represents platform economy as a driver of *deconsume* and who, instead, represent it as a driver of hyperconsumption (Botsman & Rogers, 2010).

1.1. Platform economy as a driver of *deconsume*

Different analysis support that sharing-oriented platform economy extends the lifespan of many products by opening second-hand markets (Binninger *et al.*, 2015; Demailly & Novel, 2014), and that it can solve the problem of underutilized goods (Demailly & Novel, 2014). In fact, by sharing goods like cars, electric drills and others, it is possible to provide the same levels of services while reducing the production of goods, and thus, also reducing the associated extraction of resources and the generation of waste (ibid.). Through a more efficient use of physical capital, fewer resources will be necessary (Sundararajan, 2016).

The benefits of sharing-oriented platform economy on sustainability are linked with the optimization of resources allocation (Hamari *et al.*, 2016), and so with the resource-saving potential (Leismann, 2013), with the decrease of carbon emission (Belk, 2014; Kriston *et al.*, 2010; Martin *et al.*, 2011), and with

the reduction of gasoline consumption (Martin *et al.*, 2011), in particular through the car-sharing.

Due to the more efficient use of the existing goods, platform economy might reduce the demand of new goods (Demailly & Novel, 2014; Schor, 2014), or of new hotels (Schor, 2014) showing a good ecological footprint. In a better perspective, if the sharing-oriented platform economy operates under the more favourable conditions, it can save up to 7% in the household budget and up to 20% in terms of waste (Demailly & Novel, 2014). By shifting the paradigm away from individual ownership to collectivity and sharing, less demand for consumer goods may give way to a new economy that could help take on problems such as pollution and excessive energy usage (Prothero *et al.*, 2011), leading to a sustainable consumption. On the other hand, by fundamentally modifying the relations between individuals and consumer goods, it establishes more collective, and probably, more lasting sustainable behaviours (Binninger *et al.*, 2015).

1.2. Platform economy as a driver of hyperconsumption

However, the presented evaluations of sharing-oriented platform economy as a source of *deconsume* are not shared by all scholars. Some studies show that the platform economy has become a phenomenon of hyperconsumption with negative effects on the environment. This model has created a new market that expands the volume of commerce and boosts the purchasing power (Schor, 2014). Due to the low prices, sharing-oriented platform economy has not represented a substitute for the request and production of new goods but rather, it stimulates

and accelerates consumption and provides access to goods that people could not afford before (Belk and al., 2003; Demailly & Novel, 2014; Bradshaw & Tadajewski, 2011; Felländer *et al.*, 2015; Schor & Fitzmaurice, 2015;). Schor (2014) calls these results the *ripple effects*, they are the indirect effects of platform economy: What do the sellers do with the money earned? What do the consumers do with the money saved? (ibid.)

The low prices attract people and boost them to travel more exploiting car-sharing or accommodation sharing. So, car-sharing has not reduced emissions but, by expanding the access to car usage, has increased them (ibid.). In addition, the cheap ride services are diverting people from public transportation (ibid.). Also, the sharing of accommodation is not showing the expected results: the greenhouse gas emissions of accommodation P2P platforms (including Home Exchange, Couchsurfing, etc.) kept invariant compared to incumbent hotel industry (Voytenko *et al.*, 2016), meanwhile several people stayed longer in the spot when they booked accommodation through P2P platforms, which may create extra local pressure on the environment (ibid.).

A recent study (Parguel *et al.*, 2017) on redistribution markets shows how the P2P platforms influence consumers behaviour in a negative way for the environment. Surely the second-hand market has grown strongly with the diffusion of web and of digital platforms, but this did not imply a more sustainable attitude. The second-hand market stimulates demand for new goods while owners of new goods can sell their assets more easily a buy new asset more frequently (Thomas, 2003). Therefore, the second-hand market supports and promotes primary markets by making consumer products into *liquid asset*s (Thomas, 2011). The authors show more significant results from their study carried out in France: conscious consumers

exhibited more impulse to buying on the second-hand P2P platform than less conscious consumers, as these platforms favour self-licensing behaviors.[1]

Parguel *et al.* (2017) argue that P2P platforms enhance the consumeristic attitude and, at the same time, represent a perfect context to justify this contradictory behaviour. Because these platforms are supposed to be virtuous, encourage zero-waste, and offer a second life to objects, they offer an ideal place where conflicts between materialism and environmental consciousness are *solved* by impelling buying behaviours and so, overconsumption. These authors read the platform economy at the current conditions as a driver of hyperconsumption that ends up being a predatory and exploitative model.

It is also important to say that often the entrepreneurs instrumentalize the environmental arguments as a brand to be more attractive and to promote their activity (Demailly & Novel, 2014; Voytenko *et al.*, 2016), with the risk to practice greenwashing. On the other hand, the main motivation of users is to optimize purchasing power (Demailly & Novel, 2014) rather than the environmental reason (Binninger *et al.*, 2015; Voytenko *et al.*, 2016).

However, any generalizations about the sustainability of sharing-oriented platform economy may be misleading

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1. The concept of self-licensing is based on the finding from decision-making research that people are more likely to behave in ways that can be easily justified (Shafir *et al.*, 1993). This theory has been recently applied to consumer behavior (the term *self-licensing* was first employed by Khan and Dhar, 2006) and previous research agrees that the context providing justification for self-licensing serves to enhance consumers' self-concept (feeling virtuous), therefore, allowing for transgression versus an initially goal set (Khan & Dhar, 2006). In their paper Parguel el al. (2017) use the self-licensing theory to explain the consumistic behavior in the context of P2P platforms.

because the results can vary significantly between different types of platforms (ibid.). In a study carried out by Voytenko *et al.* (2016) on sharing economy in the accommodation sector, the authors showed different outcomes for different sharing platform: for-profit platforms, the use the ethos of sustainability to attract more users (both hosts and guests), but nevertheless prioritize economic prosperity over environmental or social dimensions. Non-profit platforms, instead, seem to have environmental and social benefits as priorities. At the same time, the environmental aspect can gain a different relevance for different actors, as we can see observing Martin's study (2016) on sharing economy framing subsequently discuss.

1.3. Lack of attention of the sharing-oriented platform economy

Another limitation of the current work is that it has only focused on the impact of the unicorn models (Fuster Morell, 2016a). In concrete, it has focused on the impact of car sharing (Fraiberger & Sundararajan, 2017; Hall & Krueger, 2015), on rental industries and tourism accommodation (Fang *et al.*, 2016), and on online labor (Agrawal *et al.*, 2013; Horton & Golden, 2015), as well as on the contrasting impact of the unicorn model and the current incumbents (Zervas *et al.*, 2017). Furthermore, this work is sometimes presented by stakeholders involved in the controversies (Fuster Morell, 2016a, 2016d). For example, Uber and Airbnb have released dozens of reports, but their reliability cannot be independently validated because the methodologies are not transparently illustrated, and the data is not made accessible

to researchers (De Groen & Maselli, 2016; Kässi & Lehdonvirta, 2016). In contrast, there is a lack of analysis of commons-oriented modalities of sharing-oriented platform economy (Fuster Morell, 2016a, 2016b).

2. Attempts to build a research framework to assess the environmental impact of platform economy

Independently, by optimistic or pessimistic interpretations of sharing economy, in the last three years, several authors from different backgrounds have tried to develop some purposes to study and evaluate the sustainability and the ecological footprint of platform economy. We must discern between the more general and political purposes advanced to create the conditions for an ecological collaborative consumption and other purposes addressed, instead, to develop new methods of investigation, or to evaluate the sustainability narrative in platform economy recurring to the concept of the social movement's studies.

There is a broader consensus among scholars in recognizing the role of a legal framework (Demailly & Novel, 2014; Schoenbaum, 2016; Voytenko *et al.*, 2016; Xuemei & Qiang, 2016), and of social movements (Schor, 2014) linked with the sharing-oriented platform economy to address this model to an ecological approach. So, institutional actors and social movements are identified as subjects capable to address the platform economy to a fairer model from a social, economic and environmental perspective.

2.1. An absence of a legal environmental framework

One of the most discussed aspects of the platform economy debate concerns with the absence of a legal framework, with the consequences that these models can elude environmental regulations, only to speak of the ecological issue.[2] As the first step, Demailly & Novel (2014) propose that public authorities should conduct an in-depth analysis of the sharing models as a way to recognize them in a political weight. It is necessary to identify virtuous models and implement supporting measures. Then, they must build an economic and regulatory framework that is conducive to the most sustainable models. Taxation should take environmental externalities into account in the best way possible (ibid.).

Also, other scholars agree on the need to regulate the platform economy (Smorto, 2016; Voytenko *et al.*, 2016) that, as many denounce, operates in a legal vacuum (Kuttner, 2013; Griswold, 2014; Singer, 2014). In parallel with the institutional and legal activity, many authors give a central role to the social movements. Nevertheless, Schor (2014) is more critic particularly with the sharing-oriented platform economy, because capitalistic logic has transformed it in an activity only for profit, while the large corporations have co-opted the alternative platforms. Schor recognizes the possibility for the movements or organizations

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2. The urgency of a legal framework is more important also to regulate the different sector, to protect the workers and the consumers, to impose a taxation and to re-define an antidiscrimination law that take into account the gender and race discrimination in shraing economy model (Smorto, 2016).

that operate in solidarity to organize and join the user to struggle against these tendencies.

Sharing practices and cooperation are into the DNA of social movements that through their actions can create a platform for their members and challenge business model (ibid.) by building a social, democratic and ecological model. This perspective has shared also by Binninger *et al.* (2015) that, among the various purposes, promote the idea of a critical mass as a fundamental condition to ensure the sustainability of the model. In a more specific way, Demailly & Novel (2014) state that social move-ments can support and address the platform economy through four main action areas: (1) increasing visibility with commu-nication campaigns or labelling; (2) working as a funding and incubators for innovative projects; (3) adapting of regulation to suit new models; (4) encouraging public authorities to support and implement best practices. The continuous social movements pressure can contribute to develop the sharing-oriented platform economy in an ecological-oriented way.

In addition to these purposes, principally focused on the attempt to create a social and political context adequate for a sustainable platform economy, other important authors, have thought some models to estimate the ecological footprint of the platform economy in a more quantitative way or to evaluate environmental awareness through a qualitative method.

2.2. How to measure the sustainability of the platform economy?

On the one hand, some scholars promote the idea to estimate the actions of platform economy business models (Daunorienè

et al., 2015; Demailly & Novel, 2014). Nevertheless, this is not so simple. On the other hand, other authors prefer studying the environmental narrative that suggests these models and the way in which they frame the platform economy (Martin, 2016; Voytenko *et al.*, 2016).

Evaluating the initiatives put in place by sharing companies seems a good way to verify their sustainability. In their paper Daunorienè *et al.* (2015) recurred to the definition of sustainability evaluation as "a process by which the implications of an initiative are evaluated, where the initiative can be proposed or an existing policy, plan, program, project, piece of legislation, or a current practices or activity" offered by Pope, Annandali & Morrison-Saunders (2004). Subsequently, they propose to evaluate the initiative considering five environmental perspectives (materials, emission and waste, built-form and transport, energy, water and air) and through a point scale of sustainability[3] to identify poor practices, mid-point/basic equilibrium and the highest level of sustainability of the sharing model.

Also, Demailly & Novel (2014) share the necessity to take into account the terms of measures not only referring to the waste generated by the sharing model but also to the energy dimension (the energy and resources to produce goods and the energy to transport them). Alternatively, Demailly & Novel (2014) propose to estimate the initiatives by checking if they have passed a complete Life Cycle Assessment (LCA). In addition, they argue that it is necessary not only support the sharing models that demon-

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3. In the scale of sustainability purposed there are nine points: (1) critical sustainability, (2) bad sustainability, (3) highly unsatisfactory —poor practices—, (4) satisfactory -, (5) satisfactory, (6) satisfactory +, (7) highly satisfactory, (8) good —mid-point/basic equilibrium—, (9) vibrant —highest level of sustainability— (Daunorienè *et al.*, 2015).

strate to have a green approach by passing the LCA but also to positively support the practices with a proactive environmental approach (such as eco-design, maintenance, recycling, etc.). This means that both, concluded actions and work in progress activity, can be useful to estimate the sharing models' approach to the environmental problems.

2.3. Framing analysis

In parallel, other authors have proposed to estimate the sustainability of sharing models observing their discourse, by using a more sociological approach. By regaining the concept of framing, developed by Snow and Benford (1988) into social movement research, and by adopting a Foucauldian perspective conceptualizing discourse "as an ensemble of ideas, concepts and categories —expressed in language— through which meaning is given to social and physical phenomena, (and) which is produced and reproduced through an identifiable set of practices" (Hajer & Versteeg, 2005).

Martin (2016) tries to apply this sociological approach to the study of sharing economy discourses. Nonetheless, Martin does not focus exclusively on the environmental discourse, his purpose can be very useful to understand the different actors framing in sharing-oriented platform economy and so, also to understand the relevance that they give to ecological aspects and the way in which they interpret sustainability in their practices. He argues that the discourse on the platform economy is framed in contradictory ways; ranging from a potential pathway to sustainability, to a nightmarish form of neoliberalism. But, when an actor framed in the platform economy, they outline at the same

time how and why they would like to see it develop (Franceschini & Pansera, 2015).

Table 4. Framing analysis scheme

	Diagnostic	Prognostic	Motivational
Economic Opportunity	• *Promoting economic growth*	• Commercial Opportunity • Micro-entrepreneurs • Monetising underutilised capacity	• Economic empowerment • Inevitable technological change • Changing patterns of behaviour
		• Peer-to-peer platforms • Disruptive innovation	• Efficiency
Sustainable Consumption	• Unsustainable consumer behaviour	• Access-based consumption • Trust	• Sharing is fundamental human behaviour • The triple bottom line
			• Individual empowerment
Decentralised, Equitable and Sustainable Economy	• Centralised capitalist economies • Climate change • Inequality	• Decentralising the economy • Digital innovation • *Social innovation*	• Pathway to a new economy • Social and environmental justice • Liberty and democracy

Source: Martin, 2016.

Martin proposes to use the three sub-frames identified by Geels (2014), which are used to re-elaborate the Snow & Benford theoretical contribution (1988): (1) diagnostic sub-frame;[4] (2) prognostic sub-frame[5] and (3) motivational sub-

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4. The diagnostic sub-frame identifies and defines problems faced by the niche or regime (Geels, 2014).
5. The prognostic sub-frame offers and advances solutions to these problems in the form of niche innovation or regime reconfiguration (ibid.).

frame.[6] These three frames are useful to understand the point of view of the different actors. Subsequently, he argues that it is necessary to discern between the frames of the actors that want to empower the sharing-oriented platform economy and the frames that connote actors who are trying to resist to the development of these economic models. The ones who support collaborative consumption model frame understand the sharing-oriented platform economy in three main ways: (1) as an economic opportunity; (2) as a more sustainable consumption form; and, (3) as a pathway to a decentralized, equitable and sustainable economy (Martin, 2016). On the other hand, the resisting agents to the platform economy frame see it as (4) creating unregulated marketplaces, (5) reinforcing the neoliberal paradigm, and (6) an incoherent field of innovation (ibid.).

Through the analysis of the discourses, it is possible to understand also how different actors read the relationship between platform economy and sustainability. This approach has been applied by Voytenko *et al.* (2016) in their study on sharing in the accommodation sector. The authors analyzed how sustainability is framed and understood by the operators and users of P2P accommodation sharing platforms. The results emerged by the empirically study show that current framings of environmental —but also economic and social— implications of the sharing-oriented platform economy (in general) and accommodation sharing (in particular) vary between those who formulate them, and between platform types (rental, reciprocal and free).

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6. The motivational sub-frame establishes the rationale for taking action to address the problem (ibid.).

Therefore, any generalizations of sustainability framings to the broad platform economy or to its sectors may be misleading.

3. Conclusions

Even with an initially optimistic interpretation of sharing-oriented platform economy, the arguments here discussed have shown a series of elements that conduct scholars to put in question the positive impacts of the corporate-oriented platform economy model. On the one hand, sharing is a way to reduce consumption and costs; on the other one, it is a way to saving money that is spent in other goods or services, becoming a driver of hyperconsumption. Substantially, the platform economy has provided access to consumption to a wide sphere of people before excluded, increasing in general the levels of consumption.

At the same time, behind the sharing label, there are companies oriented to make a profit exploiting the environmental sensibility of many consumers. Regarding the necessity to measure the impact of platform companies, some scholars have proposed to quantify the waste generated or the energy saved to estimate the ecological footprint of a business. Others, instead, argue that it is necessary to evaluate the environmental sustainability of sharing-oriented companies through the analysis of discourse/framing studies. If again, there is not a shared method to investigate about the ecological impact of different companies, what result strongly shared is necessary to develop a legal framework to regulate the sharing-oriented platform economy and to address it towards the implementation of an ecological approach.

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Part III

Barcelona focus: The stage of sharing ecosystem and platform economy in Barcelona

Chapter VII
The Barcelona City Council with the local platform economy

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1. Introduction

This chapter intends to bring together the work and actions that are being carried out, within the framework of the sharing economies, in different areas of the Barcelona City Council. As we have seen in the previous sections, the sharing-oriented platform economy in the city of Barcelona is a phenomenon of interest and great repercussion, which is why the Barcelona City Council has had to politically position itself, get involved and act.

So many reasons (threats and potentialities, growing phenomenon, new practices, arise of a sharing culture, common benefit, debate...) had led the Commissioner of Social Economy, Social Development and Consumption to engage a political commitment for sharing a global understanding of the phenomenon —within the City Council body— and developing regulatory frameworks, sectoral policies or other local initiatives. As well as to articulate a joint, coherent and strategic voice to influence or challenge other public administrations (Generalitat —regional government—, Spanish Government, European Commission, European Parliament...), and that can be used to anticipate the challenges and opportunities that can be generated by sharing-oriented platform economies.

Therefore, public policy in relation to platform economies has important challenges, especially regarding those platforms that under this label, but without significant sharing-oriented practices, have grown exponentially. However, public policy has also significant opportunities if it is able to connect and facilitate the sharing ecosystem in terms of reappropriation of the economy, the innovation, the competitiveness and the sustainability, making institutions more democratic and efficient.

1.1. Challenges

- Negative impacts on certain economic and professional sectors as well as neighbours in some neighbourhoods.
- Unfair competition.
- Submerged economy.
- Non-taxation, tax evasion.
- *De facto* deregulation of certain activities.
- Indirect labour costs.
- Promotion of rented models.
- Multinational platforms with monopoly power, etc.
- The pressure of the housing market upwards.
- Feed an untenable tourism model.

1.2. Opportunities

To a large extent, the platform economy in its most transformative dimension has a good match with the society and economy model that the City Council wants to promote: more just, democratic and sustainable.

- Technological, business and social innovation.
- Efficiency in idle pre-existing resources (facilitate sharing and exchanging).
- Generation of knowledge open to all.
- Social empowerment of citizens not only as consumers but as producers or members of a users community.
- Barcelona could become a reference city.

2. About the concept

From Barcelona City Council —and in particular from the Commissioner of Social Economy, Local Development and Consumption— and from the organism Barcelona Activa, we understand that we must be able to understand the sharing economy diversity and know how to work with its complexity; having the determination to intervene when the impact on the city requires it, and don't name *sharing-oriented platform* what practically does not have any real collaborative aspect; and, generating the policies and resources for those projects that are indeed making contributions to the common good.

In order to try to understand and explain the diversity existing in the field of platforms, a simple scheme has been developed. It allows to classify the existing realities through two axes: x-axis corresponds to the information exchange relationship (peer-to-peer —P2P—, consumer-to-consumer —C2C—, or business-to-consumer —B2C) and the Y-axis distinguishes the governance of the property (see the following figure).

Figure 2. Distinction of practical practices of platform economy
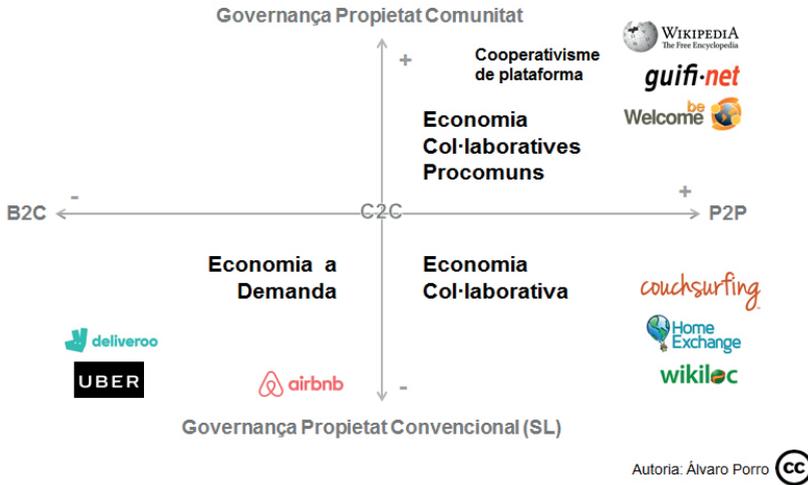
Source: Prepared by Álvaro Porro (2018).

It should be mentioned that the scheme represents a simplification aiming to reflect in a single figure the different platform economy practices. These are located in each of the quadrants of the scheme and allow to observe with existing examples the existing diversity. It does not take away, as we will see later, the importance of other relevant qualities, such as knowledge and technology policies, which can also contribute to observing the different platform economies in a more objective manner. Below there are few examples of relationships, exchanges or services that can match with the different profiles exposed in the previous figure.

Platform economy

•   Rent or exchange of goods and services mediated by a digital platform

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Access economy or on-demand economy

- Temporary rental or sale of services mediated by a platform.
- Professional client relationship (B2C).
- The provider and the claimant usually do not rule or own the platform. Instead, the platform defines the key elements of the economic relationship.

Sharing economy

- Temporary temporary rental, occasional services sale, exchange of goods and services without remuneration, exchange of knowledge or information, etc.
- Between equals (P2P) or between consumers (C2C) —the precise differentiation between *peers*, *consumers* and business has aspects that are not totally defined).
- Platforms, sometimes with profit-motivation, with premium models.

Platform cooperativism

It refers to the sector of the platform economy that follows clearer parameters and contributes to the common good. The term comes from Elinor Ostrom's conceptualization of the commons and the specific term of *digital commons* by Yochai Benkler.

- *Collaboration*. Production-consumption-exchange (generally open) of resources and services.
- *Governance*. Platforms where the community of participants or users plays a role in governance.
- *Peer to peer*. Between peers; relationships that tend to be more egalitarian (communities of self-governing contributors).

- *Commons*. A shared property of a common resource, which is accessible. This generally comes with the use of free licenses and technologies (copyleft, creative commons, open access...).

Figure 3. Examples of specific initiatives in Barcelona and Catalonia

Source: Prepared by the authors.

In Barcelona and Catalonia, there are international benchmarking projects matching with this commons approach. The NESTA Fundation[1] stated for the European Commission that "Three of the most innovative experiences in the sector at European level arose from Catalonia". These experiences are:

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1. NESTA its a "global innovation foundation", based in the UK but working on projects all over the world. See: https://www.nesta.org.uk/

- Guifi.net: It is a community wireless Internet access infrastructure, awarded by the European Broadband Broadband Award from the European Commission.
- Intelligent Citizen Kit: It facilitates tools for data sharing to the members of the Fab Labs Network - Open Production Factories.
- Goteo: It is a digital platform for crowdfunding and match-funding in project related to commons and open culture.

It is also remarkable the Catalan edition team of Wikipedia (the first language version of Wikipedia, in editing activity and results, after the English version), as well as other significant commons production communities (Free Software, etc.).

2.1. Political framework

The local policy in sharing-oriented platform economy is part of the Barcelona Social Economy and Social Economy Impetus Plan, which unfolds a socio-economic transformation of urban reality and an action program with the objective to contribute to the reduction of social and territorial inequalities and to promote an economy at the service of people and global justice (Figure 4).

Figure 4. Process for the elaboration of the ESS Impetus plan in Barcelona (Plan of Promotion of the social economy and Solidarity 2016-2019) and the conceptual map of the transforming economies
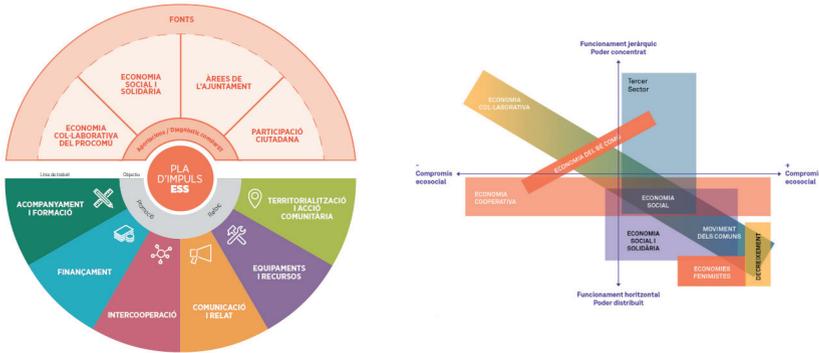
Source: Prepared by the authors.

2.2. What is being done

The City Government is working with the sectors where initiatives of the so-called platform economy are being identified. In addition, and knowing that they can be practices that can affect any area, the Commissioner of Social Economy and Local Development and Consumption has activated an interdepartmental group in order to work on building a common framework facing the sharing-oriented platform economies. Although it is not a decision-making space, it must serve to provide elements that help to make decisions in the various areas of the City Council, in the face of new economic models based on digital platforms.

Based on concrete challenges in platform economies that are already being detected in some City Government areas, it is intended to serve the rest of the departments to be able to anticipate the possible challenges or opportunities that they will

have with these new one's economic practices. It is an issue that is being interwoven from the City Government, from the realization of studies by specific sectors where initiatives of platform economy appear, since the actions that can be carried out, will be specific for each one of the areas. In addition, the information obtained from more generalist studies carried out in previous mandates is being used.

3. Actions by the different City Council areas

3.1. Social Economy, Local Development and Consumption

The Commissioner has promoted a political or interdepartmental working group that wants to be a workspace to build a common framework for platform economies. Although it does not want to be a decision-making space, it must serve to provide elements that help to make decisions in the various areas of the City Council, in the face of new economic models based on digital platforms. In order to continue advancing, and with the idea of contrasting, enriching and involving all agents, quarterly meetings are scheduled. Based on the experiences of some areas, it pretends to serve to the rest of the areas as a tool to anticipate the possible challenges or opportunities that they can have with these new economic practices. Information on this topic, as well as the overview of the evolution of the legal framework, are shared.

It is also based on the resolution of the European Parliament on the *European Agenda for the collaborative economy* that the

European Parliament approved on June 15, 2017, the report on the platform economy prepared by the Generalitat de Catalunya, was used to debate and discuss the sharing-oriented platform economies with the European Commission and the Generalitat, in order to look at the city and the model of Barcelona.

3.2. Tourism

Regarding tourism, the impact of the platform economy has had a special relevance in housing. The emergence of global marketing platforms has enabled the C2C or B2C holiday rental outcrop, which has undoubtedly been a challenge for tourism management. The sectoral regulation of the generality clearly defines the Tourism Use Housing regime (HUT) and the requirement to publish the tourism registry number of Catalonia at the time of commercialization. In the case of Barcelona, the urban planning licenses of HUT are suspended from 2014, when the moratorium was executed to draft a special regulatory plan.

Later, the Urban Planning Plan for Tourist Accommodations (PEUAT, in Catalan), approved in January 2017, ratifies the desire not to give more licenses, setting the limit in the current 9,606. At the same time, in August 2016, the shocking plan for the inspection of tourist use houses is launched, providing extraordinary resources to pursue the illegality of the existence of commercials and commercialization of Unlicensed offer.[2]

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2. PEUAT, Pla Especial Urbanístic d'Allotjaments Turístics. For more details, see (in Catalan): https://bcnroc.ajuntament.barcelona.cat/jspui/bitstream/11703/100131/1/170127allotjamentsturisticsil-170127093543.pdf.

Figure 5. Urban regulation in Barcelona, PEUAT
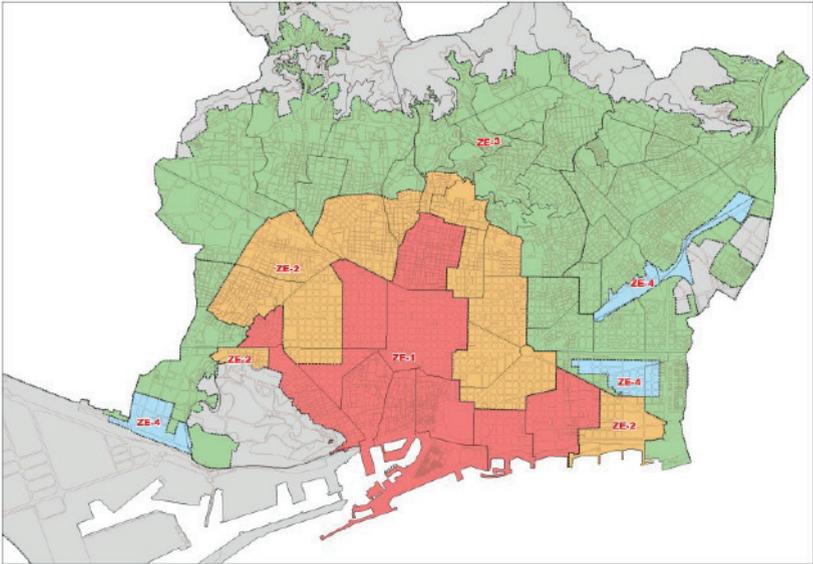
Source: Barcelona City Council (2017).

Also, we are working directly with the platforms to guarantee and value their commitment to compliance with current legislation. Specifically, meetings are being held with the main marketing platforms (HomeAway, Booking, Tripadvisor and Rentalia, with the complicity of Apartur). With all of them, it has come to the compromise of removing from the web the illegal offer detected by the computer service of the Inspection Directorate (EUM). It should be noted that Airbnb, despite periodic meetings, is the only large commercialization platform that resists the requirements of the city council, alleging that its offer does not correspond to the category of HUT. This platform has opened three sanctioning files to publish illegal offer, covered by the tourism law 13/2002, one of them of 600,000 euros.

Finally, there have been several meetings with Spanish and European cities to share the casuistry of vacation rentals and share legislative and inspection mechanisms as well as join efforts to jointly face the administrations of the Spanish and European scale.

3.3. Mobility

From the point of view of mobility and transport, we also find the different economic models that tend to be classified under the label of platform economies, although, as explained at the beginning of this report, they are In some cases platform economies, in others on demand and in very few cases, collaborative. In this regard, mobility has begun a study on the fleets of vehicles shared in the city of Barcelona, bicycles, motorcycles and cars, to determine the current conditions they have, problems, other experiences and determine what positioning and order have to take Barcelona in that regard.

The classification of the different services has been done based on the type of trip that is carried out in that mode, if it is to access the city, to move internally or a connection between two cities and also depending on the time it lasts This service or activity. The following figure shows the map according to this criterion.

Figure 6. Study of the shared vehicle in Barcelona (October 2017)
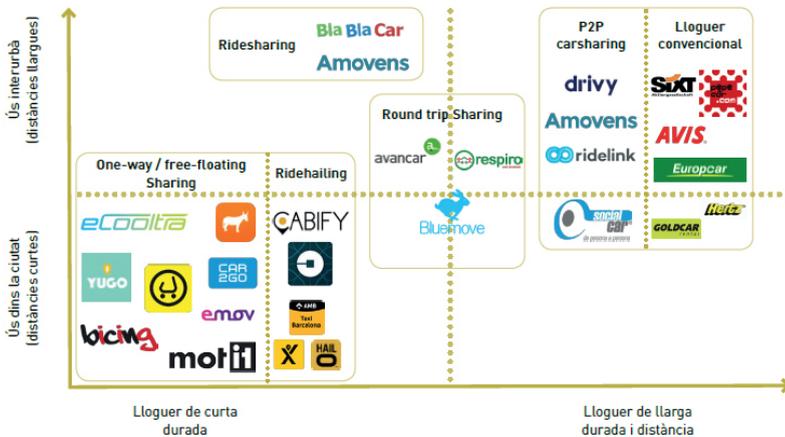
Source: Department of Urbanism, Barcelona City Council.

Most of these services are B2C, such as one-way free-floating sharing, round trip sharing, or conventional rental. In the case of the platforms, we have only Cabify, since Uber does not currently operate in Barcelona. As P2P systems in which the platform is a company, we have offers of Ridesharing and those of carsharing P2P. The study that is being carried out to order the sector will be limited to systems that share a vehicle without a driver, and that are not a conventional rental. This management proposal that will begin in Barcelona wants to have a metropolitan reach. On the other hand, and given the importance and the foreseeable impact of platform systems, there is a willingness to conduct a joint study with the Generalitat de Catalunya and the IMET (metropolitan taxi institute). This study would also include the expected impact of the future autonomous vehicle on mobility in Barcelona, given other international experiences that exist on the subject.

3.4. Labour

In the work sector, the City Council is collaborating with Barcelona Activa (a public body devoted to employment promotion) to start a study focus on platform economies and the work and employment dimension. The main objective of the report is to know the possible proposals of action for the local administration regarding the new reality of the emergent work in the new business models framed within the denomination of the platform economy. The work scheme is based on different stages:

- Theoretical framework.
- Identification of the main problems.
- Fieldwork.
- Analysis, conclusions and proposals for action by the local administration from a trade union point of view.
- Answers from other countries.
- Debate and dissemination.

Highlighted field work as a fundamental stage in order to collect rigorous data and to provide relevant conclusions for the objectives of the study. It also highlights the conclusions and proposals for action developed by a working group set up by experts in labour law. Finally, the report will be published in a didactic format so it can serve as a guide for recommendations, advice, good practices and information for all the workers and citizenship in general.

Bearing in mind recent news such as, for example, strikes by Deliveroo workers to demand fair hour payments, an effort is being made to obtain results as quickly as possible. Recently and helped by the driver's participation in La Comunificadora

program, the City Council has met with drivers and Deliveroo managing, with Barcelona Activa mediation.

3.5. Consumption

Barcelona City Council' consumer area is being supported through the general call for subsidies different projects and initiatives that give visibility and disseminate the values of responsible and sharing-oriented consumption. Also, it is necessary to comment that the update of the complaints collection system of the Municipal Consumer Information Office (OMIC) is improving its limitations to include the existing reality of the city and to guarantee the rights of consumers in front of new consumer relationships in an area other than professional or business activity, and regarding the services and purchases that are made through web pages and applications. At the same time, protecting freelances and microenterprises in their consumption relationships with companies when providing basic services in a regular way. One of the main objectives of the new consumption area is to advise and inform consumer rights on platform economy transactions, as well as to become a reference equipment for sharing-oriented consumption.

It is noteworthy that a practical guide has been published, which includes current legislation and taxation in the field of platform economy, as well as providing tools to protect consumer rights, inform legal liability, tax obligations in relationships P2P, recommendations, best practices, market access requirements, self-employed workers and others, from others. In addition to the responsible consumer guide in the use of digital platforms for a sharing-oriented economy, it will be complemented

by specific training in the techniques of the OMIC so that they can provide advice to citizens in this area.

4. Promotion of the sharing-oriented platform economy

Besides the specific studies mentioned above, it should be emphasized that, from the Commissioner of Social Economy and Local Development and Consumption's point of view, platform economy support actions are being carried out with a common approach to multinational platforms.

4.1. Commons focus

The commons model is characterized by the search of the general interest, that is reflected in four distinguishing elements:

1) More democratic business and company models (involving platform governance and benefit distribution to the producers-users community; respecting the social coverage of labour rights). In this sense, it would be the production, reproduction, preservation or improvement of the management of a material or immaterial commons, a good or a capacity that benefits the whole of a community.

2) Use of free and/or open technologies on digital platforms, hardware, designs and processes.

3) A policy of free and/or open content licenses and open data policy, commons/shared and under ethical parameters. This

and the previous element guarantee the transparency of the process, as well as its reproducibility, and technological governance.

4) Awareness and action regarding negative externalities, such as social exclusion, labour exploitation or environmental impact; improving the sustainability of the activity by reducing the negative effects.

4.2. A technical workgroup, BarCola

In January 2016, the Barcelona City Council participated in the creation of BarCola (Barcelona Collaboration), a joint initiative between the municipal administration and the sharing-oriented platform ecosystem of the city. Barcelona has a boiling ecosystem, very powerful in some cases, internationally awarded. Therefore, public policy in relation to platform economies has important challenges, especially in relation to the platforms that under this label, but without significant sharing practices, have grown exponentially. However, it also has important opportunities if it is able to connect and facilitate the platform ecosystem in terms of reappropriation of the economy, innovation, competitiveness and sustainability, making institutions more democratic and efficient.

The purpose of the BarCola group is to study and promote common models of platform economy and to make recommendations for the development of public policies. Institutions related to academic research (Dimmons, UOC; UAB; UPC; UB; ESADE) are members of this workgroup, as well as social collectives, companies or entities of the platform economy and the commons (Guifi.net, Free Knowledge Institute, Platoniq, Fundación Goteo, eReuse, X-Net, Colegio de Ingenieros, OuiShare, Holon,

FabLab Barcelona, CitiLab, Lazzum or Tarpuna, among others), as well as public bodies (Barcelona City Council, ICUB —The Culture Institute—, Ateneus de Fabricació —fabrication athenaeums—, IMI —Municipal Computer Institute).

4.3. Barcelona Activa

Also in January 2016, the Barcelona Department of Socioeconomic Innovation (initially Other Economies Department) was created to promote the social economy and solidarity in a broad sense, including everything that has also been called *other economies*.

4.4. Impuls program La Comunificadora

In order to support entrepreneurship and stimulate the emergence of platform economy projects, the program of La Comunificadora, a pioneer worldwide, is being developed and promoted from the Barcelona Activa's Department of Socioeconomic Innovation. Each of the two editions (shortly to begin the third edition) of this program have served to support and accompany fifteen projects of platform economy, and situate them within the framework of the economy of the commons, under social and equitable parameters.

All the projects have a collaborative dimension and the driving people, together with tutors, trainers, mentors and other participants, have explored feasibility using sustainability models with the commons criteria, looking for ways to generate income and defining models of self-production organization based on

fair relationships between the different agents involved. The projects respond to one or more of the following axes: free and open design, circular economics, online platforms, free culture and free software development.

The expansion of the Internet in recent decades has been accompanied by a revitalization of the commons and the emergence of forms of sharing-oriented production between peers with free licenses and communities open to participation. More recently, with the advent of the economic crisis of 2007, there has emerged an economy that calls itself *collaborative*, which takes advantage of the Internet scalability collaboration, but only to maximize the income from investors and without distributing value or governance. La Comunificadora is given in a global context in which this type of platform economy is being answered in different environments and from different perspectives so that it demands its reorientation towards the commons.

On the local scale, La Comunificadora must also be understood within the framework of an ecosystem of confluences around the circular, cooperative, feminist, peer-to-peer and commons economies. You sign up for these processes, it is a consequence and it affects you. Catalonia and, most notably, the metropolitan area of Barcelona, has been rich in recent decades in initiatives of free technologies, sharing-oriented production, open design and pro-commons.

Several reports from the last two years have made recommendations for training and accompaniment actions to be made to help them to achieve their viability and re-orient the platform economy towards the common good so that the negative impact on society. The 2016 Pro-Common Declaration, as a result of many contributions, formulated these recommendations as a proposal for a participatory process where it would accumu-

late support to incorporate into the Municipal Action Program (PAM), assumed by the City Government. The Comunificadora, as a Barcelona Activa's Impetus program, is an experience that helps to promote a change in the direction of the platform economy by returning it to the production of goods and services of the commons, the distribution of generated value and open governance.

In addition to this program, there have been training or capsules of less duration on the subject. It is worth mentioning the Cooperativa de Plataforma workshops, as an opportunity to build alternatives to extractive platforms or to transform existing cooperatives into platformed activities. With these workshops executed from Barcelona Activa, it will be accompanied by sharing-oriented projects that want to (re)lead their models towards platform cooperativism.

The main topics will be discussed on how to build an open business model, with knowledge sharing, peer production models, income models, participatory or network governance. Cases will be treated and participatory activities will be carried out. The training sessions will be 16 hours in six different sessions and complemented by a personalized accompaniment session.

4.5. Conferences (platform economies, international encounters, Sharing Cities Summit)

In March 2016, Barcelona Activa's Department of Socioeconomic Innovation, together with the Commissioner for Social Economy and Solidarity, and the research group Dimmons (IN3-UOC), and with the collaboration of BarCola, organize the

first edition of Pro-Common 2016, with an international focus. More than 300 people met to co-create together a declaration of recommendations for public policies, for promoting the commons side of platform economies, obtaining a significant impact.

The statement was provided by Dimmons with a process that had the contribution of about 20 participants of BarCola and subsequently was enriched by the proposals made during the days collected in notes using the Teixidora.net platform. The result was a document with 120 proposals. These proposals were incorporated into the Decidim.Barcelona platform, in the participatory process of the Municipal Action Plan. They were also sent to the European Commission that had an open process of contributions for the regulation of the platform economy, and to the Generalitat of Catalonia, which was also initiating the process of the aforementioned report.

After the success of the first days, in June 2017 took place the second edition of the Commons Collaborative Economy Forum. It was co-organized again through a participatory and collective approach, focused on addressing more specific and local challenges of the platform economies in Barcelona and Catalonia. The meeting sought to design and offer public-common solutions in specific areas that affect citizens (such as housing, the economy of care, social exclusion and innovative promotion policies). In addition, and among other people, it stands out the help and participation of Yochai Benkler, a worldwide expert on the common good and platform economy.

Finally, the City Council has also taken part in international meetings to make visible the case of Barcelona, as in Amsterdam and New York Sharing Cities Summits, in order to coordinate with other European and world cities. It should be noted that the third edition of this international event is taking place in the

city of Barcelona during the week of the Smart City Expo World Congress 2018. It hosts more than 30 cities across continents, including New York, Paris, Amsterdam, Seoul, Montreal, Buenos Aires, Ghent, Gothenburg, Grenoble, The Hague, Kobe, Madrid, Malmö, Maribor, Melbourne, Milan, Montreuil, Toronto, Umeå and Vienna. During the three days of Smart City Expo World Congress 2018, the platform economy has a topic in the Smart City Congress and a specific stand in the Smart City Expo exhibitors area, where more than 70 local and international projects participate (through presentations, networking, exhibitions, and other activities).

4.6. Projects (Digital divide project and Circular Economy)

Aiming to reduce the digital divide, social exclusion in the city, and ensuring free access and equal conditions to the network, an agreement with the Guifi.net Foundation is being carried out. Thus, five tests Pilot in different neighbourhoods of the city (Bordeta, Sant Martí, Nou Barris and Torre Baró) are developed, under the common approach to the construction of technological networks. The project is designed to digitally train the citizens of this neighbourhood, as well as improve the infrastructure, and is joined by different areas of Barcelona City Council.

Another project that the City Council supports is the eReuse circuit, along with the Polytechnic University of Catalonia (UPC). The project aimed to create value with the circularity of digital devices and reuse them by ensuring a correct recycling at the end of its useful life. The circuit includes donors. It should be mentioned that a pilot test has already been carried out

between Pangea and Barcelona Activa, where several entities of the social and solidarity economy (Solidança, Alencop, Abacus and Donalo) participated and around 400 computer equipment were given.

5. Promotion of the social and solidarity economy

Although it is not a matter of actions proper to the promotion and promotion of the commons platform economy, it is worth mentioning other more general resources that the Commissioner of Social Economy offers to citizens in general, and therefore, also to the initiatives and projects with a more common approach.

5.1. Permanent training

The various training or mentoring activities and initiatives that are offered throughout the year are designed not just for everyone keen to start up a social business project in the Social and Solidarity Economy and need support to get it off the ground, but also for already existing organisations or businesses that wish to strengthen or consolidate their position, or face up to strategic changes (management, strategic planning, communication, financial feasibility, etc.). Several formats are available, from made-to-measure programmes offering training and more intensive, specialist mentoring, to one-off workshops highly focused on specific issues. In addition to the own training offer for pro-

jects related to social economy and solidarity, there are a broad training offer and more generalist and technological activities, aimed at companies and entrepreneurship: a training program and business activities; a training program and entrepreneurship activities; quarterly activities of the Cibernàrium program.

5.2. Advice

The Commissioner's Office for Social Economy, Local Development and Consumption is boosting and strengthening social and economic initiatives in the city's social and solidarity economy (cooperatives, third sector, associations, commons-based platform economies, etc.) That's why we are working together with Barcelona Activa to offer several mentoring and advice programs run by experts in the various sectors, both to help get the social and economic projects off the ground as well as consolidate and strengthen the organizations. At the same time, the City Council has launched a permanent specialized and customised advisory service to support every person and organisation that needs it.

- *Advisory service for Social and Solidarity Economy projects.* Designed for people and organisation that have got an idea or are getting a social and solidarity economy project off the ground through this service, you will get advice on, among other things, generating ideas, legislation and taxation, marketing, drawing up a business plan, funding, leadership, plus organising and managing teams.
- *Advisory service for Social and Solidarity Economy organisations and businesses.* Addressed to organisations or business that belong to

the social and solidarity economy, this service offers advice on, among other things, strategic planning, business models, feasibility and sustainability, marketing strategies, communication and ICT tools, organisational and participatory models, financial planning, economic management and corporate models.

Finally, during 2017 starts a pilot test of an itinerant service of attention for people who want to start up projects or formalize an activity. This pilot provides tools and resources, contacts with other experiences, an accompaniment in the elaboration of a roadmap, among other advice, and is directed mainly to people and communities in the neighbourhoods with the most inequalities in the city.

5.3. Financing - Credits and funding programs

With the aim of promoting social enterprise and strengthening the business side to social and solidarity economy projects, Barcelona City Council is collaborating with two cooperative banks, Fiare Banca Etica and Coop57, to improve their access to credit and funding and thereby contribute to their financial consolidation and stability. The City Council has also created a new municipal credit fund. Thus, economically feasible projects with a clear social slant can opt for favourable conditions while applying for new lines of credit and funding.

5.4. Financing - Subsidies and grants

Barcelona City Council is offering different subsidies to projects or activities that promote or strengthen the transfor-

mational nature of the social and solidarity economy, including democratic and participatory management, being geared towards human needs and a commitment to the community. The subsidy may not exceed 80% of the project's total expenditure. Third sector organisations and companies, cooperatives, mutual societies, worker-owned companies, commons community or sharing-oriented platform economy initiatives, as well as university and educational bodies, may opt for these subsidies. Calls for applications for these subsidies are made annually. In addition to these calls, it is worth highlighting the call for the socioeconomic impulse of the territory, and specifically the modality of social and digital innovation, to boost projects that increase the use of open technology and digital manufacturing to foster new forms of innovation and collaboration that solve social challenges and sustainability in the territories in which they are carried out.

5.5. Match-funding

Lastly, it was noteworthy that at the end of 2017 the collective funding call of the Barcelona City Council was published jointly with the Goteo Foundation, where 67 proposals were presented. This is a call for the promotion and financing of projects of local development, of individual or collective entrepreneurship or under the umbrella of associations and entities with a community presence in Barcelona, using a collaborative tool for financing such as crowd-funding and with a € 96,000 fund that should allow public funding of a total of 24 projects with a maximum of 4,000 euros for each. The success of the call is due to the fact that this new form of financing manages to highlight projects that have either the support of a community or raise the interest and mobilization of society.

The projects selected had the support of Goteo platform to maximize the capacity for participation and collection of their collective funding campaigns (crowdfunding). Since all those projects based on citizen contributions exceeded the minimum amount required, the contribution is complemented at the rate of one euro for each euro achieved. Of the 23 projects that finally came out in the campaign, 22 successfully completed and achieved the goals set. The announcement was able to distribute more than € 233,000, apart from the mentioned contribution of the City Council of Barcelona, more than 3,000 contributions were made by the citizens, which demonstrates the good acceptance that they had and the success of the match-funding.

5.6. Equipment for social and economic innovation

There is a new municipal space in the Barcelona Activa's network of facilities addressed to social and economic innovation. It is aimed to become the benchmark centre for social and economic innovation, focus on exploring new ideas, organisations, services, products and models that meet needs by creating new relations, collaborations and social and economic changes. This equipment has a clear vocation for disseminating and co-producing social and economic innovation at the service of the city and the citizens. The four main work areas are envisaged to achieve the following topics:

- *Specialisation*. Space for providing Barcelona Activa services specialised in social and economic innovation projects.
- *Experimentation*. Space for experimenting with and developing new forms of social and economic innovation.

- *Speaker and node connection.* A space for publicising and disseminating what is being done in the field of social and economic innovation in the city.
- *Research-action.* Space for systematising knowledge from research-action practices, for observing the social and economic innovation in the city, and for train future trainers on the field.

This equipment also includes others services, programmes and activities, such as:

- *Reception and guidance point.* Permanent, open, universal service located at the entrance of the building. The reception point is not the building's reception but the space for asking questions, requesting help, contacting, making referrals, guiding, prescribing, advising and registering for activities.
- *Incubation community.* The equipment will make room for experimental social and economic innovation projects and initiatives.
- *Informative activities and calendar.* Quarterly programme of activities.
- *Knowledge bank.* A specialised document repository is being created (with a physical library and virtual platform). It will contain and disseminate materials, studies and research on the topic.
- *Observatory tool.* As a result of the need to explore and reconcile existing data and studies, as well as to create data covering the whole of this area, a proposal has been made for running an observatory tool that would cover second-level organisations, generate transparency among organisations in this area and outside it, and evaluate its social and economic impact to make this known.

5.7. Equipment - Coòpolis

Coòpolis is part of the Ateneus Cooperatius de Catalunya, a cooperative centre network, and is mainly geared towards creating new cooperatives as well as jobs in existing ones. The equipment, named Ateneu Cooperatiu de Barcelona, is located in the La Bordeta neighbourhood. It promotes an ecosystem of social, economic, training, job-creating and social-impact activities.

Chapter VIII

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

Ricard Espelt & Mayo Fuster Morell, Dimmons UOC

## 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
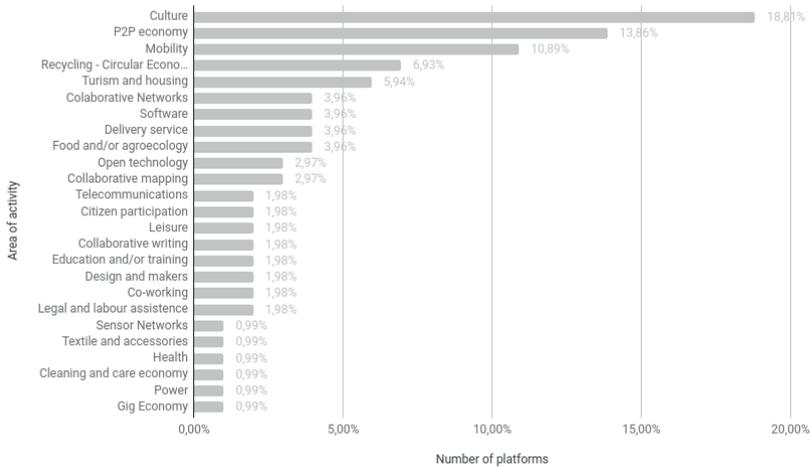
Most of the projects base their activity on digital interactions (74.3%), compared to the minority in which the digital platform is a further support (25.7%). While the interaction between peers (44.6%) or between consumers (22.8%) are the most relevant (Figure 8). Focusing on the community, 42% indicate 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
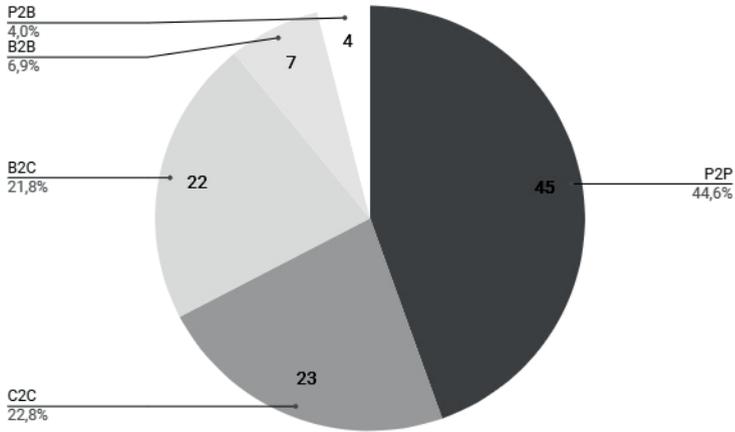
Source: Prepared by the authors.

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
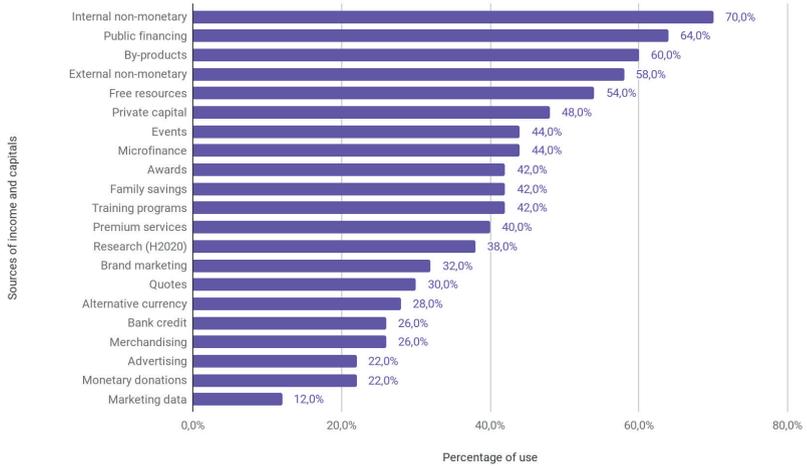
Source: Prepared by the authors.

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
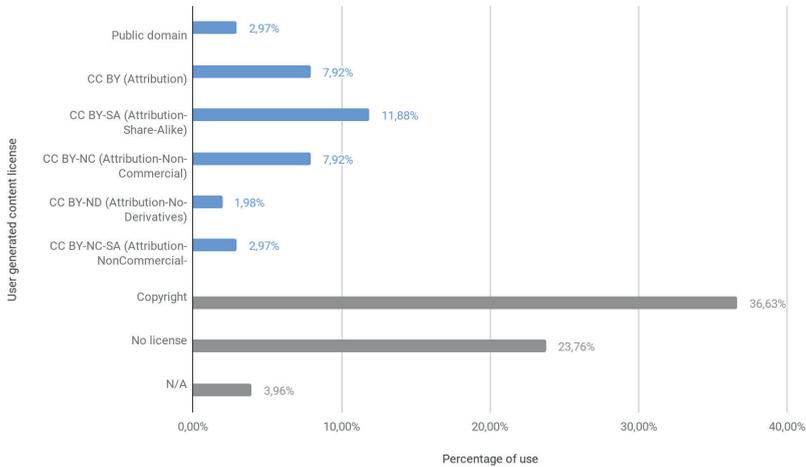
Source: Prepared by the authors.

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
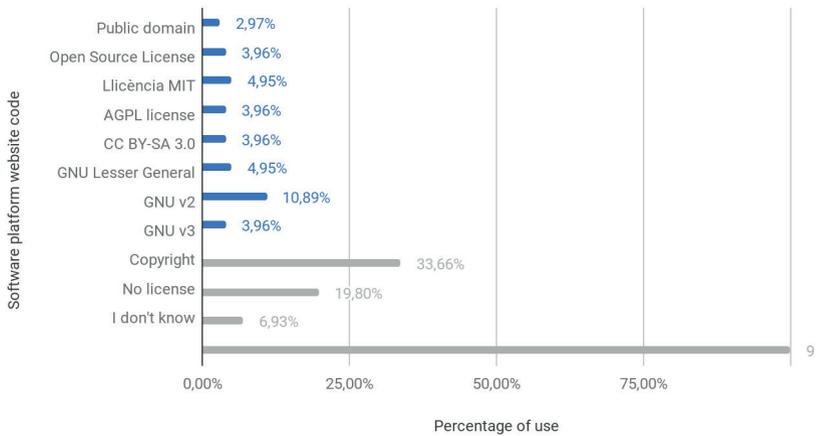
Source: Prepared by the authors.

# 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
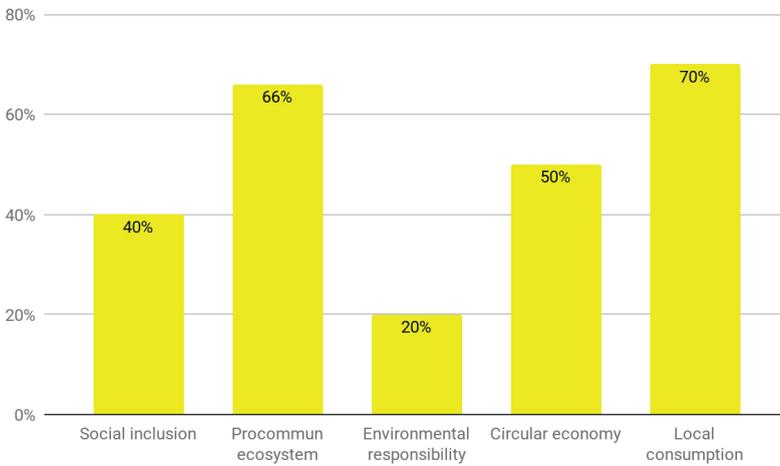
Source: Prepared by the authors.

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.

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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)
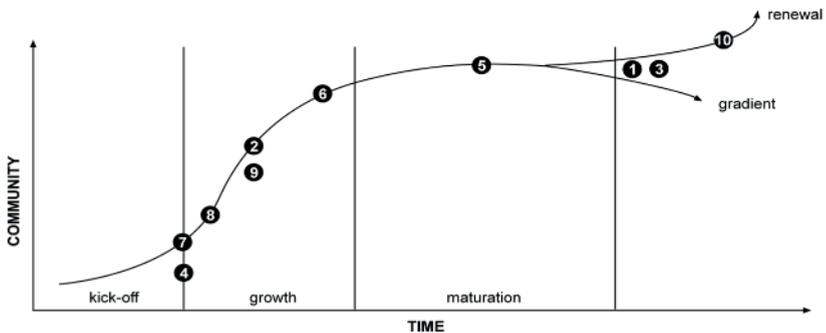
Source: Prepared by the authors.

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	Green	Orange	Orange	Orange	Green	Red	Green	Green	Orange	Green
	Open participation	Green	Orange	Green	Green	Green	Green	Green	Green	Green	Green
ECON	Goal	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	Transparency	Orange	Orange	Green	Green	Green	Red	Orange	Orange	Orange	Green
TECH	FLOSS	Orange	Red	Green	Green	Orange	Green	Green	Green	Green	Green
	Decentralized	Red	Red	Red	Green	Red	Red	Orange	Orange	Red	Red

KNOWL	Copyleft										
	Open data										
SOC	Inclusion										
	Green										

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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Chapter IX
Barcelona sharing ecosystem: A timeline

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Text adapted from the report *La Comunificadora, Transitant cap al Procomú*, by David Gómez Fontanillis.

Barcelona stands out for its collaborative ecosystem, in particular for the rooting and extension of it Commons-oriented model, where hundreds of initiatives with this model have been mapped out in the city. This chapter wants to provide a historical view of the phenomenon.

Collaboration and sharing are embedded in the culture that developed the Internet. In Castells' words: "The Internet was founded in 1969, and it was designed, decided and produced on the basis of four cultures, 1) the university meritocracy, 2) the hackers passion to create, 3) the alternative counter-culture of the 60s and 70s and the invention of new social forms and dreams of political freedom, and; 4) the culture of business".[1] In Barcelona, the hacker culture and social movements have historically been very present, which explains the current effervescence, creativity and extension of the platform economy with a favourable orientation in the city.

To draw a historical trajectory of the collaborative production ecosystem in the city of Barcelona, with particular emphasis on the collaborative impulse taken with the new opportunities offered by digital culture, it is necessary to pay attention

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1. Castells, M. 2001, *The era of information, Vol. I.* XXI Century Publishers.

to the confluence of different phenomena. On the one hand, the movement of free culture and digital Commons, where Barcelona has been a node of digital innovation since the beginning of the Internet. On the other hand, the development of the social and solidarity economy of the city, which accounts for 8% of its GDP.

This text presents experiences, case studies, projects, events and other informal groups that are part of the recent memory of Barcelona, which arose from a digital culture of the first Internet, on the one hand, and on the other one from a tradition of social and citizen participation much older and rooted in the city, from which cooperativism is part. This historical review does not seek to be exhaustive or complete, but it does try to provide a broad view of the route that has led to the current situation, helping to unravel cultural roots of the platform economy.

10. Local articulation of digital commons (1993-2016)

The Internet service provider Pangea was created in 1993 to promote the use of communications networks by social movements and organizations involved in social justice. In 1998, Softcatalà was created for the translation and collaborative "location" of software to the Catalan language. The first years of the 21st century saw the creation of the first hacklab, Kernelpanic, and the first *hackmeeting* in Spain (2000), the node of IndyMedia in Barcelona (2000), Catalan Wikipedia (Viquipèdia) as the first non-English Wikipedia (2001) and the creation of the collective of users of GNULinux CaLiu (2002).

At the same time, other digital activism initiatives were born such as the Riereta.net hackerspace or the Telenoika video-art and activist community, as well as the Raval.net association, which also linked activism and education to digital culture through El Teb. In 2003, the Infoespai Foundation was created as a space for debate and techno-political tools, and the *Useful guide for social transformation in Catalonia* and the Moviments.net server was published with a directory of digital tools and resources. In 2004, in the Osona region, the Guifinet network began to expand, reaching soon the metropolitan area, then extended to the rest of Catalonia and the whole of Spain, showing that a civic-governed and Common management model of telecommunications infrastructure was possible.

In 2008, two important entities were formed for the consolidation of these initiatives: the Guifinet Foundation and the Amical Wikimedia Association (base of the Catalan Wikipedia community). In 2009, the first edition of the Free Culture Forum took place,[2] an international meeting that brings together organizations and experts in the field of culture, digital rights and access to free knowledge to create a global strategic framework and an international coordination structure around free culture. In 2010 Som Energia, a renewable energy cooperative owned by consumers, was also created.

In 2011 the 15M movement brings together people in squares in different cities with a strong Commons approach, in response to the European and world-wide political response to the economic crisis, following the inspiration of the so-called Arab Spring. In the same year, the Platoniq collective created the Goteo

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2. More information: https://fcforum.net/en/

Foundation, an entity and open source digital platform that will allow the financing of open projects through civic crowdfunding. In the summer of the same year the School of Commons is created[3] around the Institute of Government and Public Policy (IGOP), a research center of the Autonomous University of Barcelona (UAB), with representatives from diverse Commons communities and form the Social and Solidarity Economy (SSE), as a process to deepen into the concept and models of the Commons, working at the confluence of different movements. That year celebrates the third edition of the Free Culture Forum, and in parallel, the first meeting of the Dimmons Forum on digital Commons and SSE organized by Amical Wikimedia.[4] Also, in 2011 the Foundation of the Commons is created,[5] comprising Ateneu Candela de Terrassa, the Metropolitan Observatory of Barcelona and La Hidra Cooperativa.

In 2007 the Institute for Advanced Architecture of Catalonia (IAAC) created FabLab BCN,[6] as part of the worldwide network of FabLabs led by MIT to promote digital manufacturing based on open design. In 2014, IAAC creates the GreenFabLab on the mountain of Collserola in Barcelona, a laboratory that works in the creation of a self-contained housing and research centre. In 2012, from Pangea, with the "Technology for All" Association of the Universitat Politècnica de Catalunya (UPC), a new service is started to make possible the reuse electronic devices for the

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3. Work page of the Commons School on the wiki of the P2P Foundation (https://wiki.p2pfoundation.net/Escuela_de_Commons).
4. More information: http://www.digital-commons.net/
5. Foundation of the Commons (http://www.fundaciondeloscomunes.net/la-fundacion).
6. FabLab BCN in the directory of the FabLabs network (https://www.fablabs.io/labs/fablabbcn).

benefit of social entities, which will lay the foundations of the eReuse.org project started in 2015.

From 2012 the Hangar artistic production centre of Barcelona also incorporates digital manufacturing with the residences of BlablaLab and afterwards Ilaro. In 2013, the City Council of Barcelona launched the first Public Manufacturing Athenaeum (Ateneu de Fabricació). Since 2011, the CIM Foundation attached to the UPC promotes the design and manufacture of open source 3D printers, with the BCN3D Technologies project starting in 2015.

The Ethicom-SomConnexió cooperative is set up in 2014 to provide telephone and connection services, and by 2015 the We Are Mobility (Som Mobilitat) Cooperative for sharing electric vehicles. By the end of 2015, the community also launches The Things Network Catalunya to deploy an open and common Internet of Things network (IoT) under the double umbrella of the Free Knowledge Institute and the Guifinet Foundation.

Several events and meetings took place in parallel to this process of articulation of a Commons ecosystem, approaching communities and giving rise to collaborations and joint reflection: Hackmeeting (2000 and 2005), Fractal Games (2003 and 2005), Freedom Day of Software (since 2005), the Viquitrobada (since 2007), Free Culture Forum (from 2009), UrbanLabs (2009 and 2010), Hardmeeting (2010), Escola dels Commons de Barcelona (2011), Building Digital Commons 2011), OuiShare Fest (since 2015), OSCEDays[7] (from 2015), among others.

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7. Web of OSCEDays Barcelona (https://oscedays.org/barcelona).

In 2014 the Metropolitan Observatory of Barcelona published the study *Comuns urbans in Barcelona*[8] that starts with 17 practices in different fields (energy, connectivity, culture, cooperative work, shared parenting, health, housing, public space and infrastructure) that operate around the Commons and outside the public-private axis.[9] Between 2014 and 2016 the IGOP, in collaboration with the Dimmons research group of the Internet Interdisciplinary Institute (Universitat Oberta de Catalunya) and from the P2Pvalue European project, draws up an international directory of online p2p communities[10] and a Catalan directory[11] with about 1,000 cases of peer production in Catalonia. From the analysis of 300 of these cases within the framework of the project, an expansion of the Commons model in Catalonia is observed, from 14 areas of activity in 2012 to 33 areas of activity in 2015 (Berlinguer *et al.*, 2013),[12] showing the great capacity of expansion of the model, not as a sector but as an emerging production model (Fuster *et al.*, 2016).[13]

Between 2014 and 2015, the Digital Social Innovation Project of the European Commission selects 47 study cases on digital

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8. Urban communes in Barcelona. Practices of defence, care, reappropriation and community management "OMB 2014 (http://bcncomuns.net/wp-content/uploads/2014/06/Conclusions_OMB_CAT.pdf).
9. The web http://bcncomuns.net documents the practices of urban commons studied by OMB.
10. P2Pvalue Directory (http://directory.p2pvalue.eu).
11. Directory of initiatives in Catalonia of the P2Pvalue (http://directori.p2pvalue.eu).
12. Berlinguer, M., Martinez, R., Fuster Morell, MJ Subirats. (2013). Emerging models of sustainability of audiovisual commons. Teknokultura. Magazine of Digital Culture and Social Movements (http://teknokultura.net/index.php/tk/article/view/82/pdf).
13. Fuster Morell, Mayo; Salcedo Maldonado, Jorge Luis; Berlinguer, Marco (2016). "Debate About the Concept of Value in Commons-Based Peer Production". *INSCI 2016, LNCS*, 9934, pages 27-41.

social innovation in Europe, three of which were born in Barcelona (Goteo, Guifi.net and Smart Citizen Kit).[14] The report *Smart City Barcelona Commons* (2016), commissioned by the City Council of Barcelona and elaborated by the Free Knowledge Institute, identifies more than 300 actors in the city and proposes to strengthen the Commons collaborative economy.[15] 2016 is also the year when Sobtec and the first Mobile Social Forum take place, in parallel to the Mobile World Congress held in Barcelona, in response to the evolution of the mobile devices market and the need of debate and visualization of externalities and negative consequences of this industry, as well as possible alternatives.

11. Parallel development of the social and solidarity economy (1998-2016)

At the same time, in the same decades, the Social and Solidarity Economy (SSE), which has a centuries-old tradition in Catalonia, is also articulated and consolidated. After two meetings in Porto Alegre (Brazil, 1998 and 2000), in 2001 the Global Solidarity Socioeconomic Network was established. This process, in which the Federation of Labor Cooperatives of Catalonia actively participates, will culminate at the local level in the constitution of the Xarxa d'Economia Solidària (XES, Network of Solidarity Economy) in Catalonia in 2003. Four years later, in 2007, the XES

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14. DSI Final Report 2015 (https://waag.org/sites/waag/files/public/media/publicaties/dsireport.pdf).
15. Report municipal Policies in the field of the Knowledge Society and the Intelligent City. Towards a more sustainable, social and democratic model (http://freeknowledge.eu/ca/article/information-ciutat-inteligent-barcelona-commons).

launches the Social Balance, a tool by which the adhered entities evaluate their activity according to shared social criteria and, based on the results, guide their actions to improve them. In 2018 the social balance platform code is published openly with a free license, at the same time as it is used by different regional sections of REAS (Red de Redes de Economía Alternativa y Solidaria) in Spain.

In 2012, with the funding obtained in a Goteo campaign, XES organises the first Fair of the Solidarity Economy of Catalonia (FESC). In 2014 the XES and Setem launch Pam a Pam, a collaborative mapping initiative that shows initiatives of responsible consumption and solidarity economy in Catalonia, with the aim of transforming society by consumption attitudes. In 2017 in Barcelona there are 4,718 SSE socioeconomic initiatives, 2.8% of the 167,000 registered companies in the city, with more than 53,000 working people, representing 8% of total employment in Barcelona, and a total economic volume of 3.7 billion euros (more than 7% of the city's GDP).[16]

12. Platform economy with sharing orientation (2016-2018)

In January 2016, the BarCola group (Barcelona Collaboration) meets for the purpose of studying and promoting Commons-oriented models of collaborative economy and making recom-

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16. Informe La Economia Social y Solidaria de Barcelona, by Anna Fernàndez and Ivan Miró of The Invisible City, commissioned by the Commissioner of Social Economy, Local Development and Consumption of Barcelona City Council (http://bcn.coop/ess-a-barcelona).

mendations for the development of related public policies. The group is composed of representatives from academic research (Dimmons from UOC, IGOP from UAB, UPC, UB and ESADE), of collectives, companies or entities of the collaborative economy and the Commons (Guifi.net, Free Knowledge Institute, Platoniq, Fundación Goteo, eReuse, X-Net, OuiShare, Holon, FabLab Barcelona, CitiLab, Lazzum y Tarpuna, among others), and public institutions (Barcelona City Council, Institute of Culture of Barcelona, Public Manufacturing Athenaeums and Municipal Institute of Informatics). Also in January 2016, in the logic of political change as a result of the municipal elections of 2015,[17] the Barcelona Department of Socioeconomic Innovation (initially Other Economies) is created to promote the SSE in a broad sense.

In March 2016, Barcelona Activa's Department of Socioeconomic Innovation, together with the Commissioner for Social Economy, Local Development and Consumption, and the research group Dimmons from IN3 at UOC, and with the collaboration of BarCola, organized the first Procomuns,[18] a forum and participative event in which more than 300 people participated in 90 sessions to reflect and share ideas on how to focus on the development of the collaborative economy.

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17. The SSE was present in almost all the electoral programs of the candidates that obtained representation in the 2015 elections. All but C's included measures to promote cooperativism, incorporating in large part those proposed by the Federation of Work Cooperatives of Catalonia. Garcia, Jordi (2015). Electoral programs are cooperative.
Nexe Magazine (http://www.nexe.coop/nexe/index.php?option=com_content&view=article&id=89).
18. First Procomú Collaborative Economics Conference (http://procomuns.net/ca/programa-2).

From the conference, the *Joint declaration and proposals for policies for the Commons collaborative economy in Barcelona* emerges,[19] with proposals for public policies for administrations. That results and statements were facilitated by Dimmons with a process that had the contribution of about 20 participants in BarCola and was later enriched by the proposals made using the open documentation platform Teixidora.net; generating a document with 120 proposals. These proposals were incorporated into the citizen participation platform Decidim.Barcelona, in the participatory process of the Barcelona Municipal Action Plan.[20] The public policies proposals were also sent to the European Commission, that had an open process of contributions to the regulation of the collaborative economy, and to the Generalitat of Catalonia, which was also initiating a regulatory process.

In 2017 a commission is created in the Network of the Solidarity Economy of Catalonia in which various institutions of cooperative and open knowledge orientation are currently involved, such as the Free Knowledge Institute, LabCoop, fem-Procomuns, Dimmons, Colectic, CoopDevs, Jamgo, Colectiva't, Calidoscoop, Educaires and the Guifinet Foundation.

In short, the metropolitan area of Barcelona has a consolidated Commons ecosystem that has been articulated for more than two decades, combining its development with the Social and Solidarity Economy and especially with cooperativism. This ecosystem has been studied from several fields of research in various projects that show its diversity and wealth, were some

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19. Declaration of Procomuns (http://procomuns.net/ca/politiques). English version: http://procomuns.net/en/policy/
20. Participatory Process of the Municipal Action Plan 2016 (https://www.decidim.barcelona/processes/1).

of the studies and reports mentioned here in recent years have made recommendations for training and accompaniment actions to be made in projects to help their viability, reorienting this way the collaborative economy platforms towards the common good thus avoiding negative impacts and externalities on society.

A Declaration of Proceedings in 2016, as a result of many contributions, formulated these recommendations as a proposal for the participatory process where it accumulated support by joining the Municipal Action Plan, assumed by the Municipal Government. As a result of this articulation of action research, co-design of public policies and cross-sectional meetings, and with the participation of communities and projects, different initiatives come into being with support from the City Council of Barcelona in 2016.

La Comunificadora, as a program for the economic boost for Barcelona Activa, develops Common-based training and incubation to between 10 and 15 projects per year (two editions have taken place and the first fall of 2018 a third one just started), by placing them within the framework of the Commons and the SEE. a stable space of incubation and consolidation of new economic initiatives. Other recent initiatives derived from the Municipal Action Plan are the reuse of municipal computer hardware for social projects through eReuse, or the activation of match-funding campaigns where each citizen donation to a local project is multiplied by two by means of a common capital fund.

After 2016, different processes started in previous years follow its evolution and matured. The El Teb digital promotion association is transformed into a cooperative. The *metadecidim* seminars are celebrated for the improvement and collaborative development of the Decidim open source software for citizen participation. In 2017 femProcomuns is founded, a multi-stake-

holder cooperative with different autonomous digital activity groups that seek viability with Commons-oriented and cooperative models. The initiative has just launched an app and services toolkit in the cloud called CommonsCloud.

The XOBB open communications network, the TecnoFESC section of the Social and Solidarity Economy Fair of Catalonia (FESC), as well as meetings coordinated by LliureTIC of the confluence of professionals that provide services with libre and open software, has also recently been created. Once again from activism, it can also be highlighted that on October 1st in 2017, with the referendum in Catalonia, a key moment of self-organization and simultaneous repression also occurs in the digital sphere, with an important role of the Hacker community in the defence of freedoms on the Internet. Subsequently, there is a "migration" of users and consumers towards ethical banking, as well as towards cooperative options for the provision of services. The creation of the CoopDevs association has recently taken place, with the CoopDevsTreball cooperative and the creation of the logistics platform for consumer groups Katuma.

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Sharing Cities

A worldwide cities overview on platform economy policies with a focus on Barcelona

The platform economy is a modality of economic production mediated by a digital platform. It is growing exponentially, and has become a top priority for governments around the globe for the disrupting impact it is creating in cities, as well as for the opportunities it is opening up for the scalability of more sustainable and democratic economic models. The book provides an overview of current policy reactions and public innovations by cities in the field; a quality balance of platforms, which allows to differentiate models; and, a focus on Barcelona as a reference model for its vibrant sharing ecosystem and its innovative policies.

This book is published on the occasion of the Sharing Cities Summit 2018. The third edition of the Sharing Cities Summit took place in Barcelona 12-15 of November 2018, aftereditions in NYC and Amsterdam. The event gathers Mayors and Deputy Mayors from leading cities from around the world, and actors of the sharing ecosystem, to discuss how the continuous growth of sharing economies impacts the life and economic development of the cities, and stimulate concrete collaboration between cities.

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