# SUSTAINABILITY OF CIVIC TECH FOR CITIZEN PARTICIPATION

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EIT Digital BDExp 2019

Supported by:

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# EXECUTIVE SUMMARY

Civic Tech is <u>defined</u> as "**any technology that is used to empower citizens or help make government more accessible, efficient, and effective**." In the last years, Civic Tech has raised a great interest among entrepreneurs, innovators, and investors with different degrees of success.

Market research data on civic technologies dedicated to improving governments suggest that they are quite successful. They are generating many benefits and high revenues by simplifying bureaucracy and improving internal processes in the public administration.

However, **civic technologies dedicated to empowering citizens have not fully taken off yet**. These technologies include platforms to enable communication between governments and citizens, or to support community organizing. Evidence suggests that, even though ventures that support citizen participation raise early investing funding, they often struggle to survive in the long term.

Based on empirical and desk research carried out at MediaLab Prado in Madrid (Spain), in this report I argue that **sustainability of civic tech is not only a technical but mainly a societal challenge**. In this context, sustainability refers to the ability of a business to be able to maintain itself over a sustained period of time.

Following this premise, this report proposes **three objectives for Civic Tech** initiatives, which are based on empirical data and desk research, namely: Collective Action, Civic Efficacy, and transparency. These objectives and their guiding questions are meant as a tool for supporting business modeling activities of civic tech start-ups.

In addition, the report contains a list of **risks** which are specific to civic tech ventures, along with a list of questions. These questions are meant as a tool for risk assessment of civic tech start-ups. Furthermore, the report provides **recommendations** to civic innovators and entrepreneurs .

Finally, the case studies and analysis included in this report can be useful to those interested in exploring the challenges and opportunities related to the sustainability of civic tech for citizen participation.

The objectives and recommendations can be useful to **start-ups** in the Civic Tech market, to **public innovators** who want to improve and the public administration, or to **citizen laboratories** that want to play a role in improving the sustainability of citizen participation through hybrid technologies.

# GRACIAS

I am grateful for the six months I have spent in MediaLab, and for the people I have got to know and learn from. It has been a truly enriching experience. In spite of my slippery memory, I will take the risk of naming some people who have specially contributed to my fantastic experience.

Thanks to: Yago for welcoming me in the ParticipaLab and for his great intuition in guiding me to the most relevant projects for my work; Laura for her professionalism and kindness; Marcos for our conversations and for inviting me to so many interesting events; Everyone involved in the organization of the "Observatorio de la Ciudad" for welcoming me as part of the research team, and especially Arantxa and Ernesto for their expertise and patience; Participants and organizers of "Escucha Madrid", and especially Cecilia for organizing and coordinating our efforts. And Komons - Rebeca, Saya, Alberto – I could not have wished for a more inspiring, brilliant, and caring team. It has been a real pleasure to work and share this time with you, and what it is yet to come.

Thanks to EIT Digital and, in particular to Monica, Vincenzo, and Gianluca, for your support.

Hasta pronto!

# CONTEXT

In the digital age, democracy is experiencing unprecedent changes. The new possibilities that digital technologies offer can be both a threat and an opportunity to democratic values. As we have already witnessed, digital technologies can be used for influencing elections, spreading fake news, or creating polarization; however, they can also be used to help citizens make a positive impact or improve transparency in governments.

In this context, the field of Civic Tech emerges as a key actor to deliver innovative services and products that create new opportunities for democracy. Civic Tech seeks to preserve and enhance democratic values by empowering citizens and helping make government more accessible, efficient, and effective.

Civic Tech has raised a great interest among investors and the entrepreneurship community. For example, in 2019 eBay's founder has launched Luminate, a global philanthropic organization focused on supporting technology that "empower[s] people and institutions to build just and fair societies". Similarly, in July 2019, the Knight Foundation announced a $50M investment to develop a new area of research around technology's impact on democracy.

My PhD thesis is aligned with this interest on digital democracies. More specifically, I investigated how technology can help gather citizens around issues of public interest and contributed with a methodology for citizen engagement. This topic falls within EIT Digital Cities Action Line, where citizen engagement is one of the key themes. During my BDExp, I have expanded this interest by exploring the challenges and opportunities of digital technologies and democratic processes from an innovation and entrepreneurship perspective.



Figure 1 - MediaLab Prado working space (Source: MediaLab Prado)

The selected hosting institution was MediaLab Prado, Madrid city council's citizen laboratory for experimenting with technologies. MediaLab Prado is one of the most innovative centers on digital citizen participation in Europe. Within MediaLab, I have worked at the ParticipaLab, which develops collaborative projects around hybrid democratic participation.

## Why MediaLab Prado?

To find a suitable institution, I used my knowledge on who are key actors in Europe on citizen engagement through digital technologies (such as Nesta in London, Waag Society in Amsterdam, and MindLab in Copenhagen). There are three main reasons why I chose MediaLab and, in particular, the ParticipaLab.

First, the projects they are involved are high risk, high return meaning that they very innovative in experimenting with forms of direct democracy through hybrid participation.

Second, ParticipaLab is a lively context working with many stakeholders and collaborators in areas which are very relevant to Digital Cities such as software developers, researchers, policy makers, citizens, and journalists. In addition, they have collaborated with international governments and enterprises in Australia, Ireland, Taiwan, and Iceland. This network of collaborators is a good ground for establishing relationships that exceed the BDExp period.

Third, engaging with citizen participation projects does not only entail an expertise in the methods and technologies, but also a good understanding of the local context and abilities to interact with all the stakeholders. The combination of my expertise on citizen participation, and being a native Spanish speaker who is familiar with the political and social contexts, was an excellent match for such a project.

## What's MediaLab Prado?

Media Lab Prado is the citizen laboratory of Madrid's City Council (Figure 1). MediaLab was inaugurated in 2013 and it has 20 employees, including the director, lab members, and mediators. MediaLab belongs to Madrid Destino, which is a public company owned by Madrid's city council.

Conceptually, MediaLab Prado is conceived as a citizen laboratory for the production, research, and dissemination of collaborative projects through hybrid participation (digital and face-to-face). Organizationally, it has six laboratories, each of them focusing on different aspects relevant to civic digital technologies such as open data, physical prototyping, and citizen innovation.

In innovation terms, MediaLab Prado is a space for experimentation for open innovation, where projects are initiated by employees, collaborators, and citizens. For example, citizens who want to start a project can make a proposal and create a working group which receives logistic and mediation support (Figure 2).

In this way, MediaLab Prado hosts different citizen-driven initiatives: from developing a cryptocurrency in the central neighborhoods in Madrid, to creating prostheses with digital fabrication tools, or teaching coding skills to children in educational projects such as CoderDojo. It is also a co-working space which is used by many entrepreneurs and citizens.

## What's ParticipaLab?

The 'ParticipaLab' is the laboratory of collective intelligence for democratic participation. More specifically, the lab focuses on how hybrid forms of participation can enable collective intelligence that fosters democratic processes.

Since 2015, ParticipaLab has worked in many different projects on hybrid forms (digital and analog) of democratic participation. One of the core technologies is Decide Madrid, the digital platform for citizen participation developed by Madrid's city council.

The lab has participated in developing a tool for collaborative legislation on the platform. In addition, it has developed and provided expert knowledge in several projects that seek to address some of the limitations of the platform, such as "Comunidades Propositivas" (Proponent Communities) or el "Observatorio de la Ciudad" (The city's observatory). Many of the projects have been developed in collaboration with Madrid's city council or social entrreprises.

In addition, ParticipaLab is a very active actor in the international community. The lab has also organised several international events such as ConsulCon and G1000. A more detailed description of the projects and events can be found in their recent publication on Future Democracies.
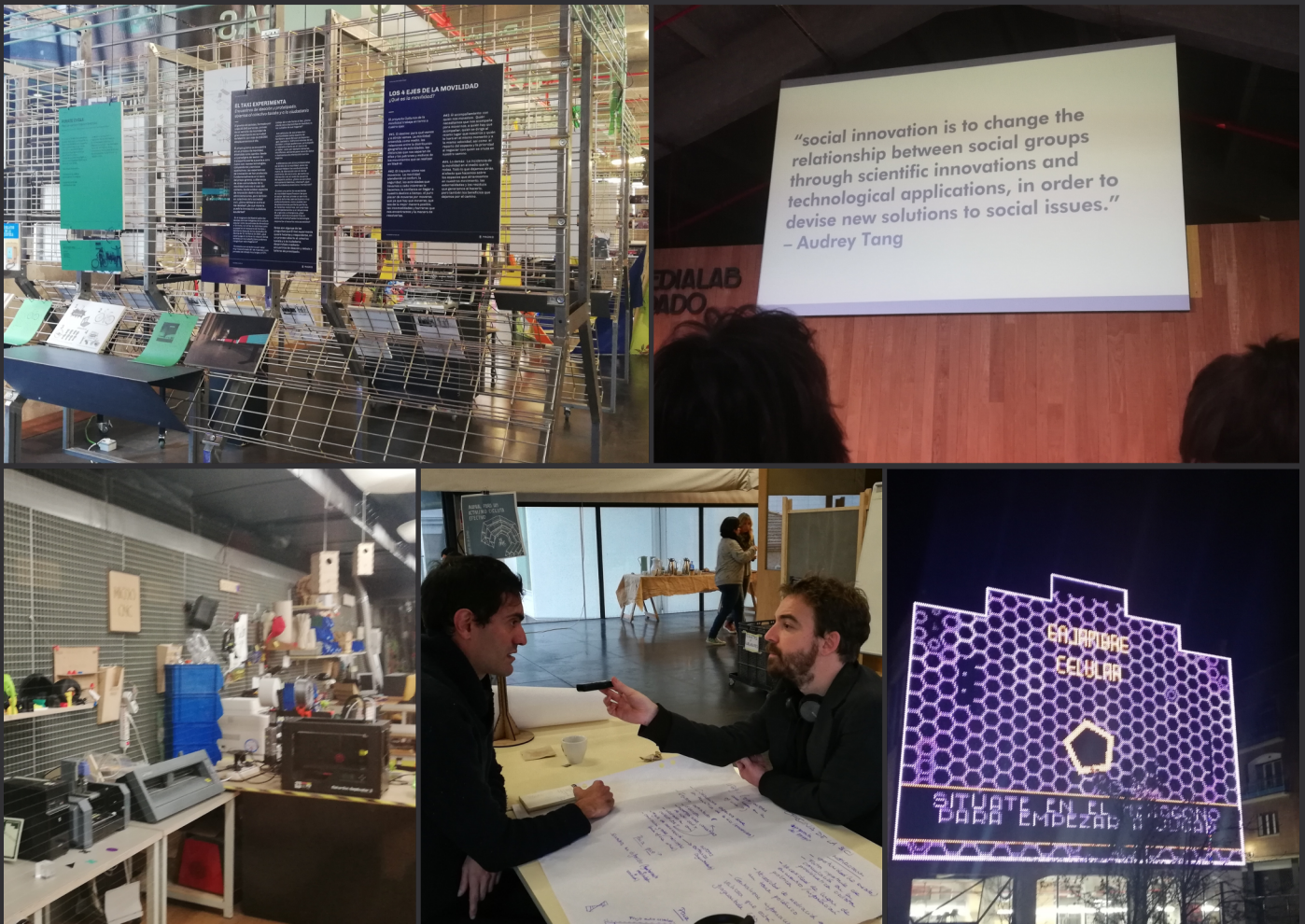


Figure 2 - Some of the activities, tools, and presentations at MediaLab

# ACTIVITIES

During my BDExp I have worked on analysing, designing, and implementing processes for enabling participation through hybrid technologies, meannig digital and analog (Figure 3). In addition, I have performed a research on the Civic Tech market, which has helped me frame problems, results, and recommendations from an innovation and entrepreneurship perspective.

More concretely, I have worked with Decide Madrid, which is Madrid city council's digital platform for citizen participation. To understand the use that citizens make of this platform, I have analysed proposals and participatory budgeting projects proposed by citizens. One of the outcomes of this work are two internal reports that describe the use of proposals and participatory budgeting on the platform and point out to strengths and weaknesses, providing design suggestions.

Relatedly, I have participated in the "Observatorio de la Ciudad" (The city's observatory), which is a formal citizen review panel where citizens analyse proposals on Decide Madrid and have the power to bring them to a public consultation. More specifically, I have participated in four design sessions together with civil servants, politicians, experts, and researchers. Also, I have been one of the evaluators taking part in the actual sessions in March and June. One of the outcomes of this involvement has been a submitted article together with a researcher from the Spanish National Research Council (CSIC).

Finally, I participated in the project "Madrid Escucha" ("Madrid listens" or "Listen, Madrid"), which is an open innovation project that seeks to find solutions to urban problems by establishing collaborations among experts, civic servants, citizens. In this project, I have been part of a working group together with international
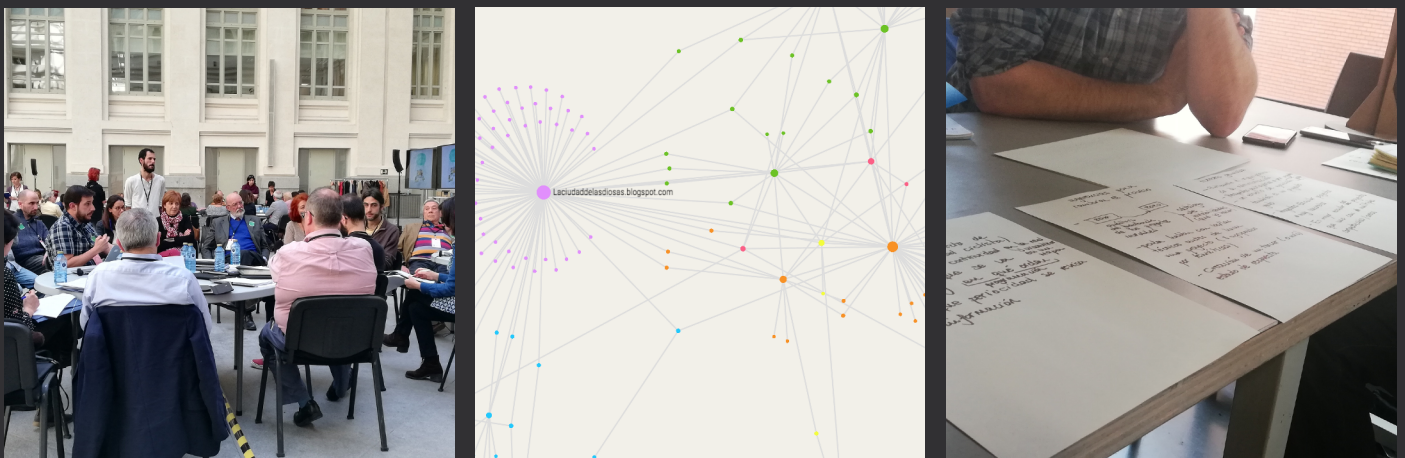


Figure 3 - My tasks included implementation, analysis, and design of participatory processes

experts from France, Taiwan and the Joint Research Centre of the European Union. My main task has been to collect and compare methods, practices, and tools for citizen participation from different contexts. As an outcome of this engagement, I am one of the co-authors of the upcoming final publication of the project. Also, as part of this project I have participated in a six-day design workshop about urban mobility with civil servants and citizens. My main task has been to research on the limitations of Decide Madrid based on different users' needs and investigate the potentials of hybrid forms of participation for civic technologies.

Furthermore, I have worked on the project "Comunidades Propositivas" (Proponent Communities), which seeks to foster collective action around public issues through hybrid methods. In this project, I have worked with Komons, a start-up collaborating with the ParticipaLab and the leading force behind Comunidades Propositivas. In this project, I have analysed and identified relevant stakeholders for a case study using digital methods and, based on the results, co-organise and facilitated a design workshop. One of the outcomes of this work is a method for stakeholder identification and analysis using digital methods (social network analysis and visualization).

## Method

MediaLab Prado has a strong focus on applied research, meaning that their projects have a societal impact and generate theoretical knowledge. Considering the social innovation development process as a reference, most of the projects I have engaged with are located in between prompts and prototypes (Figure 4), and are in the process of becoming sustainable through everyday practice.

Therefore, I have chosen to follow an action research approach, which has the dual interest of intervening in the problem situation while developing theoretical understandings about that situation. In this case, the problem situation was sustainability of Civic Tech for citizen participation.

Throughout the six months, I have engaged in both desk and field research. For example, for the market analysis on civic technologies I have collected existing studies from external sources; while in the City's Observatory I have used questionnaires and observations during the actual sessions.

For collecting, analyzing and integrating data I have used a mixed methods approach, meaning that I have used both quantitative (e.g., questionnaires, data scrapping) and qualitative (e.g. observations, interviews) methods. For example, to collect data about the proposals on Decide Madrid I have used their public API. For analysing the qualitative data, I have used Atlas.ti; and SPSS for performing the quantitative analysis. Table 1 contains a summary of activities and collected data.
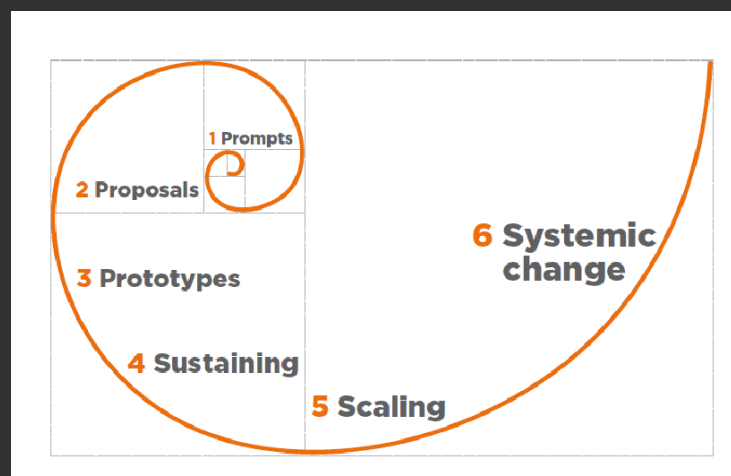


Figure 4 - The process of Social Innovation (Murray, Caulier-Grice and Mulgan 2010)

Table 1 - Projects, tasks, and data collected during my BDExp

| Activity/Project | Tasks | Data Collected |
| --- | --- | --- |
| Civic Tech market analysis | Data collection and analysis. Online research on fundraising and ventures' information | Civic Tech ventures: name, location, fundraising, type of venture (N=1154) |
| Decide Madrid | Data collection and analysis (citizen proposals and projects for participatory budgeting) | Proposals (N=100), projects for participatory budgeting (N=1330), and related metadata. Platform's usage statistics. |
| El observatorio de la ciudad (The city's observatory) | Four design meetings with politicians, experts, researchers. Participation in the two full-day sessions of El observatorio de la Ciudad. | Questionnaires (N=162), fieldnotes, interviews and legal documents |
| Escucha Madrid (Madrid listens) | Six-day working group with citizens, experts, and civil servants around urban mobility. Three design workshops with international experts. | Fieldnotes and legal documents |
| Comunidades Propositivas (Proponent comunities) | Analysis and identification stakeholder identification and analysis. Design workshop with 14 experts. | Social Media data (Websites, Twitter), legal documents, and fieldnotes |

The remaining of the report is structured as follows: **Chapter I** contains the results of a research on the Civic Tech market which provides an overview of civic technologies with a focus on new ventures in Europe. **Chapter II** focuses on a specific Civic Technology, Consul, and the instance in Madrid, Decide Madrid. Based on the analysis of this civic platform I propose three assessment metrics to facilitate sustainability of Civic Tech for citizen participation: collective action, transparency, and civic efficacy. In **Chapter III**, I present the results of my involvement in three projects at MediaLab Prado: Madrid Listens, The city's observatory, and Proponent Communities; and further elaborate on the assessment metrics. **Chapter IV** focuses on entrepreneurship and civic tech, elaborating on risks which are specific to entrepreneurs on the civic tech field, followed by a series of recommendations for civic tech

# I. THE CIVIC TECH MARKET

Citizens, enterprises and governments are increasingly using technology to support civic participation for different purposes: from raising crowdfunding campaigns to improving urban infrastructures, to platforms to improve communication between governments and voters. These technologies designed to preserve and enhance democratic values by empowering citizens and helping make government more accessible, efficient, and effective have become generally known as "Civic Tech".

## What is Civic Tech?

Reportedly, from 1994 to 2019 more than 2000 initiatives have sought to leverage on the potential of digital technologies to improve civic life. The scope and functionalities of these initiatives have been transformed with the evolution of technology. In the 1990s, most civic technologies were about information systems to improve processes in the public administration, community building through online communities, or deliberation on civic matters forums accessed through desktop computers. Recently, the raise of mobile phones, social media, artificial intelligence, and environmental sensors have increased the scope of civic tech to location-based crowdsourcing services, citizen deliberation platforms, or AI-powered information systems to improve internal processes in the public administration.

The increasing interest to improve the -often obsolete- technologies in the public administration has led to the creation of GovTech, which can be seen as a subfield of Civic Tech which specifically deals with improving governments and the public administration by reducing bureaucracy, improving transparency, and optimizing internal processes.

Several large Information Technology (IT) companies, such as Granicus and Tyler Technologies, are specialized in developing technologies for the public administration with great success.

In the last years, small businesses and start-ups are also entering the market. An example is *SeamlessDocs*, a venture that helps governments go paperless and deliver better online services to citizens and staff; or Coprocure, a software that makes procurement processes in the public administration transparent, open, and efficient.

The boundaries between GovTech and CivicTech are blurred, especially considering that an increasing number of governments around the world are using digital technologies to engage with citizens.

Historically, most of the Civic Tech ventures are located in the United States; however, more and more countries are starting to rely on digital technologies to address civic challenges.

For example, a prominent civic tech initiative started is vTaiwan, which is a platform for

digital participation within the "Open Government, Social Innovation, and Youth Participation" department in Taiwan that allows citizens to deliberate about public policies. Similarly, Australia, Estonia, the United Kingdom and Spain are engaging with forms in which digital technologies can support relationships among citizens and governments and improve citizens' participation in issue of public interest.

## Civic Tech - an overview

The Civic Tech market is very broad and with many ramifications. The Civic Hall has been working on mapping, visualizing, and analysing the civic tech field for many years. One of their products is the Civic Tech Field Guide, which is a crowdsourced database of civic tech initiatives created by practitioners from over 100 countries. The database is a living resource for innovators in civic tech, where they can explore more than 2000 Civic Tech initiatives such as tools, research projects, organizations and business ventures (Figure 5).

To know more about Civic Tech from an innovation and entrepreneurship perspective, I have performed a market research on this database, and complement it with an online research of additional civic tech initiatives. Since the Civic Hall is a US-based organization, the database mostly contains initiatives which are located in the USA, in my complementary analysis I have focused on identifying European ventures. For doing this research, I have used online investment services such as Crunchbase and Angel.co.

The procedure was as follows: first, I filtered out all the initiatives which are not specifically about civic tech from the database, and removed the multiple duplicate entries.

Then I differentiated among initiatives which were business ventures and those which were not. For the remaining business ventures, I collected information on location, venture



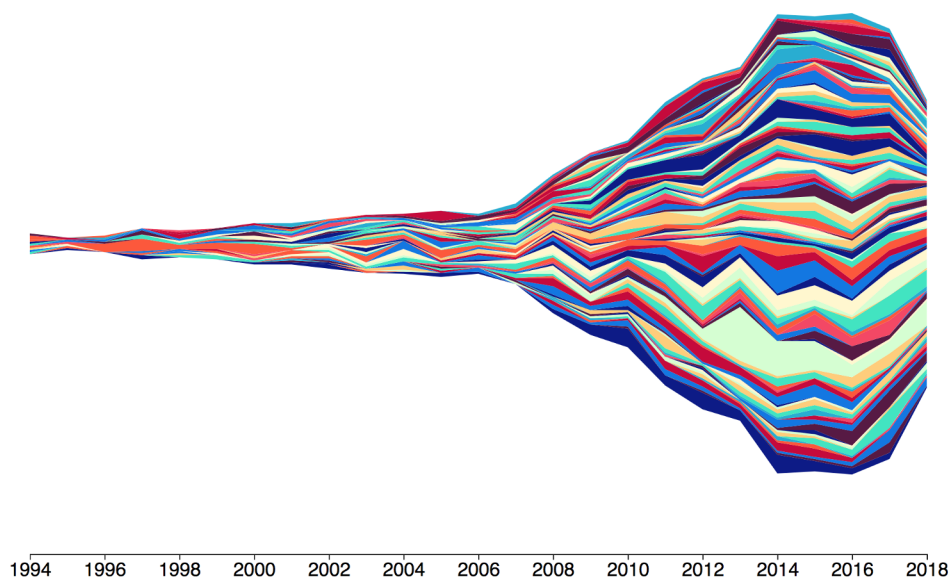1994  1996  1998  2000  2002  2004  2006  2008  2010  2012  2014  2016  2018

Figure 5 - The Civic Tech timeline illustrates the increasing number of Civic Tech initiatives, especially since 2010. The colors represent different focus areas such as crowdfunding, expert networks, or factchecking (Source: The Civic Hall)

type (for profit, nonprofit) and fundraising information. Furthermore, I categorized the ventures according to their key activities by doing a thematic analysis using Atlas.ti. Finally, I collected information on their current status. In concrete, I created three variables according to their status as a venture: on-going, closed, exit. Exit could be an IPO or an acquisition by another company.

The original database contained 1154 initiatives, which was reduced to 987 after removing those ventures that were not specifically about civic tech (8%) and duplicate entries (6%). The remaining initiatives had very different natures. In addition to business ventures there were research projects, civic tech tools developed by IT companies, or services provided by the public administration.

The data confirms that most of the companies were located in the USA (74%) - although these results might be skewed by the initial dataset. Table 2 contains some of the civic tech ventures which are located in Europe. Most of the ventures were registered as for profit. Moreover, I collected fundraising information for those ventures where it was available (49%). The data shows that ventures had obtained an average of $15M; with a minimum of $50K and a maximum of $130M (Figure 6).

In addition, the thematic analysis revealed five main types of ventures depending on their key activities: crowdfunding, communication between governments and citizens, community organising, open data and visualizations, and bureaucracy tech. Figure 7 illustrates the percentage of the ventures according to their type.
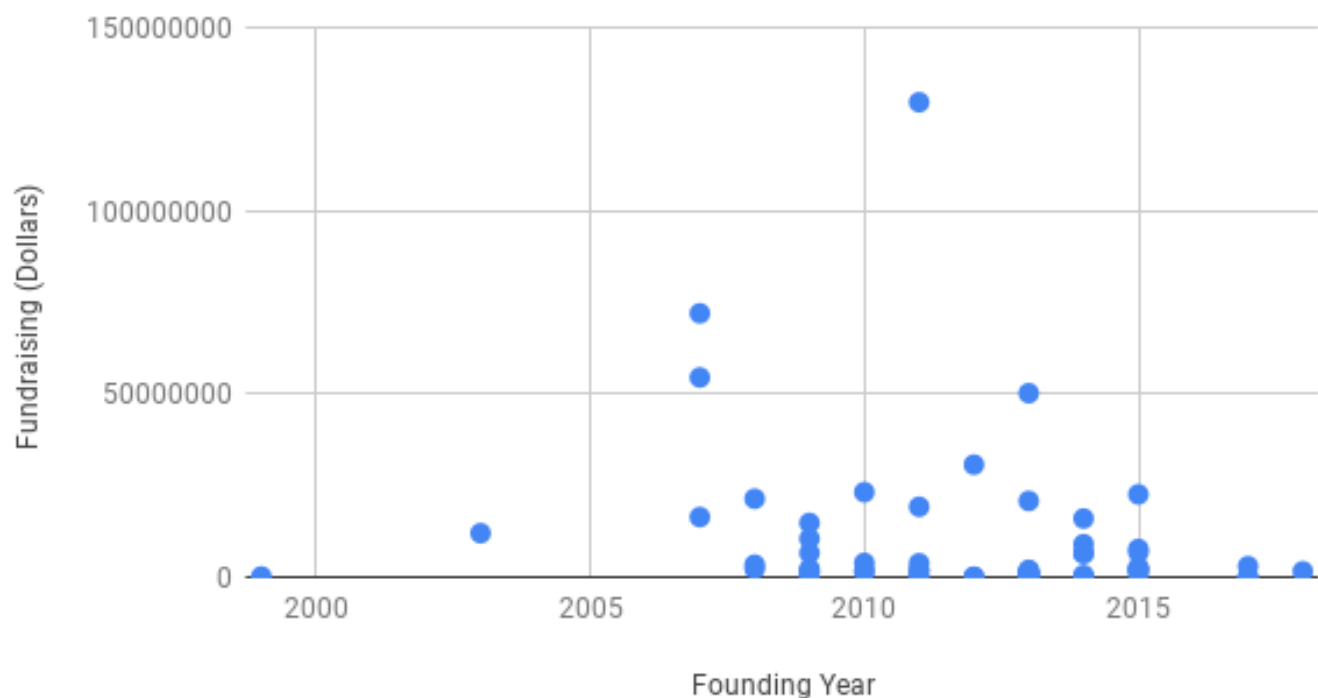


Figure 6 - Five types of Civic Tech ventures depending on their key activities and corresponding percentages. Types constructed through thematic analysis.

Table 2 -  List with some of the Civic Tech ventures in  Europe

| Venture | Year | Country | Description | Funding |
|---|---|---|---|---|
| Novoville | 2016 | United Kingdom | Citizen Engagement Platform | $1.8M |
| Polyteia | 2018 | Germany | Data-empowered governance solutions | N/A |
| Apolitical | 2015 | United Kingdom | Learning platform for government | $3.4M |
| Citizen Lab | 2015 | Belgium | Civic engagement platform | €2.7M |
| Civocracy | 2015 | Germany | Citizen Engagement Platform | $315K |
| Fluicity | 2015 | France | Citizen Engagement Platform | €900K |
| CHAOS | 2017 | Finland | Citizen Engagement Platform | $290K |
| Cap Collectif | 2014 | France | Citizen Engagement Platform | N/A |
| Discuto | 2013 | Austria | Crowd decision-making platform | N/A |
| Citybeats | 2017 | Spain | AI-based social insights | N/A |

**Crowdfunding** is about crowd financing community projects that people care about such as _Neighborly_, a USA-based community investment marketplace that allows investors to support community projects based on their location and cause. _Goteo_ is a Spanish civic crowdfunding platform where citizens can create, collaborate, propose and fund initiatives and social, cultural, technological and educational projects.

The next category contains digital platforms that allow **voters to communicate with governments** or with the public administration to report issues or provide proposals, discuss among them. Usually, these platforms also allow governments to communicate with voters, and sometimes ask citizens for their opinion on issues of public interest. These platforms also differ in the nature of the issues that are reported. An example is

_PublicStuff_, a platform that allow to report issues by proving a geolocation and a description of the issue. Another example is _Civocrazy_, a platform that allows citizens to share their ideas with governments; governments can use these ideas to start projects in the cities. Civocrazy is based in Berlin and partially funded by EIT Digital.

**Community organizing platforms** are about bringing people together around a shared cause. Usually there is
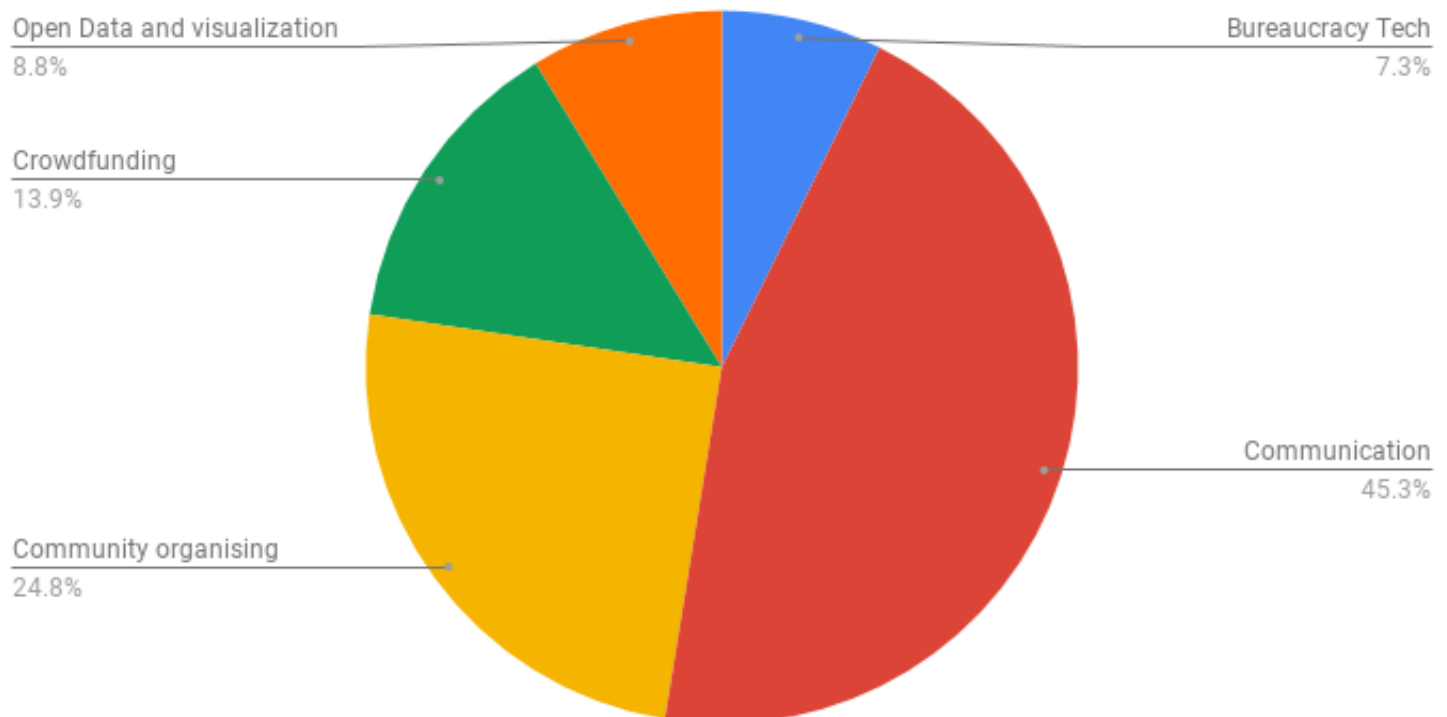


Figure 7 - Five types of Civic Tech ventures depending on their key activities and corresponding percentages. Types constructed through thematic analysis.

little involvement by the government or the public administration. An example is *Salsa Labs,* a platform targeted to nonprofits to facilitate supporter engagement; or *Causes* which allow citizens to discover, support and organize fundraising campaigns, and petitions around the issues of public interest.

Platforms for **Open Data and visualizations** allow sharing urban data (environmental, demographics, financial). For example, *UrbanFootprint* provides AI-based predictions based on urban development data with the aim of helping urban planners, jurisdictions, NGOs, and environmental analysts to build more sustainable, resilient and equitable cities. *AppCityLife* is a Platform as a Service (PaaS) that helps cities develop digital services (mobile apps, wearables) for citizens.

Something that became evident while doing the market analysis was that many of the ventures had been closed, acquired by another company, or their platforms seemed to have very little activity.

Researching on this subject it came out that the low sustainability of Civic Tech is a popular topic. There are several reports describing this issue and analyzing possible causes for it.

Many of these reports highlight a paradoxical situation. Civic tech fosters interest both from investors and entrepreneurs as illustrated by the number of start-ups and ample funding; however, evidence shows that Civic Tech ventures have a low survival rate and it the causes are not yet well understood. Following this interest, the next section zooms into the topic of sustainability of Civic Tech.

## Sustainability of Civic Tech start-ups

The lifespan of civic tech start-ups seems to be low. According to a market research carried out in 2019, only 25% of the established companies survive after five years, and the survival rate goes down to 3% after the seven year. These percentages are lower than average numbers for start-ups, where the survival rate of a start-up after the fifth year is 50% and 4% after the tenth year according to recent a report by the Bureau of Labor Statistics.

The low survival rate of civic tech initiatives have led the Civic Hall to create the "Civic Tech Graveyard", which is a collection of civic tech projects, tools, and ventures which do not longer exist and a list of possible reasons for these failures.

Practitioners and entrepreneurs discuss the low sustainability, hypothesizing possible underlying reasons. For example, in 2015 the Sunlight Foundation launched a survey to collect failure stories and learn from Civic Tech mistakes. Also, a recent studies (such as this report and presentation) elaborate on lessons learned by studying civic tech tools which did not meet the expectations and failed. Diving more into the reasons for low sustainability os especially important in Europe since practitioners are pointing out that civic tech is about to hit the European market, and that we should learn from previous mistakes, especially in the United States.

All studies seem to agree on a common pitfall: many initiatives fail to enable genuine participation and to sustain engagement over time .

During my BDExp I have dived into this subject, investigating aspects that can influence the sustainability of civic tech while participating in creating, implementing, and evaluating processes for civic engagement through hybrid technologies.

To this purpose, I have first analysed Decide Madrid, which is Madrid's civic tech platform. Then I have actively participated in three projects , where participation is enacted in hybrid forms (digital and analog). The empirical evidence collected through these tasks is used to provide recommendations for the design, implementation of civic tech platforms for citizens participation to innovators and entrepreneurs.

# II. CONSUL: A PLATFORM FOR CITIZEN PARTICIPATION

In 2015, the city council of Madrid developed the digital platform for citizen participation CONSUL. This is an open source digital platform for citizen participation for deliberation and decision-making, as there are many in the market (Civocracy, Citizen OS).

This is a very interesting case study for civic tech because it can provide insights in what works - and what does not. How does the platform support citizens' participation? Who and how participates? What can we learn from the platform to preserve civic tech's sustainability? To address these questions, my first task was to get familiar with the platform, how it enables citizen participation, and what are the challenges and opportunities.

In Madrid, the instance of the platform is called Decide Madrid and it allows citizens to make proposals for the city, join public debates, decide on budgeting spending, and participate in public policy-making. The platform started in Madrid but it has rapidly been adopted in other cities and countries: since 2015, a total of 130 public institutions in 33 countries have developed their own instances (Figure 8).

The timing and impact of such an innovation has been recognized by several international



Figure 8 -  Countries which use CONSUL (source: Consul project)

Figure 9 - Decide Madrid interface with all the available functionalities

institutions: CONSUL has received several international awards, including the UN Public Service Award in 2018 for "establishing more open, transparent, participatory and inclusive governance models."

In June 2019, the Consul Democracy foundation was created, which is a non-profit organization whose mission is to manage the development, improvement and worldwide expansion of the open source free software CONSUL.

## Decide Madrid

In the 2015 elections, *Ahora Madrid* was elected into office. One of the key aspects in their political programme was to improve transparency in the government and support citizens' participation in public matters.

To that purpose, they created the area of transparency, participation, and open government, which after three months in office released the Consul platform for citizen participation and its instance, Decide Madrid.

The platform allows citizens to make proposals for the city, engage with participatory budgeting, comment on collaborative legislation, and participate in public consultations (Figure 9).

Anyone can sign up on the platform and make proposals, but to be able to vote for proposals or participate in public consultations users need to be officially registered in one of the 21 districts of Madrid city. In June 2018, there were 390.000 citizens registered on the platform.

The way people can participate and how this participation can have an impact on the city is shaped by public policies. For example, citizen proposals that reach a number of votes on the platform equivalent to the 1% of the population (approximately 27000 votes) will be open to public consultation. Once a proposal reaches the required number of votes, all the information related to the proposal is published on the platform, where people can read and discuss about it for 45 days. After that period, the public consultation phase starts. This means that citizens can vote if they are in favor or against the proposal.

Citizens can vote their preferred proposals through the platform, via regular post, or physical ballots allocated for the consultation. If there is a majority of supporters, the local government takes the proposal as their own and brings it forward.

Since its creation in 2015, two proposals have reached the required number of votes and have been the object of a public consultation, where a total of 214076 citizens participated.

Another way people can participate in public issues is through participatory

budgeting.

In 2016, the city of Madrid allocated 80M euros to be spent on projects proposed by citizens. In 2017 and 2018 this budget was increased to 100M euros. Similarly, citizens can ask for projects to be developed in the city. In this case the criteria for selecting projects is not based on a threshold of votes but on relative number of votes and feasibility of the proposal, which is assessed by civil servants.

Those projects which are assessed as feasible are given an estimated budget and open to be voted by citizens. Chosen projects are selected based on their number of votes (those with more votes are considered first), estimated budget for implementing them, and the available budget (once the limit has been reached, no further projects are considered).

## Method

To investigate how the platform supports citizen participation, I have performed a qualitative and quantitative research of the citizen proposals and participatory budgeting.

More concretely, I collected the 100 most popular proposals and related metadata (title, number of votes, proposal date, author, number of comments). Then, I thematically analyzed these data using Atlas.ti, using an iterative approach. Then, I collected all the proposals made to participatory budgeting in 2016, 2017 and 2018 (N=1330) and the assessments to the projects made by the civil servants. In addition, I collected all public statistics about use of

Table 3 -  List with some of the Civic Tech ventures in  Europe

| Theme | Votes | Proposals per theme | Comments per theme |
| --- | --- | --- | --- |
| Environmental sustainability | 42474 | 24 | 341 |
| Care in the city | 25414 | 16 | 315 |
| Public transport | 20159 | 22 | 202 |
| Roads and highways | 9170 | 13 | 510 |
| Social inequalities | 8940 | 7 | 60 |
| Arts and  culture | 5165 | 5 | 27 |
| Alternative transport | 5088 | 6 | 30 |
| Betting houses | 3947 | 4 | 41 |
| Urban infrastructure | 2857 | 4 | 85 |
| Education | 1224 | 2 | 8 |

the platform (e.g. number of users, demographics, public consultations).

This analysis provided valuable knowledge at different levels: from issues with the interface design, to mismatches with organizational processes, and transparency issues. For the sake of conciseness, the following section contains the main findings that are specifically relevant for the purpose of this report. The detailed list of results have been provided in internal reports.

## Main results

**Citizens are eager to participate** and propose improvements for the city. In 2018, citizens had contributed with a total of 23.000 proposals, which means an average of 21 proposals per day. Similarly, citizens have contributed with many projects for participatory budgeting: a total of 10408 projects have been proposed since 2016. This number illustrates the platform's success in terms of participation by citizens.

A key aspect of the platform is its **legitimacy**, which is enabled in two main ways. First, it is a platform developed and owned by the public administration, which has legal rights and obligations. Secondly, there are policies that shape the impact of the proposals in the city.

Legitimacy in citizen participation platforms is crucial because it influences citizens' beliefs that their participation can make an impact.

Enabling **hybrid forms of participation** is paramount. When one of the proposals reached the required number of votes, a public consultation as open. A total of 214076 citizens participated in the consultation. Interestingly, even if the consultation was triggered on the digital platform, only 36% of those who voted did it online. More than the half (55%) used the regular post, and a smaller percentage (11%) voted directly at the ballots .

**Lack of collaboration** among citizens hinders the impact of the proposals. Even though a large number of citizens have created proposals, the proportion of those which have reached the required number of votes is low. The thematic
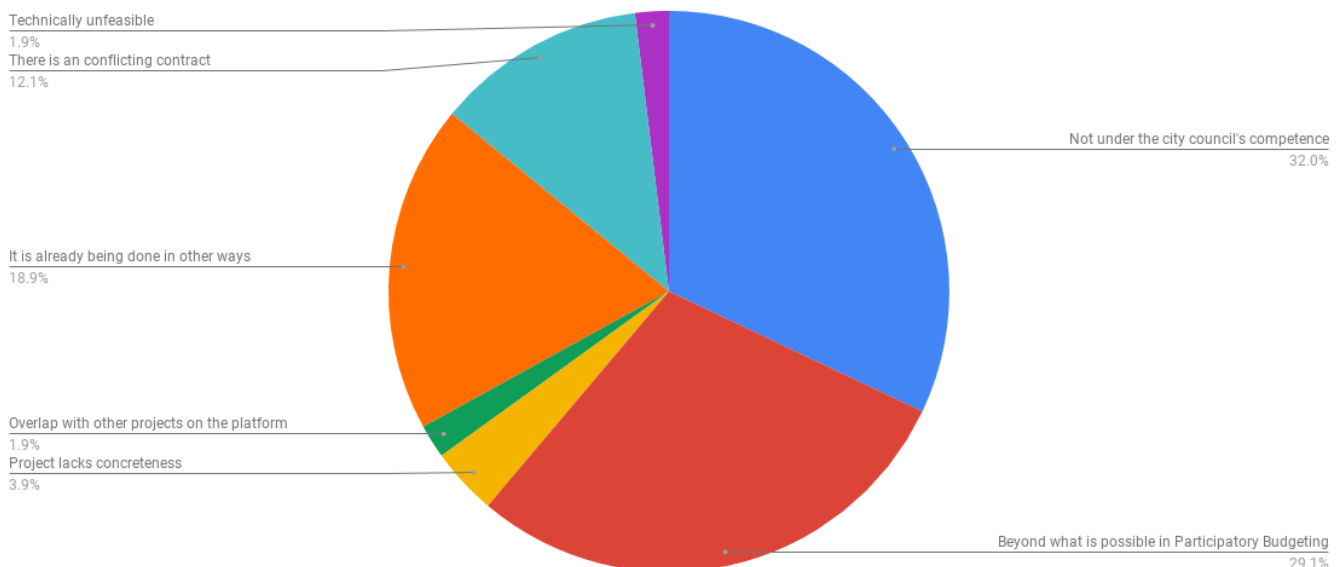


Figure 10 -  Reasons for rejecting citizens' projects for Participatory Budgeting

analysis shows that this is related to the limited opportunities for collaboration within the platform.

For example, the most popular theme is environmental sustainability: in total, there are 24 proposals which cumulatively sum 42474 votes (Table 3). However, these proposals are not connected and the votes are therefore dispersed.

**Rules of use are not clear**. The design of the interface does not guide users in what can - and what cannot - be done on the platform. For example, many projects for participatory budgeting propose to change a current public contract; these proposals will be automatically rejected because they are beyond what it is possible within the platform. Indeed, the analysis of the assessments to the projects made by the civil servants shows that more than the half of the projects (61%) are rejected because they request something which is not city council's competence or is beyond the scope of participatory budgeting (Figure 10). Both errors could be minimised by improving the interaction design.

**Misaligned temporalities** between the proposals and the actual projects. The immediacy of digital technologies (people can enter in the platform, write a proposal, and publish it in a very short time) can create false expectations regarding the time required to assess or implement a proposal. However, the public

administration does not scale up (number of resources are not increased) and implementing proposals might take several years.

## Insights

Discussing the results with practitioners and participation experts, revealed three objectives to be pursued to enable sustainability of civic, tech for citizens participation namely: collective action, participation's efficacy, and transparency.

**Collective action** refers to the extent to which civic tech allow people to collaborate, coordinate, and articulate their actions influences the strength of the proposals. Looking at the proposals, there are thematic communities in Decide Madrid (interested in environmental sustainability, urban mobility, social inequalities) but they are fragmented.

In the long term, this lack of collaboration influences the number of proposals that achieve the required number of votes. In addition, it can also increase citizens' frustration and therefore negatively influence their participation.

The second objective is **civic efficacy**. The choice of this term is based on the concept of self-efficacy by A. Bandura, which refers to a person's own belief in their abilities to achieve goals. Here I extend the term to a collective form, and refer to the citizen's belief that their

participation can make an impact in the city. A digital platforms' legitimacy has a positive influence on civic efficacy; however, unclear rules and misaligned temporalities have a negative influence on it.

Finally, the third objective is **transparency**. In civic tech, transparency often refers to making processes, data, or finances available. In this case, transparency is understood as making visible all the required information (reading processes, policies, data) to enable genuine participation.

For example, transparency is about making clear what can be done on the platform, and what cannot be done, and how to do it. This is not an easy task since it entails knowledge on which information is important for all the people involved (citizens, civil servants)

Many of the projects at ParticipaLab build on the hypothesis that hybrid participation can complement civic tech platforms and overcome their limitations. The following chapters present three projects in which I have worked at MediaLab Prado. My aim in these projects was two-fold: first, gather additional data on the platforms limitations from different users; second, investigate the opportunities and challenges of hybrid participation.

# III. HYBRID PARTICIPATION

This section presents the results of three projects where I have participated: Madrid Listens, The city's observatory, and Proponent Communities. All the projects seek to enhance the possibilities of civic tech by enabling hybrid participation (digital and face-to-face).

## Madrid Escucha

*Madrid Escucha* (a word-game that means "Madrid listens", or "Listen, Madrid") is an open innovation project that established collaborations among experts, civic servants, citizens (Figure 11). One of the goals of the project is to influence policy making in issues of public interest. This project is relevant because it seeks to enhance the possibilities of civic tech through design workshops with different stakeholders.

I have participated in this project in two ways. First, I have been part of the three working sessions with international experts (from Taiwan, France, and the Joint Research Center at the European Union) to share learning outcomes and create methodologies for citizen participation.

Second, I have participated in a six-day workshop where citizens, experts, researchers, civil servants worked on issues of urban mobility. My team worked on the topic of how civic



Figure 11- Working sessions and workshops in Madrid Escucha. (Banner Source: MediaLab Prado)

Figure 12 - Inauguration and first session of the OC (Banner Source: MediaLab Prado)

technologies could be used to participatorily design urban mobility in Madrid. The motivation for starting this project was the frustration generated by the digital platform for citizen participation among the community of bikers in Madrid.

The project was led by a citizen expert on urban mobility and urban biking. He was also the co-founder of the largest urban biking organization in Madrid. The collaborators were two bikers and experts in urban planning, a civil servant from the urban planning area, and a civil servant from the citizen participation area (both from the city council). In addition, there was a facilitator from MediaLab.

In this project, I collected fieldnotes and formal documents and thematically analysed them using Atlas.ti.

## El observatorio de la ciudad

*El Observatorio de la Ciudad* (The City's observatory) is a citizen review panel which combines digital and analog methods, and it is the first one of its kind in the world. This project is relevant because it enhances the possibilities of civic tech by providing decision power to a selected group of citizens.

In this project, I have participated in four design sessions together with civil servants, politicians, experts, and researchers. Also, I have been one of the evaluators taking part in the actual sessions in March and June (Figure 12). The evaluation was performed using questionnaires at the beginning and end of all sessions. We also collected fieldnotes and engaged in informal conversations with the participants.

I used Atlas.ti to perform the qualitative analysis of the fieldnotes and open ended

questions; and SPSS for the quantitative data.

The citizen review panel is composed by 47 people, who are selected by sortition. The selection process goes as follows: the city council selects 30 000 citizens of Madrid and invites them to be part of the citizen panel. In this case, more than 1200 people accepted to participate. A second sortition round is performed among those who accepted, controlling for different factors to ensure diversity (e.g. age, district). The task of the citizen review panel is to evaluate the proposals coming from Decide Madrid and decide whether to make them subject of a public consultation.

## Comunidades Propositivas

*Comunidades Propositivas* (Proponent communities) is a project that aggregates fragmented communities on Decide Madrid and bring them

together to create curated proposals that have higher chances to succeed. This project is relevant because it seeks to enhance the possibilities of civic tech by analyzing large amount of online data using digital methods and leveraging on that data to foster collective action (Figure 13).

The project started with an analysis of more than 10000 proposals on Decide Madrid and, using network analysis and Natural Language Processing. The results showed thematic communities which were fragmented and two of them were selected (one was about environmentally sustainability, the other was about children-friendly urban environments).

Through a process of analysis and mediation through digital methods and events, two new collective proposals were created and submitted to Decide Madrid. The process proved to be successful, and one of them have obtained more than 27000 votes.

In this project I have participated in the design, implementation, and evaluation of the activities. To that purpose, I have used Decide Madrid's API, Hyphe and Gephi for online data collection and network analysis .

These three projects have produced large amounts of data. In this report, I will focus in the outcomes that are relevant for civic technologies and their sustainability.

The projects provided data on opportunities for improvement of civic platforms, but also evidence of the opportunities and challenges of hybrid participation in civic tech.

## Main results

*Civic Platforms - Opportunities for improvement*

Civic Tech platforms have many different users: citizens, civil servants, experts, policy makers. However, ci**tizens tend to be considered the main users in civic tech for citizen participation**; to develop meaningful participation is equally important to consider the needs, goals, and practices of all of them.
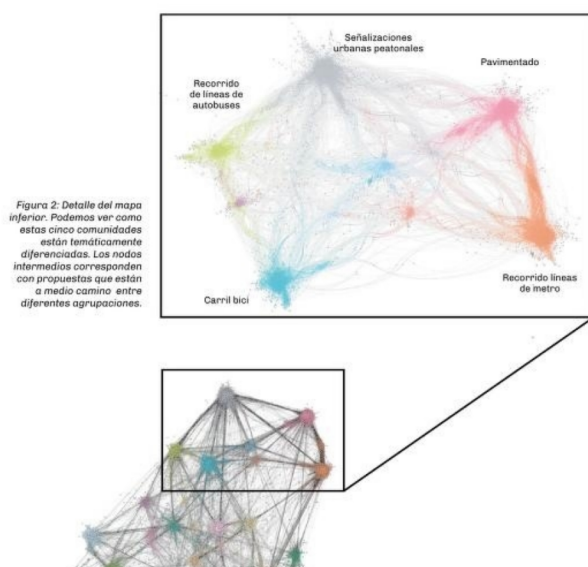


Figure 13 - Digital methods and events (Sources: Democracias Futuras by MediaLab Prado; Komons.org)

The workshops and working groups activities confirmed that it is very important that civic platforms **make explicit the "rules of the game"**, and contextualized them for each type of user. These rules should be embedded in the design and not as a set of instructions. For usability purposes, instructions should be reduced to the minimum.

During the activities, some citizens felt that they were **missing relevant information** to properly use the platform: What is it possible? What are the steps to achieve it? How should that be implemented? What is the potential impact? What is the expected timeframe? What is it not possible to do on the platform?

The interaction with public administration through civic platforms can be a **source of frustration**. Inconsistencies in the communication, vague arguments for rejecting projects, lack of meaningful feedback, or little impact. These sources of frustration can partially be addressed by design. For example, a platform can suggest replies to a proposal to civil servants (minimizing inconsistencies), or support proposals to evolve into collective action (little impact).

In addition, civic platforms can be a source of frustration to civil servants. Overlooking the importance of engaging civil servants in the design process and of designing the platform to their practices can lead to poor design and personal resistance. For example, communications from the local government on the platform contains inconsistencies, mainly due to the lack of coordination and articulation mechanisms among civil servants in the platform. Furthermore, Civic tech should aim to minimize civil servants' workload.

Civic Tech platforms are often designed using the design principles of online communities. However, the data collected suggests that **civic tech platforms are not exactly as online communities**. For example, in terms of usage, most of the people in an online community only read what other people write, they are called "lurkers". However, most of the respondents in Decide Madrid seem to use the platform to support proposals, as a different kind of lurking. Although these results are not conclusive, they suggest that using the design principles of online communities might not fit the needs of civic technologies.

Civic tech platforms tend to translate what it is done analogically into a digital interface; instead of **exploring new possibilities which are enabled by technologies**. For example, during the activities it came out that information from the environmental sensors in the city (pollution, traffic flow) would be useful for motivating and grounding proposals. Combining these data into the digital platform could enhance existing participation processes.

*Hybrid forms of participation - Opportunities and challenges*

Hybrid forms of participation open many opportunities to improve sustainability of civic technologies. Digital technologies foster scalability and representativeness. Analog methods foster community building and collective action.

The digital platforms for citizen participation generate **initial enthusiasm**, which can easily turn into frustration, especially when proposals are rejected and the reasons are not well elaborated or when proposals have little impact.

Face to face activities with other citizens, civil servants, and experts can overcome some of these frustrations and restore initial enthusiasm. Civic platforms

experiencing a decrease in their participation could use the events for engaging again with a critical mass.

Choice of methods to identify stakeholders influence representativeness, which can influence the trustfulness on the platform and eventually lower its value. Combining digital methods based on large amount of data (as in Proponent Communities) and sortition (as in the City's observatory) for gathering participants with different perspectives can **improve diversity**.

**Legislation is important for civic efficacy**. This was clearly illustrated by the City's observatory, where citizens do not only provide recommendations but are part of the decision-making process. The results of the questionnaire show that citizens were significantly more positive and less skeptic about the usefulness of their participation at the end of the first session.

Analog processes require **mediators who guide the activities** and discussions towards a predefined goal; and mediate among the different stakeholders. Without mediation, physical process might just add more frustration.

## Insights

Table 4 presents each of the three objectives complemented by several **guiding questions.** The three objectives together with the set of questions can be used as a tool for supporting business modeling activities of civic tech start-ups. These questions have been developed based on the empirical and desk research and refined through conversations with civil servants and experts in participation.

Furthermore, the projects highlighted opportunities for new business needs and services. For example, civic technologies need services that have the skills and expertise to translate processes in the public administration into interface designs. In addition, civic platforms need products and services that visualize, contextualize, and triangulate sources of information to make relevant data friendlier and more actionable to citizens that want to make proposals to their local governments. In addition, there is a need for services that use large data analysis to identify relevant stakeholders to participate in hybrid processes. Finally, hybrid models of participation require mediators (which can be provided as a service) that are experts on civic platforms and can guide face to face activities into actionable outcomes.

In all of the projects, MediaLab (as an organization and physical space) played a crucial role in initiating, mediating, and sustaining participation. For example, in Madrid Escucha, MediaLab employees served as a source of expertise on organizing the event and mediating the activities. In addition, their network was instrumental in engaging civil servants in the process. Indeed, all the projects brought together

Table 4- Objectives and guiding questions for sustainability of Civic Tech for citizen participation

| Objective | Guiding questions |
|---|---|
| **Collective Action** | Does the technology allow citizen to self-organise themselves? Do the technology support citizens to self-organise themselves? Has diversity been explicitly consider when designing the means of participation? Are there specific methodologies in place for broadening participation to different perspectives? Are there specific physical meeting spaces for different actors (citizens, experts, civil servants)? |
| **Civic Efficacy** | Are the ways in which citizens impact clear, visible, and regularly updated? Is the timeline of the processes visible? Is there legislation that goes beyond recommendations into genuine participation? Do the technology reduce civil servants' workload? |
| **Transparency** | Are processes transparent? What are the affordances on the digital platform? Is it clear what citizens can do on the platform? Is it clear what they can't do? Are the steps to achieve their purpose clear? Are the differences between different forms of participation explicit? |

# IV. CIVIC TECH ENTREPRENEURSHIP

From an entrepreneurial perspective, Civic Tech start-ups have specific challenges which influence their sustainability. In the following sections I elaborate on these challenges based on the entrepreneurial knowledge acquired during the EIT Digital education, the market research on civic tech, the analysis of existing studies and reports.

## Uncertainty in Civic Tech Entrepreneurship

In general, being an entrepreneur entails embracing a great degree of uncertainty. However, based on civic tech reviews (for example, by the Knight Foundation, or the Omidyan Network), there are some sources of uncertainty which are specific to civic tech. Here, I elaborate on the challenges that civic tech ventures can face when estimating the market size, staying truthful to a value proposition, and maintaining customer relationships (Table 5). These insights aim to help civic tech start-ups to foresee possible risks to their business sustainability.

**Market size estimation** can depend on values and social pressure. Market size is a function of potential customers divided by the penetration rate.

On the one hand, the number of target customers is very high because any government, NGO, or international agency is a potential customer.

On the other hand, it is difficult to estimate the penetration rate because the number of potential target buyers depends on the priority given to citizens' participation. In the last years, there has been an increasing demand of civic technologies because of social pressure. In addition, national and international legislation increasingly sets rights and standards with respect to participation policies in issues of public interests.

This risk can be reduced by raising the participation standards in local governments by, for example, providing a certification to those which support participative processes. It is important to highlight that participation enabled through legislation or certification can also lead to the instrumentalization of participation, which can negatively influence a start-up's value proposition, which brings us to the next point.

**Staying truthful to a value proposition** can depend on external factors. The value proposition of a start-up doing civic tech for citizen participation is tightly related to the impact of the participation enabled by the technology.

However, making sure that participation is impactful and genuine does not only depend on how well designed or implemented a civic product or service is, but can also depend

on external factors such as public policies, legislation, and political willingness.

This risk can be reduced by engaging with local advocacy groups and influence participatory policies in a way that participation does not only mean to provide recommendations but also making an impact.

In addition, some revenue models might interfere with value propositions. For example, building a revenue model on data monetization or transaction fees can seem inconsistent with some of the values expressed by the company.

This risk can be minimized by raising investment funding for building core capacities, so there are available resources (liquidity, time, employees) for creating products and services that aligned with the company's value proposition.

**Maintaining customer relationships** can depend on political changes. Customer relationships means establishing a relationship not only with the public administration, but also with policy makers, and politicians.

A related risk is that technologies can be linked to political views, or even to concrete political parties. If that is the case, the sustainability of a civic tech start-up can be influenced by a change in the government.

This risk can be reduced by establishing strong connections with civil servants, and co-designing the platform with them. Engaging civil servant in the design and development process will not only improve the quality of the technology, and civil servants' satisfaction but also create a lasting customer relationship.

Table 5 contains assessment questions for each of these risks. This table can be used as a tool to guide civic tech start-ups in evaluating and addressing potential risks to their business. The table has been developed based on empirical research and discussions with a researchers

Table 5- Risks assessment for Civic Tech entrepreneurs

| Risk | Assessment |
| --- | --- |
| **Market size estimation** depends on values and social pressure | How active are citizens in demanding means of participation in issues of public interest? How likely are citizens to engage into collective action around a hot topic of public interest? How interested is the local government in enabling genuine participation? |
| **Value proposition** depends on external factors | Are your revenue models aligned with your value proposition? What revenue models could be risky for your company? How transparent is your company about revenues? How open is the local government to collaborate in fostering civic efficacy? |
| **Customer relationships** depends on political changes | To what extend is your product linked to a political programme? To what extent is the public administration involved in the design? To what extend does your product simplify processes in the public administration? |

on innovation models.

## Considerations on Civic Tech Business Models

To minimize the effect of these sources of uncertainty, and based on my experience during the BDExp and existing studies, I propose that civic tech entrepreneurs consider aspects of their business models with respect to the short and long term. This means to consider what they need to survive next and what can help them in their sustainability, how the two of them relate, and what they need to achieve both.

More concretely, it is important to differentiate between **revenue and investing funding**. Revenues can be obtained in the short term by built products and services. Because of the political and social context around civic tech, there is a risk that start-ups in this field focus in short term tasks which help them move forward but hinder their sustainability. Therefore, it is important to have investing funding which helps build core capacities that can sustain the company in the long term.

While doing this, The Knight Foundation proposes the difference between **buyers and builders**, which I think it is a very important one. Buyers are those who will pay for services and products in the short term, such as governments, NGOs, or enterprises. Builders are those who will pay for building core

# RECOMMENDATIONS

In the following, I present some recommendations based on my research and experience. These recommendations can be useful for different stakeholders such as civic tech entrepreneurs, innovators in the public administration, or citizen laboratories which want to support civic tech initiatives.

**General recommendations:**

- Civic Tech has a lot of potential, can raise a great amount of funding, but it also has a **very high failure rate**.
- Initial **enthusiasm can be overtaken by frustration** and feelings of powerless if participation appears to be meaningless or lacking impact.
- Good design (usability and user experience) and technical infrastructures are important especially in the short term. In the long term, **sustaining participation is mainly a social challenge, not a technical one**.
- Combine technical expertise with experts from the social and political sciences. The success of Civic Tech for citizen participation depends on processes that genuine and sustained participation.
- Consider setting-up **hybrid models of participation** (digital and face to face) to improve collective action, transparency, and civic efficacy in ways that digital means cannot.
- Select a **"neutral" physical space** for face to face activities. Public administration spaces are not a good choice. If available, Citizen Laboratories are a very good fit.
- **Involve the public administration** early in the design process. Civic Tech users are not only the citizens but also the civil servants. The sustainability of your product largely depends on how well the design and development fit civil servants' work practices.

**For Civic Tech Innovators:**

▸ Consider **collective action, civic efficacy, and transparency** as indicators of success.

▸ Support **collective action** by allowing users to collaborate and cooperate. Consider diversity and inclusion factors when doing this. Identify key actors using social network and online analysis. "If you build it, they might not come": open participation to everyone, and personally invite those who are key to your process.

▸ Design participation considering its **civic efficacy**. Designing platforms that support participation also entails understanding how this participation can make an impact. Users should be able to obtain up-to-date information on the status of their contribution. Reasons for rejection should be clear, meaningful, and consistent.

▸ Enable **genuine transparency**. Do not make data and actions available, but meaningful and ready at hand to be used by everyone. Develop expert knowledge of the terminology, processes, and in the public administration. Make the rules of the process clear. Create citizen-friendly participatory processes, citizens do not need to know policies or legal processes to successfully interact with your product.

**For Civic Tech Entrepreneurs:**

▸ Early funding is not an indicator of success. Civic tech requires an **active and sustained critical mass** to survive over time.

▸ Consider your business models with respect to the **short and long term**. Because of the political and social context around civic tech, there is a risk to focus in short term tasks which help you move to the next step but hinder the venture's sustainability.

▸ Differentiate between **revenue and investing funding**. The former enables liquidity, the latter allows developing core capacities to sustain the venture in the long term.

▸ Explore the different the **revenue opportunities that hybrid participation open**. Do not only focus on the technical product. Consultancy and facilitation can also be sources of revenue.

# PERSONAL LEARNING

My BDExp has been a great experience, which has helped me to **acquire practical skills, develop new knowledge, and enlarge my network** with researchers, entrepreneurs, civil servants, and international experts. MediaLab has been instrumental in doing so because it is a very active hub where activities, workshops, presentations take place continuously.

In relation to my technical doctoral area of studies, I have learned practical skills for doing research in societal contexts. This means **skills for collecting and analysis online data**. In concrete, I have learned practical skills such as Python for scrapping the content in Decide Madrid platform. Also, working together with Komons.org has been very important for developing skills in digital methods for collecting online and social media data. In concrete, I have learned how to use Hyphe for collecting online and social media data and learned Gephi for doing network analysis.

The methodology I developed during my thesis with its three processes (articulating, representing, and reconfiguring) has been instrumental in guiding me through the different activities and conceptualizing my tasks. For example, Decide Madrid is an excellent tool for articulating issues; however, it is very limited in terms of representing and reconfiguring those issues because it does not allow to bring in different



Figure 14 - Exhibition of projects by the ParticipaLab at MediaLab Prado

perspectives or to support self-organisation in a way that they can lead to the sustainability of a proposal. In addition, hybrid participation methods enabled by some of the projects  help articulate an issue, but they are limited in representing different perspectives.

In addition, my methodology has been useful for **ideating a new service**. Together with Komons, we have used this methodology to reflect on the way  stakeholders are identified and categorized . This work has led to the development of a new service: "Social Actors Mapping", which is currently under development.

This service allows identifying social actors using a mix of digital methods such as social media and network analysis and qualitative research, and it is an improvement to existing services for stakeholders analysis and categorization.

The BDExp has also highlighted some of the **limitations of my thesis**. In the first place, my methodology does not consider issues of scale: How to articulate an issue when those who participate are not a small group but potentially the entire population of a city? How to make their opinions visible, understandable, and actionable? In addition, legitimization is considered to a very limited extent in the methodology: How to navigate existing structures (organizational structures, existing procurement contracts) to be able to enable legitimate participation? Are there formal requirements for legitimization and, if so, how to enable these? Finally, the engine moving all the activities presented in my methodology are personal motivations and interest – there is no elaboration on revenue models or investment funding since the activities were funded by the research project I participated in. How to sustain the processes proposed in the thesis? What are the products and services that can provide revenues or what are the strategies for obtaining investment funding? During my BDExp I have addressed some of these questions, but some others remain still open.

Furthermore, the knowledge and skills that I have learned at the EIT Doctoral School have served to contribute to  Komons' business model and growth plan. In addition, I have expanded my **knowledge on entrepreneurship and innovation**, especially with respect to the public sector. For example, I have learned about uncertainty in entrepreneurship and strategies to deal with it. I have witnessed how the entrepreneurial journey is more than taking the most effective path to an easily defined future but it is a process of exploration.

While exploring about non-linear business models and discussing with entrepreneurs, I have learned about the concept of effectuation, which fits very nicely to what I have experienced during these six months. The concept of effectuation is used to show  that entrepreneurs rely on the means they have available to move forward. They take the minimum risk that gives them the maximum benefit. One of the main challenges is how to keep going in the short term while working on enabling sustainability in the long term.

Citizen laboratories, such as the MediaLab, are great catalyzers of opportunities and networks for civic entrepreneurs under uncertainty because they allow interacting with other people and create business opportunities. However, an important pitfall is to move from interest to commitment. Opening possibilities without commitment are dead end opportunities that stay on hold.

Finally, my internship has influenced my interests, as now I am looking forward to continuing working in **innovation in the public sector** and engage into projects that exemplify ways in which academia can collaborate with young ventures. Indeed, the collaboration with Komons will go on beyond these six months, since we are continuing working on the "Social Actors Mapping" service.

During my  BDExp I have also faced **difficulties**. One of them has been agreeing on tasks which would be complex enough to provide meaningful insights, and at the same time simple enough that would provide results within six months. Also, the distributed governance model at MediaLab, where employees usually lead

their own projects and collaborate with practitioners, researchers, civil servants, enterprises, citizens outside MediaLab was initially challenging because there was a great amount of tacit knowledge about the relationships and everyone's roles. However, further down the line this structure has been very convenient because it has allowed me to explore different topics, join different projects such as Madrid Escucha, and strengthen my collaborations with  start-ups such as Komons. Finally, working with the public administration, politicians, and policy makers has been challenging because I needed to learn about a great amount of new terminology, procedures, and organizational structures, which I hope I can continue using by going on working on civic technologies and public innovation.

## FINAL REMARKS

The new possibilities that digital technologies offer can be both a threat and an opportunity to democratic values. This report demonstrates many ways in which digital technologies can be used to help citizens make a positive impact and improve transparency in governments.

Even though the timing is right, the funding appeal is high, and the required technologies are mature enough, Civic Tech start-ups are still struggling to maintain themselves over a sustained period of time. This report highlights the importance of considering societal aspects when envisaging civic tech ventures that can survive in the long-term and proposes a set of tools and recommendations for how to do it in practice.

Due to time limitations, the tools presented in this report are based on empirical data of one civic tech platform. Future work should investigate similar civic tech platforms for citizen participation, but also other civic technologies such as civic crowdsourcing and data analysis and visualization. Furthermore, the empirical material is based on three case studies. Future work should focus on evaluating the tools and recommendations in other contexts.

Finally, based on my experience, citizens laboratories combine knowledge, skills, and network which are very relevant to civic tech developers. Opening up new opportunities and strengthening existing collaborations (through projects or programmes) among civic tech entrepreneurs and citizens laboratories can result in very fruitful collaborations, which can have a great impact on the sustainability of civic tech for citizen participation.

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Supported by:

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