

Models, Methodologies, Scenarios &

Requirements - Final



 Project
 Enabling Multichannel PArticipation Through ICT Adaptations

 Acronym
 EMPATIA



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Versioning and contribution history

#	Description	Contributors
0.0	First draft	Secchi (CES)
0.1	Detailed Review of Chapter 5 and 6 (Use Cases and Requirements)	Cordeiro (ONE)
0.2	Draft update and chapter 2 and 3 review	Stortone (UNIMI)
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0.3	Complete Review #1	Ferreira (CES)
0.4	Complete Review #2	Bertone (UNIMI)
0.5	Deliverable 1.1 Models, Methodologies, Scenarios & Require-	Secchi (CES)
	ments – Early Draft (Submitted at M04)	Cordeiro (ONE)
0.6	Chapter 2, 3 and 4 extended and updated	Spada (CES)
0.7	Chapter 5 detailed and reviewed	Stortone (UNIMI), Julio (INLOCO) Ruesch (ZLOG), Nekola (D21)
0.8	Full draft review	Copello (CES)
0.9	Deliverable 1.2 Models, Methodologies, Scenarios & Require-	Spada (CES)
	ments - Preliminary (Submitted at M12)	Secchi (CES)
0.10	Added Section on IODP	Copello (CES)
		Spada (CES)
0.11	Added preliminary section on the quick guide for decision makers	Ruesch (ZLOG)
0.13	Added Report on Empaville	Meloni (CES)
1.0	First Submission of Deliverable 1.4 Models, Methodologies, Scenar- ios & Requirements - Preliminary (Submitted at M18, before the amendment approval)	Copello (CES)
1.1	Added section on data analysis and visualization	Klein (CES)

1.2	Added final section (including Annex G) of "A quick Guide for decision makers"	Ruesch (ZLOG)
1.3	Review IODP section and Empaville report	Copello (CES)
1.4	Section and project update	Copello(CES) Secchi (CES)
1.5	Edit from the internal peer-review process	Ruesch (ZLOG), Julio (IN- LOCO), Horst (D21)
2.0	Final edit and submission of Deliverable 1.4 – v2.0 – Models, Methodologies, Scenarios & Requirements - Final (Submitted at M22)	Copello (CES)

Preamble

This is the final version of Deliverable 1.4 report, originally due at the end of June (M18), as stated in the EMPATIA's work plan proposal. At the time, a preliminary version of this final report was handed in (v1.4) explaining that due to changes in the time schedule of pilots, and its consequent impact on results and analysis, it was decided during a EMPATIA General Assembly, to ask for a shift in the deadline of this task to end of October (M22) as described in the accepted Amendment handed in May 2017.

Executive Summary

This document reports the results of the twenty-two months of activity of Working Package 1 (WP1). The overall objective of WP1 was to provide the conceptual framework that supports the entire EM-PATIA project. In particular the information here reported have guided the development of the preliminary prototypes of the EMPATIA pilots in the Czech Republic, Germany, Portugal and the newly added pilot in Italy. Motivated by the pilots, the original conceptual framework has evolved with respect to its preliminary version described in the previous four draft versions of this document.

Starting from suggestions which emerged in the field, WP1 has also explored a number of new lines of research on informed consent, gamification, e-deliberation, and crowdsourcing that were piloted in ancillary projects in conjunction with the new Italian pilot (Milan), members of our research board (e.g. Participedia), and institutional networks (i.e. International Observatory on Participatory Democracy - IOPD). The research on gamification has evolved into an entire gamified multi user experience platform called Empaville. Empaville has been deployed more than 20 times with academic experts, bureaucrats, practitioners, and citizens to explore the advantages and disadvantages of ITC solution for participatory budgeting. The research on e-deliberation has received an additional small grant from the Templeton Foundation in the US to develop a spin-off project focused on improving online discussions. Lastly IODP, a network of more than 2000 cities, and Participedia, a global network of scholars that maps democratic innovations, have partnered with EMPATIA to map the use of ICT solutions for participatory governance pushing EMPATIA to develop an advanced research suite. The preliminary results of this mapping survey are presented in this report (section 4.4).

The deliverable is composed by eight chapters and is organized in two main parts.

The first part (Chapters 2-3) focuses on the analysis of the state of the art of the scientific research on Democratic Innovations and on the transformations introduced by the widespread adoption of platforms and other ICTs, both in terms of their delivery and on the definition of a preliminary analytical framework to study multichannel Democratic Innovations. It adds a specific chapter on case selection that focuses on why the EMPATIA platform has selected pilot sites in cities that have implemented or desire to implement participatory budgeting.

The second part (Chapters 4-7) defines the initial non-functional and functional requirements for the EMPATIA platform prototype, starting from the development and analysis of use case scenarios. It begins by offering an overview of the multi-method approach we employed to gather such require-

ments. It then describes the early conceptualizations generated before initiating each pilot. As it is clarified in the introduction, a divergence between the suggested requirements described in this document, and the requirements effectively requested and implemented in the pilots will be described – as well as its impact – on D3.2. Participatory budgeting processes are profoundly embedded in the socio economic context (see D1.3 for a detailed analysis), thus the dialogue between theory and practice is in constant evolution and strongly depends on political factors that are outside the consortium control. Section 3.6 details some of the context aspects of each pilots prior to implementation, describing the change from Bonn to Wuppertal and the opening opportunity in Milan that has been added as a new official pilot. This part includes the results of the mapping of other democratic innovations worldwide (in partnership with IODP and Participedia); and it presents a quick guide to frequently asked questions related to the EMPATIA platform implementation (Chapter 7).

In addition, the introduction provides a description of the objectives, scope and main results of the deliverable and a detailed analysis of its relation with other Tasks and Working Packages of EMPATIA, while the conclusion offers an overall assessment of the state of the conceptual framework developed by the EMPATIA project.

Table of Contents

Preamble
Executive Summary
Table of Contents
Table of Figures
Table of Tables
Acronyms14
1. Introduction
1.1. Motivation, Objectives and Scope of the Deliverable15
1.2. The role of this Delivery within the Project17
1.3. Structure of the rest of the document18
2. Key Concepts
2.1. Defining Multichannel Democratic Innovations 21
2.1.1. The Lego Blocks of Multichannel Democratic Innovations
2.1.2. The Advantages of Integrating Multiple Channels of Engagement in Democratic
Innovations
2.1.3. Challenges of Integrating Multiple Channels of Engagement in Democratic Innovations. 30
2.1.4. Models of Integration
2.1.5.MultiChannel Participation in Summary
2.2. The Publics of Multichannel Participation35
2.2.1. Organized Civil Society and Individuals in Multichannel Participation
2.2.2. Confluences and Tensions between Democratic Innovations and Social Movements 39
3. Case selection
3.1. Why participatory budgeting?

3.2. What is participatory budg	eting? 47
3.3. Brief overview of the acad	emic literature on participatory budgeting
3.4. Diffusion of PB Worldwide	: Trends and Families55
3.5. The evolution of technolog	y in participatory budgeting processes59
3.6. Pilots	
3.6.1. The evolution of the El	/IPATIA pilots
4. Requirements Gathering	
4.1. A multimethod approach .	
4.2. Case-Oriented Requiremer	ts Gathering73
4.3. Gamified multi-users expe	rience: Empaville75
4.4. Mapping additional use ca	ses in collaboration with IODP77
4.5. Mapping existing e-democ	racy tools
4.6. One to One UX with experi	s
5. EMPATIA Theoretical Use Cases	
5. EMPATIA Theoretical Use Cases	
5. EMPATIA Theoretical Use Cases 5.1. Methodology 5.2. Use Case 1	s
 5. EMPATIA Theoretical Use Cases 5.1. Methodology 5.2. Use Case 1 5.2.1. Use case general descr 	85
 5. EMPATIA Theoretical Use Cases 5.1. Methodology 5.2. Use Case 1 5.2.1. Use case general descr 5.2.2. PB cycle 	85
 5. EMPATIA Theoretical Use Cases 5.1. Methodology 5.2. Use Case 1 5.2.1. Use case general descr 5.2.2. PB cycle 5.2.3. PB cycle phases 	s
 5. EMPATIA Theoretical Use Cases 5.1. Methodology 5.2. Use Case 1 5.2.1. Use case general descr 5.2.2. PB cycle 5.2.3. PB cycle phases 5.3. Use Case 2 	85
 5. EMPATIA Theoretical Use Cases 5.1. Methodology 5.2. Use Case 1 5.2.1. Use case general descr 5.2.2. PB cycle 5.2.3. PB cycle phases 5.3. Use Case 2 5.3.1. Use case general descr 	85 85 86 iption
 5. EMPATIA Theoretical Use Cases 5.1. Methodology 5.2. Use Case 1 5.2.1. Use case general descr 5.2.2. PB cycle 5.2.3. PB cycle phases 5.3. Use Case 2 5.3.1. Use case general descr 5.3.2. PB cycle 	85
 5. EMPATIA Theoretical Use Cases 5.1. Methodology 5.2. Use Case 1 5.2.1. Use case general descr 5.2.2. PB cycle 5.2.3. PB cycle phases 5.3.1. Use case general descr 5.3.2. PB cycle 5.3.3. PB cycle phases 	85
 5. EMPATIA Theoretical Use Cases 5.1. Methodology	i 85 85 86 iption 86 87 87 88 91 iption 91 91 91 91 91 93 93
 5. EMPATIA Theoretical Use Cases 5.1. Methodology 5.2. Use Case 1 5.2.1. Use case general description 5.2.2. PB cycle 5.2.3. PB cycle phases 5.3.1. Use case general description 5.3.2. PB cycle 5.3.2. PB cycle 5.3.3. PB cycle phases 5.3.4. Use Case 3 5.4.1. Use case general description 	a 85 86 86 iption 86 87 87 88 91 iption 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 91 93 93

5.4.3. PB cycle phases
5.5. Use Case 4
5.5.1. Use case general description96
5.5.2. PB cycle
5.5.3. PB cycle phases
5.6. Use Case 5 102
5.6.1. PB cycle 102
5.6.2. PB cycle phases 102
5.7. Additional use cases 105
5.8. Use Case analysis 105
5.8.1. Agenda Setting 108
5.8.2. Ideation
5.8.3. Development
5.8.4. Selection
5.8.5. Monitoring
5.9. Non-functional requirements 114
6. Requirements 116
6.1. De-constructing PB: from Phases to Actions 116
6.2. Requirements Description 121
6.3. Additional requirements and tools 131
6.3.1. Voting
6.3.2. Informed consent
6.3.3. Wizard & templates
6.3.4. E-deliberation134
6.3.5. Data Management and Visualization135
7. A quick guide for decision makers 136

8. Conclusions
Keywords of EMPATIA
Bibliography
ANNEX A: Empaville Report
ANNEX B: EMPATIA PB Cycle (from the original proposal) 170
ANNEX C: Template for Use Case Scenarios 172
ANNEX D: IODP crowd mapping survey 175
ANNEX E: E-deliberation randomized controlled trial 179
ANNEX F: A Review of Data Visualization and Managements Tools
ANNEX G: "A quick guide for decision makers"

Table of Figures

Figure 1 Relation between Deliverables2	20
Figure 2: How common are multichannel innovations?7	78
Figure 3: Variety of Processes	79
Figure 4: Does the city have an integrated digital platform?	80
Figure 5: What is the governance structure of the various participatory processes?	80
Figure 6: Outcomes of Digital innovation initiatives	81
Figure 7: Participatory System of Canoas, Brazil	82
Figure 8: Use Case 1 PB cycle	88
Figure 9: Use Case 4 PB cycle	99
Figure 10: New EMPATIA PB Model10	06
Figure 11: From Phases to Actions11	17
Figure 12: Requirements Description Structure12	22

Table of Tables

Table 1: Strengths and Weaknesses of PB	53
Table 2: PB Phases Conversion	107
Table 3: Ranking of non-functional requirements	115
Table 4: From Phases to Actions	119
Table 5: Requirements Description	123

Acronyms

Acronyms	Description
СА	Citizen Assembly
CRM	Citizens' Relation Management Platforms
D n.n	Deliverable (referred to EMPATIA's proposal)
DI	Democratic Innovation
GA	General Assembly
ІСТ	Information and Communications Technology
IODP	International Observatory on Participatory Democracy
РВ	Participatory Budgeting
SM	Social Movements
T n.n	Task (referred to EMPATIA's proposal)
UCS	Use Case Scenario
WP n	Working Package (referred to EMPATIA's proposal)

1. Introduction

The introduction to the report of the deliverable D1.4 describes briefly its objectives, the role of the deliverable in relation to other tasks and working packages of EMPATIA, and finally the structure of the document, providing a brief abstract for each chapter.

1.1. Motivation, Objectives and Scope of the Deliverable

This deliverable provides a report of the activity of the EMPATIA's Task 1.1: 'Theories, models and cases studies for Participatory Budgeting', and Task 1.2 'Reference scenarios and requirements', whose objective was the study and analysis of the State of the Art of the use of collaborative platforms in the design and management of PB in Europe, in order to define a logical framework for research and analysis of multichannel PB. The main goal of this deliverable regards then the development of an initial body of knowledge regarding multichannel Democratic Innovations (DI) and in particular Participatory Budgeting (PB) that guided the initial advancement of the project on three main dimensions:

- The delivery of scientific research activity regarding theories and cases of multichannel DI, focusing in particular on the challenges and opportunities introduced by the integration of Information and Communications Technology (ICT) in their design and management;
- The development and dissemination of a collaborative platform and other ICT tools able to support the design and management of DI;
- The implementation of pilots during the lifetime of the project where the theories and tools developed were tested in real-life setting.

This deliverable moves from the content included in EMPATIA proposal to cover the debates and the discussions carried out during the kick off meeting (January 2016), the workshop organized in Milan (February 2016), the workshop organized in London (May 2016), the second partner meeting organized in Prague (September 2016), the GA meeting in Coimbra (January 2017), the project review (feedback) in Rome (January 2017), the GA in Bonn (June 201) and the GA in Milan (September 2017). The partners of the EMPATIA's consortium have been actively engaged in providing inputs and feedbacks to the various elements that compose the document during bi-weekly Skype meetings that have begun after the September meeting in Prague, and have particularly focused on pilot support. For this reason the material covered in this deliverable is the result of a multi-disciplinary work based on the collaboration between various sources of knowledge.

The first iteration of this document (v1.1) was the first deliverable of the whole EMPATIA project, concluded at month 4 from the official start of the project. As it is inferable, that deliverable had a pivotal role in the launch of EMPATIA. Indeed it was supposed: to develop and evolve theoretical and technical intuitions already in the original proposal into more articulated reflections, to provide a set of guidelines to activate the work of other Working Packages (WP) and Tasks (T), and finally to provide a reference point – in terms of form and content – for the deliverable in the progress of EMPA-TIA. In detail, the main objectives of this deliverable can be described as follows:

- a) Define a preliminary analytical framework to study multichannel DI, and PB in particular, starting from the analysis of the state of the art of the scientific research on DI and on the transformations introduced by the widespread adoption of platforms and other ICTs in their delivery;
- b) Define non-functional and functional requirements for the EMPATIA platform prototype, in a permanent exchange of inputs and feedback between WP1 and WP2 regarding: how the platform should work in order to accomplish the transversal objectives of the project (nonfunctional), and what actually are in detail the functions that we need to develop and integrate (functional);
- c) Activate other Tasks and WP that will be feed and guided by the information contained in this deliverable.

However, it is important to state that during the development of this report – as well as its tasks – it became apparent that there was a mismatch between the theoretical models – as originally conceived – and their practical implementation.

At the technological level, for instance, there are a number of components' specifications that were not developed. As it turned out, Pilots did not request the implementation of these components, nor were willing to test them within their PB processes. We are aware that some of these requirements were abstractions at the theoretical level, and were often deemed too general, or too risky to be put in test by municipalities. Some of these suggested innovative options (e.g. Alliance, different voting systems) were not necessarily in line with what practitioners, or city managers in charge of the process, were either familiar or willing to engage with.

Moreover, the process was altogether delayed because many pilots started to react and define better the requirements only after a first version of the platform was made available for testing. This meant that only then it was possible to collect more details on the requirements, to then define what features the platform would have to support these requirements. These issues, and how they affect

the features actually being tested, are not described in this document but on D3.1. For this reason, we recommend that both D1.4 and D3.2 be read together, to enable appropriate referencing.

Finally, in order to develop the platform, general requirements were created based on a review of the literature and of existing experiences. This was the base of the theoretical framework, which is the multichannel participation. In practice, the limited time, issues reported above, and small scale of the project, has affected our ability to test this framework within the pilots. We have, however, devised the partnership with the International Observatory on Participatory Democracy (IOPD) and Participedia to counterbalance this. As the activity described on section 4.4 of this document, through this partnership we were able to look at the current state of the art, including the different understanding about multichannel participation within DI, between academics and practitioners. Remarkably, the fact that more than 130 mapped cities have understood the multichannel terminology and framework, suggests that this is a current subject and despite not having been directly dealt with within EMPATIA pilots, we have managed to open this discussion within the community.

1.2. The role of this Delivery within the Project

As it is declared in the original EMPATIA's 'Description of Work', this deliverable 'provides a report on the outcomes of Tasks T1.1 and T1.2 [up to M22], which was used to support the work on T2.1, WP3, and other activities feeding on the results of WP1'. Translating from project technical language, this means that the pivotal role of Tasks 1.1 and 1.2 in activating and steering the activities of the Task 2.1 are: providing Platform architecture and specification, and in providing guidelines to WP3 focused on Pilots design and implementation.

Figure 1 shows in detail the relation between this deliverable and those foreseen as an outcome of the Tasks of WP2 and WP3.

The dialogue between T1.1 and T2.1 has continued all along the project and was at the base of this final version of this deliverable.

The relation with WP3 and the design and management of the pilots is less structured. WP1 and WP3 are supposed to feed each other mutually: on one hand guidelines provided here, and in all past version of this deliverable, have supported the delivery of pilots. On the other hand, the same study of the pilots (as well as other external case studies) were a fundamental source for the activity of T1.1. Anyway, the theoretical model of application of EMPATIA designed here (and in the past versions) were not binding for the actual pilots, whose design and implementation were delivered in autonomy according to the specific needs of the territory involved.

1.3. Structure of the rest of the document

The rest of the document is structured in seven additional chapters. The title of the document Models, Methodologies, Scenarios & Requirements reflects adequately its structured content. It is also possible to conceive the deliverable as composed by two main blocks: the first block (chapters 2 and 3) is mainly focused on the development of the theoretical framework to research multichannel democratic innovations, the second one, (chapters 5, 6 and 7) is more pragmatically oriented to the description of use scenarios and requirements for the EMPATIA platform, as well as best practices for PB planning, implementation and monitoring. In between, chapter 4 reports on the methodology used to align theory to practice in the two components of the deliverable. Chapter 8 offer final conclusions on: i) how this document influenced the delivery of the EMPATIA project, ii) how the knowledge generated in the activity of T1.1 and 1.2 will be used for dissemination and exploitation purposes, through the publication of public reports, scientific articles and other content for public communication.

• **Definition: Chapter 2** focuses on the definition of Multichannel Democratic Innovations. The first part of the chapter concentrates on the definition of key concepts of *channels, multichannel democratic innovations, phases, actions, process* and *platform*. As the channel is here defined as a strategy aimed to reach a targeted public, the second part of the chapter focuses exactly on the publics of multichannel participation, analysing two recurrent issues: the tensions between individuals and organizations of the civil society in DIs, and the convergences and divergences between the action of organized Social Movements and DIs.

• **Methodology**: **Chapter 3** describes the methodology used to develop this deliverable, focusing on the complex alignment required between different mechanisms of knowledge production, pertaining to the domains of social research, computer science and 'street' science (situated and contextualized knowledge). The chapter provides some methodological hypothesis and describes the rationale behind case-oriented requirement gatherings.

• **Case selection: Chapter 4** explains why we focused the initial EMPATIA deployment on implementing multichannel innovations that included participatory budgeting processes and introduces the four case sites. After a detailed description of what participatory budgeting is and its uniqueness in the panorama of democratic innovations, the chapter overviews each of the case briefly and concludes by highlighting how each of the case offers a paradigmatic example of potential implementation of EMPATIA. This chapter also presents the results of the crowdmapping survey of DI around the world.

• **Scenarios: Chapter 5** describes possible use scenarios for the EMPATIA platform, starting from case studies based on the pilots in Germany, Portugal and Czech Republic. After a detailed description of non-functional requirements for each scenario, a transversal analysis is applied, in order to highlight common patterns and priorities.

• **Requirements: Chapter 6** includes a description of functional requirements for the EMPATIA platform at the highest level of detail currently attainable. Moving from the analysis of Use Case Scenarios (UCS) presented in the previous chapter, to 'isolate' the a-synchronous actions that compose the various phases of PB cases researched. For each action identified, in the second sub-chapter we propose a preliminary list of possible tools necessary for the delivery of actions. For each tool a list of requirements has been developed. This chapter includes a new subsection on data visualization.

• A quick guide for decision makers: Chapter 7 provides information related to T1.2 which is aimed at people who are interested in using the EMPATIA platform. The guide identifies the main use cases of the EMPATIA platform, gives an overview of its core features, and includes a collection of pros and cons regarding some key features and configurations that were a subject of discussion amongst pilot partners during the course of the project.

• **Conclusions: Chapter 8** provides a description of the main results of the deliverable and presents an overview of the future uses of the knowledge generated under WP1 of EMPATIA.



Figure 1 Relation between Deliverables

2. Key Concepts

The chapter provides a definition of the key concept of 'Multichannel participation'. The first subchapter introduces some key concepts that were at the base of the EMPATIA consortium work: what do we mean exactly by keywords as 'Democratic Innovation' and 'Multichannel participation'. The first sub-chapter (2.1) focuses in particular on the definition of participatory 'channel' and its peculiarity in comparison with other vocabulary already in use in the domains of participatory democracy and civic technology studies. A particular attention is devoted to advantages and disadvantages of introducing multiple channels of engagement, and to different models of integrating such channels (2.1.4). The rest of the chapter explores the tensions between different publics in democratic innovations (2.2), and concludes by introducing a preliminary overview of gamification in democratic innovations (2.3).

2.1. Defining Multichannel Democratic Innovations

'Democratic Innovations' — institutions specifically designed to increase and deepen citizen participation in the political decision-making process (Smith, 2009) — have become a ubiquitous feature of policymaking and governance building. For example, Participedia¹, a dissemination partner of EMPA-TIA, describes the fast diffusion of democratic innovations as 'a transformation of democracy — one possibly as revolutionary as the development of the representative, party-based form of democracy that evolved out of the universal franchise'.

For the purpose of this deliverable (and of the whole EMPATIA project) it is useful to distinguish here between two main groups of Democratic Innovations: those taking place in invited spaces — participatory spaces designed by a government/organization to involve citizens — from those taking place in 'invented spaces' — participatory spaces claimed by social movements (Miraftab, 2004, De Cindio, 2012; De Cindio & Schuler 2012). The role of the official institution involved in a democratic experiment has decisive implication on the configuration of channels used to engage citizens and participants. In this sub-chapter we describe integration mechanisms aimed to improve the efficiency and internal legitimacy of multichannel democratic innovations, taking place in 'invited' spaces. These mechanisms encourage those social behaviours that the innovation architects (and in some cases also the most engaged users, when the rules are up for discussion) have identified as ideal. However,

¹ Participedia is a global network of scholars that maps democratic innovations using innovative crowdsourcing methods (http://participedia.net).

other participatory mechanisms and practices naturally emerge to strengthen the sense of community across channels (De Cindio, Gentile, Grew, & Redolfi 2003) or to promote overall playfulness (Sicart, 2014). The design choices allow the participants to redefine the meaning of their actions within the process in new ways (Gordon & Walter 2016) beyond the goals of the project. Some argue that the creation of a long lasting community of engaged citizens is the most concrete and longlasting impact of some of these democratic innovations (De Cindio & Stortone 2014). Successful democratic innovations offer an array of examples of these 'meaningful inefficiencies'. These elements bring back the energy of 'invented spaces' within 'invited spaces' and transform grey institutions in lively spaces. A catalogue of these re-inventions of democratic innovations is beyond the page limitations of this sub-chapter. While this sub-chapter will frame multichannel participation within 'invited' spaces, we will deepen the complex relation with invented spaces in the following sub-chapters.

Some democratic innovations are very simple and involve a single public in a set of tasks — a single channel of engagement. Town hall meetings (Bryan, 2003), Mini Publics (Smith & Ryan 2014), issue-reporting digital platforms (Sjoberg, Mellon, & Peixoto 2015), and participatory monitoring processes (Bjorkman & Svensson 2007) are just a few examples of single channel democratic innovations. Other democratic innovations are more complex and can be better understood as a system that integrates multiple channels of engagement, i.e. multiple online and/or offline spaces designed to promote the participation of a specific segment of the population. The most complex of these systems integrate more than one stand-alone democratic innovation (Spada, Mellon, Peixoto, & Sjoberg, 2016).

While the existing literature has investigated both theoretically (Mansbridge et al., 2012) and empirically (Dias, 2002; Goldfrank, 2006; Wampler, 2007) the interactions between democratic innovations and other existing institutions (macro-level interactions), very little is known about the interactions of channels of engagement within a democratic innovation. How can we optimize the integration of multiple channels of engagement? What are the opportunities and challenges of these complex systems? The few existing case studies on multichannel innovations highlight exclusively the potential benefits of these institutional designs (Best, Ribeiro, Matheus, & Vaz, 2010; Peruzzotti, Magnelli, & Peixoto 2011). The experimental literature has focused insofar on exploring the effect of different organizational features of a democratic innovation, what we can see as the 'Lego blocks' of a democratic innovation architecture. No experiment to date has investigated different sequences and integration mechanisms of such Lego blocks. In sum, the current literature offers many insights about the macro-level interactions (Democratic Innovations / Other Democratic Institutions), and the effect of

micro-design choices (Design of Democratic Innovations), but very few insights about the meso-level interactions.

This sub-chapter presents an overview of the advantages and disadvantages of integrating multiple channels of engagement. In order to do so we begin by offering a definition of channel of engagement and multichannel democratic innovations systematizing grey concepts developed by practitioners in recent years. In doing so we expand concepts developed by the literature in marketing (Stone, Hobbs, & Khaleeli, 2002) to include themes and normative concepts developed within democratic innovation literature.

The starting point is then the consolidation of a vocabulary of Democratic Innovations, a language that can describe the phenomena we are interested in. Thus, in the next sub-chapter we begin by introducing a series of definitions, starting with the concept of channel of engagement and multichannel democratic innovations. These concepts do not aspire to become a standard. We think of them as a disposable tool useful to jumpstart the discussion and reduce the level of confusion that currently characterize the debate. The sub-chapter also introduces the 'action', the smallest building block, and then discusses phases and cycles that are synchronous clusters of actions frequently used to describe the inner workings of PBs and other DIs by academics and practitioners.

2.1.1. The Lego Blocks of Multichannel Democratic Innovations

Preliminary conceptualization of multichannel customer relation emerged at the end of the nineties (Holmsen, Palter, Simon, & Weberg, 1998; Stone, Hobbs, & Khaleeli, 2002). More or less at the same time academics showed the potential of experiments to optimize messages and select the best approach to promote voting in elections (Green, & Gerber 2000). The main result of the 'getting out to vote' literature was, and still is, that authentic dialogue is the most important element that motivate people to vote or participate in a campaign. Building upon such concepts the Obama campaigns of 2008 and 2012 (Hendrick & Denton, 2010; Kreiss, 2012; Stromer-Galley, 2013; Bimber 2014) showed the potential of multichannel engagement across a variety of media. Since then, these practices have spread to electoral and charity campaigns worldwide and have entered popular internet culture generating a large grey literature composed by practitioners report and 'how to do' books (Issemberg, 2012; Kapin & Ward 2013). We aim to adapt this body of ideas to the field of democratic innovations introducing themes and normative goals that are missing in the marketing and GOTV literature.

In marketing, a channel is a set of interdependent organizations and practices that allow and promote the sales of goods or services (Armstrong, Kotler, Harker, & Brennan 2012). Multichannel marketing integrates such organizational practices across multiple channels, including advertising and

customer relation. Multichannel advertising and customer relation has the objective of creating more or less authentic dialogic interactions with the public. Micro-targeting in advertising is now the norm. Amazon, Google and Facebook track users' available information to maximize the probability of inducing a purchase by customizing the products shown in their platforms. These firms employ a combination of randomized controlled trials, large observational data analysis and qualitative studies of customers' opinions to optimize different messages and platform interfaces. Different version of the website are shown to users in different locations, and across a variety of platforms. Engagement in customer relation is also becoming more frequent. Firms rely more and more on community forums, Facebook and twitter, to engage customers in complex discussions about past, current and future products.

Multichannel engagement goes one-step further, and micro-targets entire participatory processes in which a segment of the public can collaborate with the organization to achieve a goal. Some of these processes are two-way vertical relations between participants and the organizers; some others are multi-way interactions in which participants collaborate both horizontally among themselves and vertically with the organization to generate an output of interest. The videogame industry is a pioneer of these engagement practices. For example, these firms often allow the most active participants in their community to shape small features of the games in development. In some engagement processes, participants can even affect elements of the rules that govern the architecture and agenda of the process itself.

Multichannel Democratic Innovations

Using the previous examples, we can define a channel of engagement as a combination of tools, messages and participatory processes designed to encourage a specific behaviour in a target public. The previous very broad definition is purely procedural and applies to a variety of purposes such as: selling goods and services, campaigning, petitioning, gathering volunteers, crowdsourcing information, ideas, and money. In what follows we focus on the subset of multichannel engagement processes designed to deepen democracy — multichannel democratic innovations. Adapting Smith (Smith, 2009) we define multichannel democratic innovations as institutions that integrate messages and participatory spaces targeted to different segments of the population in a system specifically designed to increase and deepen citizen participation in the political decision making process.

Multichannel is not (just) Hybrid.

The most common multichannel democratic innovations are hybrid consultations processes integrating online and offline venues of discussion targeted to different type of participants (Bittle, Haller, & Kadlek, 2009; Andersson, Burall, & Fennel, 2010; Gupta, Gouvier, & Gordon, 2012). Our definition does not reduce multichannel democratic innovations to hybrid innovations that combine online and offline media. On one hand, face-to-face innovations can be multichannel. For example, the 2004 British Columbia Citizens' Assembly integrated meetings that were open only to a randomly selected group of participants drawn to represent the entire state, with fifty public meetings in different geographical areas (Warren & Pearse, 2008). On the other hand, hybrid democratic innovations can be single channel and hybridization does not automatically create a new channel. For example, the District Eight PB process in NYC employs digital technologies to map the implementation of the winning projects, but such hybridization is just a data visualization tool that supports the participants' monitoring activity and does not create a separate channel of engagement.

Channels and Actions

Our definition offers also the tool to distinguish between channels and actions – actions that a user can perform within a participatory process. Some typical actions in face-to-face participatory processes include listening, talking, reading, mobilizing, ranking, voting and monitoring. Similarly, typical actions in collaborative platforms are for example generating, editing, versioning, commenting, mobilizing and ranking ideas. It is common knowledge that users tend to intervene and contribute differently to participatory processes (Preece & Shneiderman, 2009; Wenger et al, 2002; Edwards, 2006; Bertone et al, 2015). For example, the folk law of internet participation (Nielsen, 2006) states that 1% of users will contribute content to a wiki, 9% will edit and refine it, while 90% will 'lurk'. According to our definition, such users/actions clusters are not separate channels of engagement, unless the platform includes a dedicated participatory process targeted to them. For example, multichannel collaboration platforms integrate a channel for the general users and a channel with more privileges restricted to the more active users. This is the same strategy that face-to-face participatory processes use when restricting certain actions to representatives selected by the participants (Abers, 2000) or by sortition (Warren & Pearse, 2008).

Channels and Phases

The new definition also allows us to distinguish between democratic innovations phases and channels. We use the term phase in its general meaning; a democratic innovation phase is a set of specific actions aimed at achieving a specific goal in a specific amount of time. Each Democratic Innovation is organized in a sequence of phases composed by actions, not necessarily corresponding with a single

and specific channel of engagement. For example, most deliberative mini-publics involve first a learning phase, then a consultation phase and then a deliberation phase (Fishkin & Luskin, 2005). These three phases are significantly different in design, and allow participants to perform different set of actions, but do not target different publics; hence, they are not different channels of engagement. All participants in a deliberative mini-public go through each of the three phases. Lastly, a cycle is a set of phases that repeats itself. For example, PB processes employ a yearly cycle that combines phases that last various months. PBs usually integrate four macro-phases: an initial ideation phase, in which participants propose potential public projects; a filtering phase, where projects are developed at the level of definition necessary to make a decision through active involvement of the technical body of the entity engaged in PB; a project selection phase, in which participants affect the selection of projects that will enter the budget; a monitoring phase, in which participants gather information on the implementation of projects (Wampler, 2015; Baiocchi, 2005; Avritzer & Navarro, 2002; Abers, 2000; Fedozzi, 2000). However, in most PBs these phases are designed for the same public and thus they do not constitute separate channels of engagement. Large cities PBs are a multichannel democratic innovation according to our definition, not because they combine multiple phases, but because they integrate multiple district level participatory processes with specific rules, different amount of resources and separate engagement campaigns. For example, the PB in Porto Alegre integrates 17 slightly different district PB processes, while the PB in New York City started integrating four districts processes in 2011, and now integrates 28.

Phases and Actions

Moving back from the macro to the micro, it is important to highlight how the same action can be repeated within the same phase and also in a subsequent phase. Meaning that the Lego blocks of democratic innovations are limited, but the possibilities to organize them in complex systems is almost endless. For example, in PB the phase of ideation implies actions of collaborative writing and voting in order to have a preliminary ranking of proposals before passing to the filtering phase. The filtering phase correspond to a subset of actions of collaborative writing focused on the advanced development of proposals. Finally, the selection phase entails some sort of voting to prioritize the projects in a final list that will be funded by the municipality. As it is possible to infer, collaborative writings and voting actions take place in different moments of the same phase and are repeated in more than one phase. While from a purely technical point of view these actions are identical, the meaning and function of the same action is transformed, every time, by the different context of implementation. Or as another example, Citizens' Assemblies use frequently cycles of actions: small group discussions and plenaries are often repeated multiple times during each of three phases of the

assembly (learning, consulting, deliberating) to transmit the information across groups. These small groups in most cases do not target different segments of the participants (e.g. youth vs adults), and thus, according to our definition are not separate channels of engagement.

However, in consultations that allow the participants to self-select in different small group discussions, focusing on different topics chosen by the participants themselves, the groups become channels of engagement. The 2015 Citizens' Assembly on devolution in Southampton (UK) offers a recent example of an open space conference within a democratic innovation. In the second weekend of the assembly, the organizers introduced an open space conference that enabled the participants to discuss topics of their own choice. The participants divided themselves in five invented subgroups that are five different channels of engagement. This phase of the citizens' assembly was designed by the organizers to re-introduce the freedom of 'invented spaces' and to allow the participants to step out the choice architecture that had been carefully set up for them (Flinders et al. 2016).

Most of the concept we have introduced can be scaled-up or down. For example, a phase can have multiple channels, and a channel can have multiple phases. In what follows, we focus the analysis on channels.

In sum what distinguish two channels of engagement is not the medium (face-to-face vs. SMS vs. web), nor the phase (learning vs. deliberation) or the action (discussing vs. writing vs. voting), or the fact that citizens can participate in different ways (lurking vs. creating), but the fact that each channel is designed for a specific segment of the population. A channel can be as simple as an additional face-to-face meeting targeted to a specific minority within a phase, and as complex as an entire democratic innovation.

2.1.2. The Advantages of Integrating Multiple Channels of Engagement in Democratic Innovations

A growing consensus is emerging among practitioners that the more channels of engagement a democratic innovation has, the better. Many consider the integration of multiple channels of engagement a method to *diversify* the risk that one single channel could be ineffective, and a way to *differentiate* channels of engagement to better accommodate the interests and goals of different types of people (Martins, 2015; Andersson, Burall, & Fennel, 2010; Sampaio, Maia, & Marques, 2010; Bittle, Haller, & Kadlec, 2009).

Diversification

Going back to its origins, the concept of product diversification in management describes the strategy of entering completely different businesses that suffer different cycles and different shocks so that the average profit of the combination of channels is less volatile. In the realm of democratic innovations, diversification refers to the integration of completely different channels of engagement with different objectives, different procedures and different publics. For example, cities are developing integrated platforms for citizens' relation management (CRMs) that combine long-term face-toface consultation processes,² issue-reporting software, open data initiatives, engagement initiatives for youth, social marketing initiatives for sustainability, people panels for recurrent surveying³ and classic e-government services, to name a few. Some of these channels are standalone democratic innovations and a completely different 'product' with different goals and objectives targeting a different segment of the population. The main practical advantage of diversification is the massive number of participants it can attract. For example, the Gabinete Digital in the state of Rio Grande do Sul in Brazil, active between 2011 and 2014, engaged more than one million people every year (Spada et al, 2016). Another advantage that is often discussed by practitioners, particularly those in democratic innovations that support protest movements or campaign to change behaviour (e.g. reduce corruption), is the possibility that one of the channels of engagement might fail. This concept is directly inspired by the idea of redundancy in engineering and the idea of product diversification in finance. To our knowledge, there are no studies documenting the increased resilience of multichannel innovations, and the supposed benefit is currently mostly theoretical. As we will see in the next subchapter, there are instead very concrete examples of multichannel innovations that experienced a legitimacy crisis due to the failure of one channel or conflicts between two channels. Therefore while the idea of risk diversification is theoretically appealing it probably applies only to a subset of democratic innovations and under a specific set of local conditions.

Differentiation

The concept of differentiation, instead, originates in marketing and refers to the construction of a brand and specific messages aimed at distinguishing a product or service from the competitors. In the realm of engagement differentiation is mostly done by micro-targeting messages and spaces of

² In Brazil many cities implement, every 5 years, a participatory process called Plano Plurianual Participativo (Multi-year Participatory Plan) to design the zoning plan and the guidelines for city public project. Similar participatory planning processes are adopted by neighborhoods and cities around the world.

³ People panels are a common practice of UK cities. The Southampton people panel is a typical example: https://www.southampton.gov.uk/council-democracy/have-your-say/peoples-panel.aspx

participation. The Obama campaign was the first to show how to operationalize successfully the process to increase the number, diversity and satisfaction of participants in a campaign (Kreiss, 2012). Epetition platforms such as Avaaz and Change.org, that routinely micro-target the possibility of participating in specific campaigns, have globalized multichannel engagement campaigns. One of the main advantages of differentiation for democratic innovation is to better engage some difficult to reach segment of the population. For example the New York participatory budgeting organizes multiple districts meetings that target linguistic and religious minorities, offering a modified set of rules and services tailored to such groups. PB also offers a specific channel for formerly incarcerated people that have no right to vote in the US. This is a differentiation strategy because the overall objective of these different meetings is the same, coming-up with projects for the PB process during the brainstorming phase, but each meeting differs from the other for its location, the language used, and sometimes the rules of discussion employed.

Efficiency

Beyond the benefits in terms of efficacy, broader and more diverse participation, multichannel democratic innovations can gain in efficiency due to the sharing of resources and information across channels. For example, the city of Canoas in Southern Brazil, has introduced a 'Municipal Systems of Participation' (2009-2015), a CRM that integrates different channels of social dialogue to improve transparency, accountability and efficiency. The system combines 13 on-line as well as off-line participatory tools targeted to different segments of the population. Participatory Budgeting, Urban Participatory Planning, the Forum of Services (in which citizens oversight the functioning of several city services), and 'the Mayor in the Station' (an outreach space of social dialogue which consists – once a week – in the presence of the Mayor in the train station to dialogue with commuters) are some of the most prominent participatory spaces. Some of these channels are conceived to promote horizontal interactions among participants (e.g. PB), while others are designed just to improve the communication between the city officials and citizens (Martins, 2015). The key innovation introduced by Canoas consists of a complex system of public proceedings of all these different channels that allows the city, interested citizens and civil society organizations to keep track of issues raised by individuals and groups in each of these different channels.

Democratic Benefits

And there are also benefits for the participants, such as increased choice in the way they can and prefer to interact with the participatory innovation, and the ability to switch between channels, or participate in multiple channels at the same time. The literature on democratic innovations has yet to analyse in detail these benefits, but the original literature in marketing discusses them at length

(Holmsen, Palter, Simon, & Weberg 1998; Stone, Hobbs & Khaleeli 2002). Some benefits however, are unique to the democratic realm and have no clear roots in the engineering or marketing literature. For example the multiplication of channels of engagement can be used to separate powers and to create effective and legitimate oversight mechanisms. Part of the role of mini-publics in citizens' assemblies, for example, is to function as an oversight mechanism designed to prevent interest groups to hijack the participatory decision-making process. For example, multi-year projects could add the provision of including a mini-public at certain periodic intervals as oversight mechanisms, or could include dormant oversight channels that can be activated by the citizens or the organizers in case of necessity.

2.1.3. Challenges of Integrating Multiple Channels of Engagement in Democratic Innovations

While reviewing existing case studies we found also many interesting examples in which the introduction of additional channels of engagement within a democratic innovation backfired. The following are the five main issues we have identified.

Direct negative interactions among channels

First, and often observed, channels of engagement might interact negatively. Introducing a new channel might divert users' attention and interests in unexpected ways. For instance, if one channel is particularly successful in attracting participants, other channels might suffer due to a loss of participants. Similarly, if a channel is particularly unsuccessful, other channels might suffer because they are still part of the same system that now has a non-working component. This feature of democratic innovations is particularly important when considering the fact that such innovations are often introduced in the midst of fierce opposition, and that opponents, to delegitimize the entire process, will certainly exploit its weaknesses.

Increased chances for free riding

Second, when multiple channels are available, participants might choose the one that generates the most rewards for the least cost. This form of soft *free-riding* tends to affect significantly the legitimacy of a democratic innovation, and often limits capacity building, concentrating the efforts of individuals into an array of behaviours aimed at reaching maximum added-value for themselves, rather than feeding the consolidation of the collaborative space. The more channels are active, the more a participant can select the one that generates the most returns for the least effort. The latter was a particular problem in some experiments of face-to-face participatory budgeting that introduced the

possibility of voting online. In some cases, participants perceived the new online voting channel as a mechanism that allowed 'slacktivists'⁴ to affect the PB outcomes.

Redundancy and increased complexity of the integration mechanism that leads to reduced legitimacy, transparency and accountability

Third, the more channels exist, the more complex the integration mechanism becomes. Complexity not only generates costs in terms of management, but also increases the difficulty to explain and justify to participants the design of the participatory process. This could potentially reduce the overall transparency and accountability of the democratic innovation and consequentially its legitimacy. Complexity often also reduces the ability of participants to truly own the process and affect its agenda. A typical example of this problem concerns the multiplication of brainstorming channels aimed to collect participants' proposals and how such multiplication increases the complexity of the decisionmaking process. What has happened in Lisbon's PB since 2009 is an example of this risk: to face the almost 1,000 proposals for investment generated by citizens every year in face-to-face and online meetings, the municipality had to organize an Interdisciplinary Working Group of Civil Servants to merge and pre-select the proposals. The pared down list of 200 projects sparked numerous complaints by citizens who saw their ideas disappearing or being distorted (Sintomer & Allegretti, 2016). Citizens' Assemblies offer a very interesting example of such problem. The history of Citizens' Assemblies shows how difficult it is to integrate the deliberative channel open only to a random sample of the population, with the public referendum. Historically the majority of CA referendums have failed to ratify the recommendations proposed by the citizens' assemblies because the public did not paid much attention to the activity of the mini-public (Fournier et al., 2011). These examples show an evident risk: on one hand, the proliferation of micro-targeted engagement channels can create expectations that cannot be met, on the other hand the proliferation divides the public and might reduce its ability to make the entire platform accountable. While there are no studies yet that link explicitly the presence of multiple channels of engagement with the challenge of managing expectations and the issues of co-optation, contestation and bargaining power, the PB literature offers many examples of multichannel innovations suffering such problems (Wampler, 2006; Sintomer & Allegretti, 2015).

⁴ Wikipedia defines Slacktivism as a portmanteau of the words slacker and activism. The word is usually considered a pejorative term that describes "feel-good" measures, in support of an issue or social cause, that have little physical or practical effect, other than to make the person doing it feel satisfied that they have contributed.

Increased probability that an oligarchy of super-participants emerges

Forth, complex democratic innovations that combine different channels of engagement with different privileges potentially facilitate the emergence of an oligarchy of super participants. The case of Porto Alegre (Fedozzi, 2007; Langelier, 2011, 2015) is exemplary in this regard. Over time the members of the elected citywide assembly of district representatives (*Conselho do Orçamento Participativo*, or COP) that has the most control over the PB process have become an oligarchy with very little turnover. The COP is a channel that requires significant more effort than any other channel in the PB systems. The meetings are more frequent and the discussions are more complex. At the same time, the COP has the most influence over the final allocation of projects. The combination of channels that requires more effort to be accessed and provides more privileges, also increases the probability that a selected group of people that has the time and the interest monopolize such channels.

Increased risk of misuse

A fifth and final challenge resides in the risk of over-designing the democratic innovation. If the organizers impose a new channel of engagement, participants might end-up feeling manipulated, instead of the owners of the process. The introduction of thematic assemblies in some PBs provides the typical example of a miss-designed channel. Returning to the case of Porto Alegre, during the mid-90s, the city government introduced a new set of citywide assemblies in an attempt to overcome the fact that projects proposed in district assemblies were limited in scope and mostly concentrated on filling basic infrastructural deficits in informal neighbourhoods. These assemblies, called thematic assemblies, attempted to tackle citywide problems, such as transportation, education, employment or environmental pollution. But people rarely used the thematic assemblies as intended; instead they used them to re-propose projects that had not been selected in the district assemblies.

2.1.4. Models of Integration

After having introduced the concept of channel of engagement and having discussed the benefits and drawbacks of integrating multiple channel of engagement within a democratic innovation, we now move to describe the most common integration mechanisms we have encountered in our review of Democratic Innovation cases. When we look at how Participatory Budgeting(s) and other DIs have managed multichannel integration to leverage benefits and minimize disadvantages, we find three main model of integration: competition, regulation and isolation.

Managed Competition

One integration strategy is to allow the channels to compete for resources. In Porto Alegre, the district level assemblies directly compete for the engagement of participants. Citizens are asked to rank

the policy priorities for their district and to present projects. The overall ranking of policy priorities, combined with the number of people that participates affects the allocation of resources to each neighbourhood (Abers, 2000; Baiocchi, 2005). The risk of this approach is that the competition moves from agonistic (Mouffe, 1999) to disruptive, despite the majority of researchers that have described PB underline that the process fosters a friendly competitive spirit across neighbourhood. Wampler, for example, describes the case of the city of Ipatinga in Brazil, in which a neighbourhood that did not have enough participants to achieve the amount of resources necessary to build the desired project cooperated with the other neighbourhood to create a plan that allowed taking turns in sharing resources (Wampler, 2007). On another example, during the competition across neighbourhood in the city of Recife, the e-voting channel competed in a disruptive way with the face-to-face voting channel for the engagement of participants, creating major conflict for the process. While disruptive competition might be a good strategy to optimize firms' marketing channels, the examples of Recife shows that within democratic innovations it generates negative effects in term of legitimacy and citizens' frustration.

Integration based on rules and procedures

The most common integration mechanism is to adopt a system of rules and procedures that manages the interactions among channels. For example, Citizens' Assemblies require rules that allocate tasks between the mini-public and the meeting open to the public. CRM platforms often employ gamification strategies to govern the access to different channels of engagement. Participants might be required to complete capacity building actions, social actions or reaching out actions (Gupta, Bouvier, & Gordon, 2012) before having access to a channel of engagement that has higher privileges or higher status. Nudges are also another more subtle approach that is widely used to optimize messages and choice architectures in engagement channels (Sunstein & Thaler, 2008). A growing literature explores the advantages and disadvantages of gamification, and nudges in online and offline spaces (Hausman & Welch, 2010; Deterding et al., 2011; Fuchs et al, 2014; Holler, 2015). The system of rules governing a complex democratic innovation is in some instances open to discussion. For example, many participatory budgeting processes create a sort of constitution that describes the rules governing the process and establish a procedure to review it. At first glance, opening the rules to discussion increases transparency and empowers participants to adapt the process to their needs (Abers, 2000; Baiocchi, 2005; Lerner & Secondo, 2012; Allegretti 2014). But in some cases, as this channel, was exploited in a way that solidified the control of the oligarchy of participants over the process and reduced the possibility of spontaneity during open assemblies, as it happened in Porto Alegre (Baierle, 2007; Spada, 2012).

Isolation

The complete isolation of two channels in a phase of a democratic innovation is another possible form of integration strategy. The case of Belo Horizonte in Brazil is proto-typical. Belo Horizonte created an online e-PB channel that has its own budget and is effectively an entire separate space with limited interaction with the face-to-face PB process. This strategy was designed to prevent the emergence of the conflict that had plagued Recife (Sampaio, Maia, & Marques, 2010; Allegretti, 2012). Isolation might also be particularly useful to prevent the tyranny of majority and dedicate specific spaces to youth or other minorities. Yet, isolation of channels appoints a great responsibility on the organizing entity, that is the only player able to ensure equity and even rights to compartmented chunks of publics.

2.1.5. MultiChannel Participation in Summary

In this sub-chapter, we have introduced a classificatory scheme that identifies multichannel democratic innovations separating them from the concept of multichannel engagement and multichannel marketing. We have also reviewed a number of advantages and disadvantages of such innovations.

Differently from previous research activity that investigates innovations and their interaction with existing institutions (macro-level), or experimental analyses on the role of different organizational elements within one innovation (micro-level), we have examined clusters of actions that are specifically designed to engage a segment of the public – what we call channels of engagement. To our knowledge, this meso-level analysis has rarely been done before.

These comparisons have uncovered three models of integration: managed competition, regulation, and isolation. These three models are certainly not exhaustive of the variety of possible integration method, but constitute a first step in the exploration of the sequence and integration of different combinations of the Lego blocks that compose a DI.

What has also emerged from our analysis of the most recent cases is that the examples that integrate the largest number of channels appears to be more concerned with quantity, efficiency and satisfaction of participants, than effectively empowering citizens. Using the normative conceptualization introduced by Smith, these integration mechanisms focus more on improving institutional capacity than creating democratic goods. Thus, we conclude by suggesting that the next step in the research agenda on multichannel democratic innovations is to explore the impact of different integration models on the division of power between participants and organizers, in order to promote the development of a new generation of integrating platforms that include in their code democratic principles.

2.2. The Publics of Multichannel Participation

In the previous sub-chapter we defined *channels* as a combination of messages and participatory processes designed to encourage a specific behaviour in a target public. This assumption leads the reflection to define and describe what we actually mean by publics of a Democratic Innovation. In this deliverable we do not have the space to research the segmentation of public of PBs in different social groups that is a fundamental analysis in order to evaluate the actual inclusive capacity of a DI. This will be the focus of situated research on the cases of pilots and other case studies and will be reported in Deliverable 1.3 and 1.5. Nonetheless, it is important to briefly analyse the main trends of rejection commonly observed in practical implementation of PBs and other DIs, and in particular those 'active rejections' that implies the definition and exploitation of alternative channels of inter-action that are in competition with those defined in the DI.

In theory, the legitimacy of Democratic Innovations relies on their capacity to create a participatory space that is either potentially accessible to all the citizens of a given territory (a city, a region, a school, a country, *etc.*) or composed by their representative sample. From this perspective, the active engagement of groups of stakeholders directly interested in the decisions to be made, is out of the scope of our definition of DI. This also means that, for example, we cannot consider the mere consultation of a panel of experts as a significant advancement for democracy.⁵ Universality and representative democracy into participatory experiments along the two decades, not without complications. Indeed DIs do not appear in vacuum: once we move from a theoretical picture into practical experiences it is evident that DIs always create tension and reaction in those individuals and groups already present on the political stage. DIs can affect pre-existing political cultures and transform consolidated power relation existing at a given scale.

In this sub-chapter we focus on two main groups of tensions created by the introduction of new DIs respectively with the associations and organizations of the civil society and with organized social movement. While the first case regards a rejection of an universalistic approach in favour of alternative means of interaction that still can be included in the definition of 'invited spaces', the second case is characterized by the direct irreconcilable counter-position of invented vs. invited spaces of participation.

⁵ It is to highlight that both meeting with stakeholders and panel of experts can be a component of a complex DI as for example the phase of filtering in PB is delivered involving expert knowledge about the proposals collected in the previous phase and vote in the following one.

It is important to emphasize that, in theory, a Democratic Innovation does not necessarily require the active role of an 'official' institution (generally a municipality, but it could be at any other scale of engagement), but could also be delivered directly within groups and organizations, or in less stable social movements. This is true if we limit the definition to the set of tools and methods that allow to manage inclusively a determined decision-making processes, independently of the scale and the level of institutionalization of the organization that is supposed to decide. Anyway, in this report we refer to the diffusion of DI along the last couple of decades (and recently boosted by the rise of the Network Society) as an historical event characterized by an explicit goal to 'democratize the democracy' (Avritzer & Santos, 2005) and its weakened and in bad shape institutions.

It is in this context that DIs as PB are an obstacle or rejected by organized players that already rule on the actual public sphere or already constituted as separate spheres. Such players, as associations and movements, in some cases, paradoxically even share the same goals of democratization carried by DIs.

2.2.1. Organized Civil Society and Individuals in Multichannel Participation

As Matt Leighninger wrote in 2006, "in the 20th century, public life revolved around government; in the 21st century, it will centre on citizens" (Leighninger, 2006:3) Similarly, many others discuss the dawning of an era in which citizens have come to participate in all sorts of matters previously reserved for government bureaucrats and politicians. To increase citizen voice is viewed as a necessary counterweight to elite power and bureaucratic rationality. Whether or not citizen participation has actually marked the political agenda, a remarkable consensus has emerged around its desirability (Peck & Theodore, 2010). This worldwide participatory wave of the last decades is based on the expansion of deliberative practices within civil society, in contrast to traditional practices of representative democracy. DIs differ from traditional institution and develop new ways to engage citizens. This new logic, featured by deliberation and focused to the totality of citizens, would propose distinct political relationships that are based on argument and the participation of all citizens. We can say that the impetus of the DIs is the democratization of the public sphere. As we can imagine, their implementation has given rise to tensions between logical outlooks that have differing conceptions of the public space. Drawing on deliberative framework, it could be said that through rules and procedures DI attempts to structure the informal space wherein communicative action rests. This structuring of the public sphere can transform relations within civil society, with associations ceasing to be the only connectors between unorganized public opinion and power.
From a deliberative political turn, new DIs involve a context of rules and procedures that oblige actors in traditional civil society to behave differently. This rationalization signals a break from civil society's traditional spontaneous mediation. If we have traditionally understanding civil society as a set of 'institutions, practices and networks of voluntary life' (Baiocchi et al., 2011), mainly through secondary associations, then DIs change the image of civil society by, for example, elevating the political subject to the globality of the citizenry along with deliberative ideals. In many experiments, as it is no longer necessary to take part through the associations, this can be done directly. So, it presupposes a different civil society from what has been normal so far. It rejects the image of a liberal civil society, isolated from the evolution of politics, but also denies the possibility of a republican society based on common values. Civil society is conceived from the individual's standpoint, but instead of secondary associations, interests and strategies are designed collectively in a public deliberative realm.

The new spirit of participation hides a conflict within civil society itself, between associations and the logic of public action that the DIs brings with it. It is so because in the new institutional framework proposed, associations have to share the voice. If associations used to be the actors that structured informal public opinion, DIs offers a new way of structuring public opinion where citizens are directly invited to get involved in public decisions. This relation between the associations and the DIs conceals a friction with important consequences for the democratic life, as it presents itself as a battle for representation of the citizenry's voice. It also shows a conflict around the way political decision can be legitimated. The idea of broadening the spaces of political inclusion, which has been brought into DIs elsewhere, changes the internal links within civil society (and its relation with the state). It generates a conflict between the old and the new protagonists, because the former has to share the political space, which betrays a significant problem about the right to participate and exert influence in political spheres. Who speaks on behalf of the citizens? While new theories of administration show that other forms of management with participatory mechanisms make it easier for citizens to get involved (Evans, 2003), users of the traditional channels of participation protest and, in some cases, question their development (Hendriks, 2002). This friction illustrates the difficulties faced by attempting to broaden the space of political inclusion, even in a context where that broadening is based on deliberative principles and supported by administrations.

Tension between individuals and organized groups

It is understood that individuals represent only themselves, whereas the associations, on the contrary, are the representation of the citizenry before the public powers. They assume to be representative of the general interest. From this point of view, a problem of legitimacy arises, as besides indi-

vidualism, associations brandish the historical role they have played in defending citizens' rights, which ought to support their privileged participation in the urban dynamics.

The risk for associations came from the way public interest is understood. If politicians think that associations are not able anymore to structure public opinion (in deliberative terms) then, for them, DIs mean the victory of individualism and the impossibility of structuring public interest in a fair way. In this conflict we see the collision produced between representative and deliberative practices. A procedure that is open to all would be a hindrance to the emergence of an expert citizen and favour illqualified knowledge, which would easily be manipulated by the public powers. Here we may observe that opposition on the part of associations is spun as a critique of a political project that wishes to change the relationship between the administration and civil society. Associations question the structuration of public opinion by universal procedures, because they think that along with deliberative practices, government gets to neutralize the countervailing powers of the local civil society.

The core of the challenges set up in cities by DIs lies in the opposition between two different ways of understanding public interest building, centred respectively on citizens as individuals or on the organized groups that compose the local civil society. The opposition of associations represents a style of organisation and civil society that favours representability and the negotiation of interests over deliberation or transparent and public democratic procedures. So we can see that deliberative reforms are not so easy, not only because they mean a new challenge for political parties, but also a new structuration of public sphere, which implies a transformation of internal relations within civil society. One of the main criticisms of democratisation that DIs and PB in particular promotes is usually thought of as a continuation of the individualisation process of modern society, which would threaten strategies for collective empowerment. Many of the arguments that make up their opposition could be understood as a reaction to the displacement of their former privileges. Their arguments against the ability of ordinary citizens to participate in politics or against the individualisation process of modern societies betray an elitist position very similar to the arguments that have, at different times over the last two hundred years, challenged the participation in the political system of women, the illiterate or those without property. We can think that the problem for the associations is that the new model of participation takes them onto a plan of accountability, that is, they have to show they provide an effective voice for citizens, ideas and abilities that help to clarify debates.

It is right to think that DIs offer a new way of building public interest based on deliberative practices. In the Network Society we can expect the same problems, even boosted by the availability of new means of participation mediated by devices, tools and methods that lead to an increased individualization (Wellman, 2001). It's right that digital and networked devices allow a massive participation,

something in-person DIs miss, but it does not imply any automatic and actual collective empowerment (Rheingold, 2002; Castells, 2009). The main issue, as it happens with DIs against traditional participation, will be the same: the risk of individualization.

2.2.2. Confluences and Tensions between Democratic Innovations and Social Movements

The final sub-chapter of this chapter focuses on the relation between Democratic Innovations as PB and Social Movements: what we formerly described as the contradictory relation between invited and invented spaces. In order to track both the points of confluence and the points of confrontation between the approaches of Social Movements (SM) and those of Participatory Budgeting, intended as a emblematic case of complex democratic innovation, we set out from the consideration that it is useful to take the conceptualisation of each of them to the extreme. That is, it is possible to define both PB and SM in a broad and inclusive way, in which they show diverse points in common.⁶ However, we believe that it is more feasible to examine the key elements that can determine convergences and divergences in greater depth, if we compare and conceptualise them in their most radical and restrictive way: that is, linking PB to a type of institutional tool that tries to improve existing democracy; and considering the most ground-breaking facet of SM – in other words, their most revolutionary facet, focused on methodologies of social dialogue that are different from institutionalised ones.⁷

A second starting point of this sub-chapter is the different fields in which these tensions and confluences take place. Following the indications of Wampler (2012), there are four foundational principles of PB programs: voice, vote, oversight and social justice. With respect to SM, the relation between ends and means – that is, connecting strategy and tactics, the group's stated aims and its mode of internal action and organisation – as well as the dynamics of aggregation around the group's leaders and ideas, are the elements to highlight. The way in which this series of principles is articulated will determine the fields in which confluences and tensions between PB and SM are materialised. Setting out from these premises, we propose the hypothesis that the key to understand these convergences and divergences basically refers to a question of focus. PB is based on how the political process is

⁶ We already defined PB in Chapter 2. In the case of Social Movement, a basic and broad definition would consider it as a type of Collective Action that is sustained and maintained over time (Tarrow, 2004). From this broad perspective, coordinated group dynamics that demand more participatory modes of local economic and political agency, would establish common bonds between PB and SM.

⁷ This more disruptive and non-institutional consideration of the SM excludes certain types of organizations such as NGOs, and refers on the one hand to classic movements (national liberation, labor and workers organizations inspired by socialism, communism, anarchism etc.); and on the other to New Social Movements, organized movements that spread in the 1960s such as feminists, environmentalists, neighborhood, squatter, lesbian-gay or students (Offe, 1996).

carried out (deliberation, transparency, participatory practices); while SM focus more on what it consists of (questioning the root of the existing political structure and the deep social change that is pursued). We believe that this underlying divergence can be useful for analysing the tensions and potential cooperation produced between them.

Confluences around active citizen participation

A first field to analyse these relationships is that of citizen participation in local economic and political affairs. The academic literature highlights the expansion of PB programs since its inception in Porto Alegre in 1989, being actually more than 1500 worldwide experiences (Sintomer, Allegretti, Herzberg, & Röcke, 2010). Beyond the differences in places as diverse as Brazil, Europe or China, scholars agree that throughout the world the PB programs can be distinguished by the creation of a public sphere in which citizens can directly meet to discuss a political problem about a particular expense. In this context emerge a series of participatory innovative mechanisms, pivoting from the model of representative democracy to one that promotes local participation based on the expansion of deliberative practices (Avritzer, 2006). This participatory model seems to improve the functioning of the democratic political structure; making it more transparent, inclusive and giving more voice to citizens. PB, as any other Democratic Innovations can be considered in this light as an institutional tool aimed at improving the quality of the existing representative democracy.

On the other hand, regarding political processes social movements show two aspects: an essentially static one, defined by a series of relatively stable characteristics over time, connecting with the idea of institution-form⁸ and a more dynamic one, where their modes of collective action and internal or-ganization fluctuate over time (Ibarra & Tejerina, 1998). The slope of the SM that interests us here is the institution-form, since it becomes a structured agent and stands as an interlocutor with authorities through individual leaders and representatives. In both cases, PB and SM try to encourage active citizen participation – what Wampler (2012) calls *voice*; so, at the root of this issue at least, it could be considered that a confluence happens, an opportunity for cooperation between PB and SM. Both perspectives criticize the apathy of citizens and the weakness of representation in actually existing democracies. The ability of the citizenship (word used preferably in the PB language) or the sovereign people (used in SM language) to decide about its own future, and thus become an active agent,

⁸ Do not confuse the sociological notion of institution-form, which refers to a stable and identifiable social structure (applicable to various cases such as social movements, education, family, religion etc.), with the most widespread notion of political formal and legal institutions, which are represented by governments and the State in different dimensions and areas.

emerges in both perspectives. Therefore regarding the field of active citizen participation, the outstanding element seems to be (ideally at least) one of confluence between PB and SM.

However, as we deepen this idea, the question about how to get citizens to participate in political affairs and be more active emerges. At this point, the proposal of the PB seems to become more robust, because in these processes, based on deliberative models, all individuals are challenged to participate on equal terms and the role of organized groups is somehow limited (with many tensions as we have described in the previous sub-chapter). The more informal internal organization of SM, without so clearly pre-defined mechanisms for participation, may tend to extol charismatic leaders; a type of leadership that emerges due to the exemplary character of an individual personality, becoming a referent for the group (Weber, 2002). Thus the process of active citizen participation can ideally be considered as an element of convergence between PB and SM. But the emphasis of the PB programs in how these dynamics should be specifically implemented, through clearly defined regulation and self-regulation mechanisms and rules, could assure the active participation of all individuals. Participation is then more accessible in DIs at least from a formal and regulatory perspective.

Disagreements about the public authority

The extension of public authority (vote), which places the authority of local institutions in the hands of citizens rather than professional politicians, has been defined by Wampler (2012) as a 'school of democracy'. This proactive and critical idea from the perspective of the PB is based on a perspective that not always coincides with the approach of SM. That is, as posed by several authors (Martínez, Casado & Ibarra, 2012) the SM themselves can be considered as non-discriminatory and nonhierarchical learning schools; schools for no ordinary learning to think about the possibility of other worlds. In this sense, learning to think and imagine other worlds entails a framework of sociopolitical reality – known in Social Science as framing process (Benford & Snow, 2000) – that can be radically different from the officially institutionalized one; and this certainly affects the very notion of 'democracy'. Notion that from the position of PB is naturalized and normatively conceived as the ideal to be achieved; a renewed democracy guided by the deliberative model (Ganuza, Nez & Morales, 2014). But not all social movements are so complacent with the normative idea of democracy and its development in the last decades. As posed by authors like Offe (1982) or Jessop (2008), the imposition of the political framework based nominally on democracy, has been a condition of possibility inherent to capitalist systems in modern western societies. Depending on the internal configuration of the democracy-capitalism tandem, Jessop distinguishes the National Keynesian Welfare State related to 'Fordist' production that emerges after World War II, and the Schumpeterian Competitive State that spreads from the 1980s in the post-Fordist neoliberal era. If the citizen empowerment which is re-

ferred from PB, derived from an increased authority in decision-making, focuses purely on how to increase the quality and quantity of public authority (vote) without questioning the profound effects that this type of political organization (the fluctuating democracy-capitalism tandem) has on the whole social body, then it can emerge a potentially profound disagreement about the what; that is, about what is being legitimized by this increased public authority.

At this point Wampler (2012) and Ganuza, Nez and Morales (2014) propose that DIs as the PB can lead to redistributive policies aimed to help the most disadvantaged social sectors. A movement of revolutionary inspiration, however, could question the legitimacy that the vote gives to a system whose root is inherently based on inequality, as result of the particular configuration of political economy (Zizek, 2010). The nature of political economy seems to fade into the tangle of procedures that do not allow participating and collectively deciding on the deep mechanisms of the system itself. Again, beyond the potential radicalism of the approaches of SM, it emerges a misunderstanding based on different types of legitimacy: one that focuses on how should be the process itself (PB), without question the profound nature of the system; and the other one centred on what to achieve, the will to change the political and economic system itself through the active agency of individuals and citizens, regardless of the more or less democratic means used to reach that end.

Transparency and the role of innovative technology platforms

Transparency is one of the key elements in participatory processes. That is why the PB seeks to reform the functioning of the State, at local level at least, by implementing mechanisms that impose transparency as a guiding principle, through an increased capacity of monitoring the whole participatory process. At this point the role of ICT in increasing transparency is of paramount importance. The transparency made possible by the massive integration of collaborative platforms for PB management, is configured as an element that can certainly have a positive impact on the ability of citizens to oversee the process as a whole; especially when the role of bureaucrats and technocrats in public policy is not always directed at encouraging participatory and transparent practices. The impact of ICT regarding SM has also been undeniable, as posted by scholars like Manuel Castells. The connection between movements and communicative technologies is nowadays very strong, and in this context emerge innovative political experiences for protest and demand that are able to mass selfcommunicate (Castells, 2012). The innovative technological tools are able to facilitate the transparency of internal budgetary and organizational activities of the movements as well.

The adaptation of ICT, both to the development of PB as to the dynamics of the SM themselves, can therefore be considered as an element that tends to generate confluences. Thus, by increasing the

internal transparency of their dynamics through ICT, certain obstacles (the excessive weight of personalist leadership in the case of certain movements, and the opacity of the bureaucracy in professional politics and of the implementation cycle of PB) may be combated. However, emphasizing once again the different frames of interpretation from which the sociopolitical reality is constructed (Benford & Snow, 2000), the development of appropriate multichannel and innovative ICT platforms seem to acquire a more powerful logic in the case of PB. Again, if the how of the political process (*i.e.* deliberation, participation, transparency) is the central point, an innovative ICT platform – like the one promoted by the EMPATIA plroject – becomes critical to the overall program. In the case of SM, if ICT developments are useful to obtain certain purposes – the emphasis on what should be achieved, deep sociopolitical changes –, they will of course be promoted. But they will be no more than that: eventual means for specific ends.

A different conceptions of social justice

In the hypothesis developed in this sub-chapter, this is the great point of divergence and what generates the greatest tensions between PB and SM: what each of them understands by social justice (what) and the way to achieve it (how). This is not a minor disagreement. It is a question of different types of legitimacies, some focusing more on 'how' (participation and transparency of the processes in the case of PB) and others on 'what' (the strong idea of social justice and conquering rights through struggle in SM), which generate tensions. Perhaps acceptance – by both PB programs and SM programs – of the role that each of them plays in this enormous socio-political function can help bring about a greater understanding between them. Recognising, on the side of the defenders of PB, that conflict is something inherent in every society and in the underlying relations of power (even more so in capitalist societies like ours). And, similarly, accepting that claim-related action and social protest play a fundamental role when it comes to conquering rights; the democratic systems themselves have resulted from historical popular struggles (Tilly, 2007). On the side of SM, perhaps the acceptance of the need for proactive and constructive positions - which should have the capacity to collaborate with those institutional political measures that help to improve the current state of things, at least at the budgetary and local level – would be a position that helps to build bridges. Similarly, perhaps the recognition of the need to implement political mechanisms – internal and external to the movement itself – that are more transparent, participatory and just, would be an initiative that leads to an understanding between PB and SM, leaving particular, personal and organisational interests to one aside.

3. Case selection

Among the variety of democratic innovations the EMPATIA consortium has selected four case sites that aimed at implementing a multichannel engagement system that includes participatory budgeting. This chapter explains the reasons behind such specific choice, and offers a definition of PB and a quick overview of the academic research on this democratic innovation with a particular focus on the introduction of ICT tools and the recent hybridization of participatory budgeting processes. Then the chapter concludes with a brief overview of each case site and how such site contributes to overall testing of the EMPATIA platform.

3.1. Why participatory budgeting?

'We all learnt from this process and we certainly still have much to learn.' (Dutra, 2014: 9)

In the past four decades the debates over democracy have focused on the crisis of what is generally referred to as its 'representative' model. There is a growing awareness of the so-called 'pathologies' (Santos, 2008) presented by such a model, triggering debates and proposals focused on the possible solutions to improve democracy.

The representative democracy that is being contested is based on the idea that citizens cyclically elect their representatives, through free and fair elections, to make decisions on their behalf. In this respect, although positions widely differ regarding how to handle those problems of representative democracy, there is a considerable convergence in their diagnosis. Deliberative remedies, based on several mechanisms for citizens' participation in decision-making processes, are being pointed out as the proper answer to the various troubles that are seen as pervading contemporary democratic systems. The most consensual way to make democracy more effective, or a good/better democracy, is then based on the expansion of participation of the electorate through mechanisms of decision-making. So, if citizens are being pushed aside from the centre of democracy, the more likely alternative advanced to restore system equilibrium rests on the implementation of another form of organization for governance where citizens can play as main actors.

This debate, which dates back to the 1970s (Arnstein, 1969; Pateman, 1970), has never come to a closure. Ordinary citizen involvement into the political sphere, namely in decision-making processes, has become a key strategy for local, national, and international development. Despite the controversies that persist concerning an expanded notion of citizen participation (Schumpeter, 1976; Dahl,

1989), the topic came to stay in the political and academic agendas. For instance, for Dahl (2005), the democratic ideal described above – based on an extended participation – which he calls realistic utopianism, is too demanding to be fully achieved in the real world. This is the reason advanced by the author to defend that certain political institutions may be necessary to approach the ideal democracy, but they may not be sufficient to completely neutralize the gap between ideal and real democracy.

Although scientific literature over the last four decades has been highlighting the growing importance of citizen participation in politics, there are no convergent clear ideas on how and to what extent a wider inclusion of civil society in the interaction with the State may be conceived and how are yet to come. Discussion of conceptions of participation have been presented as a scale of increasing control by citizens, ranging from the information and transparency of government activity through adequate information to an effective citizen engagement in decision-making (Arnstein, 1969), the latter guaranteeing a clear deliberative role of ordinary people in politics and democracy and some binding power of their decisions.

The role of citizens' participation in concrete experiments worldwide has also been under severe scrutiny. As well described by Archon Fung, in fact, it is possible to imagine two differentiated macrocategories of participatory processes, according to how the implementers might 'read' them: (1) the '*deontological*' and the (2) '*consequentialist*'. The deontological perspective would represent experiences where innovations are valued because 'they help to create right relationships among citizens and between citizens and the state'; hence that democracy 'requires greater citizen participation (participatory innovation), deliberation (deliberative experiments), and rights to information and knowledge (transparency) quite apart from any other effects that these innovations have' (Fung, 2011). This perspective would suggest that by offering the space to citizens to participate is sufficient, without the need for wider goals. The (2) *consequentialist* perspective would value innovations as more or less beneficial according to the extent to which it secures additional principles including '...policies that are responsive to citizens interests, social inclusion, redistributive justice, state accountability, wiser policies, and so on' (id.). *Consequentialist* processes focus on translating their main objectives into action using specific (and multiple) tools, which guarantee consequentiality and coherence between motivations, aims and targeted results, and evaluate them accordingly.

The team and partners of 'EMPATIA' project are fully committed in contributing to reinforce the multiplication of participatory processes informed by a *consequentialist* vision rather than offering tools for refining *deontological experiments* and justifying their un-evolutionary perspectives. In fact, we strongly believe in what Santos (2009) perfectly stated, when he underlined that for democratic soci-

eties is not only a realistic horizon, but rather a moral duty, to imagine legal transformations and democratic innovations which seek goals of 'strong social emancipation', while in not-democratic environments, fulfilling goals of 'weak social emancipation' could be considered a success. Only under such conditions we could imagine organisms of the State as part of what Santos in '*A gramática do tempo*'. Santos (2006) calls '*Estado como novíssimo movimento social*' (Sate as the latest social movement), *i.e.* a 'new form of political organization larger than the State, of which the State is an articulator and which is part of a hybrid set of flows, networks and organizations that combine and intermingle state and non-state elements, elements coming from national, local and global levels' which allow a 'solidarity-based and participatory reinvention of State solidarity (p. 364).

Since our project 'EMPATIA' was initially set mainly as a support for countries of consolidated democratic tradition in order to strengthen and enrich the intensity of their democracies, is our commitment to produce deliverables and recommendations, which could contribute to work in a sustainable way. We would like to produce outputs which could help governments and societies in increasing the sustainability of public policies, helping to pursue a holistic approach when working with a concept which is inherently complex, with its multiple social, economic, environmental, and cultural dimensions. We are deeply convinced that balance among these dimensions of sustainability can only be achieved through involving citizens in decision-making, in a *deontological perspective*, with citizens' participation being seen as more than just a norm of institutional appropriateness, but rather a driver of broader goals.

Under such a perspective, our choice of Participatory Budgeting (PB) as the most adequate field for testing how far information and communication technologies can deepen the commitment with genuine citizens' participation of modern democratic innovations, can be considered a very effective and a coherent one. In fact, PB has become known as one of the most effective participatory practices designed and implemented in the last 27 years, probably the cornerstone and the cutting-edge of participatory local governance. This is true especially in terms of promoting trust in representative institutions by stimulating participation, and co-governance, through the direct involvement of citizens in decision-making on economical-financial issues, which are at the base of every public policy and represent a concrete and also symbolic field from which a renovation of political cultures is taking place.

Underlying the various versions of PB is the common assumption that ordinary citizens are central actors in decision-making processes concerning the allocation of public funds, at the local and regional levels. Hence, PB is widely regarded as an important instrument for political change and the most valid option to overcome some of the factors influencing the entropy of current modes of representative government.

3.2. What is participatory budgeting?

'Utopia is on the horizon. I move two steps closer; it moves two steps further away. I walk another ten steps and the horizon runs ten steps further away. As much as I may walk, I'll never reach it. So what's the point of utopia? To keep walking.' (F. Birri, quoted by E. Galeano, interview on Radio 3 of Spain, 2002)

Despite more than 30 years of history, PB may still be described as 'work in progress'. Its local dimension is one of its main features, which has fostered its international recognition as 'good practice' of urban governance. As Allegretti states (2014), PB is imaginable today as an 'ideoscape' (as in Appadurai, 1991); a political model that travels globally, but that only exists through its local appropriations. One must not ignore, however, that although PB gained notoriety and visibility at the local level, it also infected regional and national governments as well as international organizations, cooperation agencies, universities, non-governmental organizations, and other agents around the world (Dias, 2014). As such, the same model ends up transforming itself in an incremental manner through its diverse local implementations, and at different levels. That is why PBs evolution over its more than two decades of existence is still a topic of frequent discussion and debate.

As it was developed since the Porto Alegre experience, starting in 1989, PB "is an all-embodying process, involving diagnosis, deliberation, decision making, and control. It is also a clear institution composed of rights, duties, roles, functions, bodies, and internal self-regulations" (Stortone, 2010: 7). PB could be defined as a typology of democratic innovations that modify the procedures of one of the most important aspects of urban politics — the formulation of institutional budgets – through repeated negotiations between the local government (or some local administrative agencies) and participants. The public of PB could be limited to citizens or include other groups (*e.g.* including commuters, migrants, children and other inhabitants of a specific territory, not necessarily holding formal titles of citizenship), or, in some rarer cases, limit the participation to specific members of civic associations, taxpayers, or an even more reduced groups of persons chosen through methods of random selection. PB designs also vary significantly, combining in different ways elements of deliberative, participatory, and representative democracy. In major urban areas, for example, citizens' delegates have been elected by participants to follow more intense phases of detailed planning, and often to monitor projects' implementation. However, all PBs share the main objective of increasing the num-

ber of agents involved in the budgeting process. Most PB designs focus on discussing expenditures, although there are a few that also deal with revenues. As an example of the latter, the Brazilian city of Canoas allows citizens to direct part of their local taxes to specific neighbourhood projects.

Most existing PBs concentrate on capital expenditures (*i.e.* investments, and usually just a limited part of them) due primarily to the following two reasons: (1) investments are more visible in the public space, so they are more attractive for citizens and easier to explain; (2) investments are the most flexible and independent part of an institutional budget, so the cost/benefit relation is maximised between the time needed for discussion and the possible results (in terms of variation of the original budget draft, which is based on the political program of ruling parties). These benefits would be fewer if the discussion concentrated on more rigid costs (such as current expenditures or personnel wages).

The growing interest in PB appears to have emanated from the specific features, outputs and impacts of the well-articulated and more radical Brazilian experiments (*e.g.* Porto Alegre, Belo Horizonte, Recife, Fortaleza, Guarulhos and Canoas), as well as scattered experiences in other countries⁹. The spread and growing interest in PB has generated the temptation to formulate 'normative' and 'essentialist' PB definitions (Genro & De Souza, 1997; Antequera Charter in Spain, 2008¹⁰). Nevertheless, most of literature today uses more 'neutral' definitions based on methodological features, which are broad enough to welcome a large series of experiments with different width and depth. Within this family, the PB definition developed by Sintomer *et al* (2008, 2012) remains the most widely used definition today 'the participation of non-elected citizens in the conception and/or allocation of public finances', with five further criteria:

- The existence of an explicit discussion of financial/budgetary resources, which must take into account the fact that that PB usually deals with scarce (and often shrinking) resources.
- The need to establish a dialogue with an elected body that has specific responsibilities and some concrete power over administration and resources (such criterion avoids confusing PB with other forms of community-driven decisional processes that do not include an active role for elected authorities in the process).

⁹ Among the latter: for instance: Villa el Salvador in Peru, Seville and Santa Cristina d'Aro in Spain (or, recently, Madrid and Barcelona), Grottammare in Italy, Rosario and La Plata in Argentina, Chengdu and Zeguo in China.

¹⁰ The latter is a ground-key-document approved by several Spanish cities, guided by radical-left municipal governments, in order to state "their" vision of PB, with the explicit goal to counterpoise and contrast it to the "minimalist" and "light" concept proposed by groups of cities led by liberal/conservative political forces.

- The existence of repeated cycles of events that take place over years, omitting processes that take place as part of a single isolated event (one meeting or a referendum on financial issues, for example).
- The inclusion of some forms of public deliberation within the framework of specific meetings/forums configuring a new public sphere (therein avoiding the definition of PB as a simple survey on budgeting issues, a process in which citizens would not have contact with one another).
- The existence of a certain level of accountability that would allow participants to get feedback on whether or not their proposals have been accepted by the institutions, and would provide citizens with information on the implementation of their proposed projects.

The cyclic criterion of a PB converges into a common PB model that is structured by two interlinking sub-cycles. The first sub-cycle focuses on sharing the decision-making process with citizens (by collecting proposals that address specific problems and present possible solutions, verifying their feasibility, ranking them and integrating them into drafts of official budget documents, which will then be formally approved by elected officials). The second sub-cycle involves the implementation of joint decisions. In particular, it addresses an institution's ability to respond to participant satisfaction and prevents frustration politically backfiring on the experimenting institution.

If it is generally understood that PB entrusts a given community the right to decide on budgets of their interest, though the key criterion of deliberation does not necessarily lead to *shared decision-making* by non-elected participants. In the dominant German model of PB, for instance, people can freely rank suggested priorities but elected officers make the final decisions based on (and justified in great detail according to) participants' indications. With increasing frequency, however, many PBs reject a consultative formula based on 'selective listening' (Sintomer & Allegretti, 2009) or political authorities' 'cherry-picking' of proposals (presented by citizens).

In the last decade, entire countries – currently the United States, Poland and Portugal (Alves & Allegretti, 2012; Sintomer et al, 2014) – are abolishing consultative PBs. In some case, key external consultants and university researchers have refused to support such processes due to the widespread awareness that only PBs that share decision-making power with their participants can challenge the traditional political culture, which over-emphasizes the role of representative institutions in public policy development. Moreover, there is a conviction that PB cannot be a useful 'learning by doing environment' if it is only consultative. PBs prove to be capable of creating feelings of 'coresponsibility' and 'ownership' among citizens, balancing duties and rights, when they open co-

decisional spaces that reward participants for their time and the energy they have voluntarily invested discussing public matters. A key success factor of PB is the balanced mixture of (a) the institutional political will to open part of their budget to public discussion, (b) the self-organizing capacities of social actors, (c) a rigorous organizational design for participation and (d) the level of financial commitment (and autonomy) of the institutions experimenting with PB. Success is also contingent upon the existence of clearly defined goals and motivation behind the participatory process, particularly by aligning goals with the means to achieve them. In the absence of these factors, the 'raison d'être' of a PB is more fragile and the initiative is unlikely to be sustainable.

3.3. Brief overview of the academic literature on participatory budgeting

As PB is one of the most intensely studied participatory practices today, it is far from easy to properly track the amount of literature produced on the subject during the last decades. This process is widely recognized as intimately linked to the (re)democratization processes of the 1980s and 1990s in the global South, particularly in Latin America. Originally implemented in Brazil, the geographical dissemination of PB has subsequently reached a large part of the world. PB originated from experiments conducted in small cities of Brazil (as Pelotas, in Rio Grande do Sul, Boa Esperança in Espírito Santo state, Piracicaba in São Paulo State or Lages, in Santa Catarina State) during the transitional period to democracy. The adoption in 1989 by the metropolis of Porto Alegre (the same year in which it was being tested, with a lower degree of success, in São Paulo and other larger cities in Brazil) helped it spread soon to several other Brazilian cities, then to other countries in South America and, finally, to other continents and regions of the world (Shah, 2007; Sintomer *et al.*, 2008, 2014). Its implementation launched an open discussion on urban governance, public management, citizen participation, citizen and community empowerment, as well as on a new opportunity to expand and deepen democratization (Fung & Wright, 2001; Souza, 2001; Santos, 2002; Santos & Avritzer, 2002).

The still growing literature on PB displays an agreement on the fact that direct participation of ordinary citizens in decision-making processes is the central value of the process (Abers, 2000; Baiocchi, 2005; Stortone, 2010). This particular device, oriented to improve local governance and to enhance civil society participation, is since 1989 the centre of an international debate focused on the 'democratization of democracy' (Santos, 2007), or – as Dutra simply puts it – a debate where "Democracy's problems are solved with more Democracy" (2014: 10). After 27 years of experiments all over the world, and due to the remarkable results that PB achieved in terms of effectiveness, redistribution and development, it became a favourite example of what high intensity democracy looks like (Santos, 2002), one of the most often replicated participatory procedure around the world, frequently

acknowledged as 'good/best practice' in democratic urban governance. It is regarded as a major example of a pathway to a better democracy (Gret & Sintomer, 2005), a telling example of advancing extended participation as a response to the current limitations of representative democracy.

Part of the literature on PB tries to clarify how this procedure is located among the different streams of democratic theory. The theory of deliberative democracy and the approach of participatory democracy seem to compete more directly over the status of PB. Some authors claim that PB is distinct from other participatory or deliberative formats in a number of ways (Hilmer, 2010; Sintomer, 2010). In PB, citizens also cast votes for or against specific projects, with local governments committing themselves to the implementation of the projects decided by citizens. Although in a considerable number of cases, the decisions are not legally binding, it allows citizens to call for a political commitment which can be translated into actual public policy initiatives subject to monitoring, unlike other participatory formats. A PB process is invariably steered by a specific normative orientation, often associated with social justice, territorial distribution of resources, or addressing the needs of disadvantaged groups or neighbourhoods (Sintomer, 2010; Wambler & Hartz-Karp, 2012).

Participatory Budgeting is acknowledged as an enactment of deliberative democracy and as the most robust example of the possibilities opened up by the practice of participatory democracy, able to complement and to combine representative with direct democracy (Santos, 1998, 2002; Hilmer, 2010; Sintomer, 2010).

The recognition of the singularity of PB is linked to its peerless ability to unsettle current theories and practices of democracy. PB indeed challenges the theoretical basis of representative democracy, including the definitions of its actors and institutional arrangements, and it has the noticeable virtue of proceeding with that challenge in a constructive way, appearing as a viable contribution to the emergence of renewed conceptions of State and democracy (Santos, 1998).

In the context of democratic theory, the participatory initiative which has gained most space in ongoing discussions is indeed this kind of process, since it represents the possibility of a bottom-up design and a process involving civil society as its main actor (Avritzer, 2009; Pateman, 2012).

PB thus allows participatory democracy to appear in a different light from common conceptions of the deliberative theory of democracy. If the focus of deliberative democracy theory was on the way decisions should be made, participatory democracy focuses on the discussion of participation as a right to intervene (Pateman, 2012). Accordingly, citizens participate by their own will, assuming that participation is something that must happen freely, based on people's interest to decide about their own problems and not depending on previous selection processes or by being paid for. Participation,

thus, appears here as a universal right to be freely exercised (Pateman, 1970, 2012; Santos, 1998; Dagnino, 2002; Santos & Avritzer, 2002), and PB is the most relevant opportunity to enact that right.

The remarkable flourishing of innovation through PB within and complementary to existing forms of democracy is hard to deny. But a growing set of criticisms has surfaced as well. Acknowledged weak-nesses of participatory budgeting should not be neglected, namely those regarding inclusion, since public meetings may be open to all, but illiteracy, language barriers, fear of retaliation for criticism and other obstacles are part of the process. More importantly, participatory budgeting should not be mythicized or glorified in an uncritical way, since redistributive effects, while important, are still modest, given that only a small part of the budgets of local governments are subject of public deliberation (Silver *et al.*, 2010).

Regarding the list of acknowledged potentialities, better government is only possible through the broadening of citizen participation by means of opening up spaces for the 'power of the people' to be exercised (Allegretti, 2014). PB strongly contributes to the democratization of power, to fight inequalities and injustices and to prevent the private appropriation of public matters (Dutra, 2014; Cabannes & Lipietz, 2015). It tends to promote open-ended as well as public-minded discussions among equal citizens about resources and policies (Baiocchi, 2003). Its deliberative and self-regulating capacity highlights the process as a particularly powerful tool of public decision-making.

Strengths	Weaknesses
 Makes representative democracy open to more active participation of segments of civil society, since it is based on a new democratic model that can be merged with and work within the formal representation structures of liberal democracy, as a supplement and a complement to them [allows a 'co-management' (Fedozzi, 2001), a 'joint governance initiative' (Gret & Sintomer, 2005: 131) or a 'co-government' (Santos, 2005) between State and Civil Society] Reduces clientelism, populism, patrimonialism, authoritarianism, therefore changing political culture and increasing transparency and popular/public control over 	 Forms of clientelism still survive. In many cases, especially in Western contexts, the process emerges as a top-down strategy, which limits participation beyond citizen consultation. Thus, PB may not contribute to the control of resources and decision-making process by citizens, but instead involve few or just well-connected persons In some other cases, once citizens are treated as stakeholders within government processes, they become vulnerable to cooptation, since they are less likely to criticize processes they are involved in Interaction with government puts com-
StateStimulates associativism	munity movements' independence at risk
 Facilitates a learning process that leads to better and more active citizenship, by generating new participatory publics Allows citizen/community empowerment: 'empowered participatory governance' (Fung & Wright, 2003), introducing in de- cision-making a 'fourth power' (Sintomer 	 PB is a practice of power, always determining a particular relationship between the ones who rule and the ruled ones, and that does not mean that more power is the same as equal power among actors Civil society is still developing
 et al., 2013, 2014) Inverts priorities toward the majority of the population (the poor), together with 	 Financial limitations and resources for participatory budgeting are still scarce, limiting the scope of the initiatives

Table 1: Strengths and Weaknesses of PB

attempts to open participatory channels to other social classes and groups

- Provides a means of balancing ideological concerns for promoting citizen empowerment with pragmatic responses to citizens' demands
- Provides a structure that can carry over beyond a governmental term
- Every citizen may formulate and address her/his own needs, as well as mobilize her/his own knowledge within the PB decision-making process. But it encourages participants to move away from individualistic views towards solidarity and seeing city problems in common rather than personal terms.
- It may reorient public investments towards the most disadvantaged districts/social groups or create a more equitable sharing of the resources, improving economic redistribution and social development
- Reform of public administration oriented to modernization, efficiency, and a useroriented administration. PB improves the relationship between technicians and users.

- Communities tend to stop participating once their demands are met; specific individuals are also less interested in investing time and energy in public learning or empowerment sessions
- Difficulties persist in broadening participation: the very poor, young people and the middle-classes are underrepresented
- Citizens' lack of technical and analytical skills to weigh different arguments may jeopardize participation. Technically, there is also a weakness in the capacity and leadership of local actors (elected representatives, citizens, etc.), which negatively affects the quality of the participatory local governance process
- Many PB participants are interested in securing short- to medium-term public works projects, which makes more difficult to generate discussions on planning for the future of the city
- Initiatives disappoint participants because of the slow pace of public works
- Participatory budgeting risks reification of the popular movement, making it difficult to maintain a clear separation between its role and that of government
- Fragmented decisions and short-term demands may jeopardize urban plan-

ning and long-term projects

- The coercion to participation should not be legitimized as a rule in a participatory process resting on democracy and positioned against inequalities, as happens in some cases
- Volatility of PB may involve setbacks in the modernization of public administration
- PB sustainability is dependent on political commitment to PB. Processes tend to die when political parties not committed win elections, especially in those cases where civil society is weaker; this is why PB requires a strong commitment of both a willing political society and a robust civil society.

Adapted from Sousa (2001) and enriched with subsequent literature review used in this chapter.

3.4. Diffusion of PB Worldwide: Trends and Families

Soon after its initial implementation in Porto Alegre, the new idea of participatory budgeting (PB) gained international projection, with a range of international development agencies promoting it, being replicated from small towns to mega-cities.

A major topic dealt with by PB literature is its coverage of a wide range of experiences, a variety of local participatory devices for participatory governance worldwide, through which citizens sphere may deliberate and decide on, or influence, how to define the investment priorities for a specific slice of budget of a given municipality. Direct participation and budgetary policies are the two major ingredients of this process, but each PB process is recognizable by a precise origin, history, features and results to which we must pay close attention.

Since its earliest experiences, PB became widely recognized for its resilience and flexibility. Since then, many different kinds of participatory approaches have been developed and implemented as

PB, thus highlighting the centrality of context in accounting for the features of these approaches. PB has been constantly reshaped and adapted in the different regions and countries of the world. Therefore, the shape and the outcomes of PB differ according to the cultural and sociopolitical context in which it is developed (Stortone, 2010).

The boost to participation through PB mechanisms depends on important networks that played a major role in the dissemination of the process in Latin America (and beyond) in 1997/2010, such as the Urban Management Program of the United Nations in Latin America and in the Caribbean (PGU-ALC) (Sintomer *et al.*, 2013). The World Social Forum also played a determinant role in spreading PB experience (Fox, 2007; Albert, 2010). In addition, one should mention the role played by internation-al or multilateral organizations (Dias, 2014a), such as the World Bank, despite the ongoing controversies over the role played by the World Bank in the globalization of the PB process (Goldfrank, 2012).

The literature on the topic allows us to identify different phases in the spreading of PB (Cabannes & Baierle, 2004; Dias, 2014b). The first phase (1989-1997) corresponds to the initial period of the dissemination of PB in Brazil and in South America, namely in Montevideo, the capital city of Uruguay. A second phase (1997-2000) is associated with the expansion within Brazil, when about 140 municipalities implemented the process, despite significant variations in its enactment. One-third phase started in 2000, with the expansion of PB experiments outside Brazil and a broad diversification, which has been described as the 'return of the caravels' (Allegretti & Herzberg, 2004). At that time, "there is hardly an organization or territorial entity which would not subscribe to the virtues of greater civic engagement, at least verbally" (Sintomer et al., 2014: 28). This is the phase when the local resilience of the process became particularly evident, namely in Latin America and Europe, even if Porto Alegre still stood as the main reference and model. The fourth phase (2007-2008) witnessed the emergence of both a national and international PB networks. One last – and currently ongoing – phase corresponds to the 'upscaling' of PB initiatives and their integration into larger and more complex systems of citizen participation. This phase corresponds to the recognition of both the potential and the limits of PB as a participatory procedure. While the first phases confirmed PB as a central device for participation, the ensuing phases brought up a number of problems and allowed the identification of limits to the procedure, namely the cross-cutting issue of the under-representation of some social groups in the PB processes. The latter issue has since then steered the debate and experiments with the creation of alternative spaces and channels of participation.

Another part of the literature on the topic is concerned with the comparative assessment of experiences around the world, which raises some relevant questions. Generally speaking, PB can be credited with three main sorts of achievements: promoting social transformation by broadening citizens'

rights and opening up spaces for decision-making expanding citizen involvement; creating innovative democratic institutions beyond the limits of representative democracy; becoming a new process for the design, implementation and monitoring of budgetary policy (Wampler, 2003). The point is that not all of these results are achieved by all PB processes in the same way. In fact, although participatory democracy, social transformation and the invention of radical democratic forms of politics were strongly linked to the original PB experiences, the diffusion of PB followed heterogeneous paths in designs, practices and impacts.

Despite the original impetus of PB associated with participatory democracy and an innovative conception of citizen engagement in decision making, a significant number of currently existing experiments in PB worldwide seem to have been reassembled mainly as technologies for managing budgets. As Carole Pateman (2012) recently emphasized, there is a distinction between a PB as a major step in democratizing democracy and many of the various experiments in citizen participation or consultation now called Participatory Budgeting.

The transfer of participatory budgeting from Brazil to Europe indeed has been a highly differentiated model (Stortone, 2010), a fact that continues to feed specific analysis focused on the specificities of the process in different regions of the world (Sintomer *et al.*, 2008, 2013; Dias, 2014a).

PB may represent both a top-down and/or a bottom-up participatory decision-making process, since it is dependent on who takes the initiative, namely civil society or the government. In this context, it may display a deficit of deliberation if it is devoted to implementing decisions that have already been taken. In this particular context, Giovanni Allegretti (2014) calls our attention to a very relevant question: based on Ibarra's (2007) conception of participation – 'by invitation' (top-down) or 'by irruption' (bottom-up) –, he stresses that the latter is usually criminalized, while participation 'by invitation' meets with a more differentiated set of reactions, a central question requiring further research.

The level of institutionalization of PB is another major concern to be found in the reviewed literature, a question linked to the relevant legal framework (Cabannes & Lipietz, 2015). Some processes are set up by particular, elected governments, thus depending on the latter's political will to enact the procedure, while some others are favoured by laws that rule its application, as it is the case of the region of Poitou-Charentes in France, South Kivu Province, in Congo, or national laws that establish PB as mandatory for municipalities, as is the case in Peru, Ecuador, the Dominican Republic and Poland (Allegretti, 2014; Dias, 2014; Oliveira, 2014).

Drawing on these considerably different developments and adaptations of the original Brazilian experience as it spread to other parts of the world, Sintomer and colleagues (Sintomer *et al.*, 2008,

2013) proposed a systematic framework of citizen participation based on a typology including six models: I) Participatory Democracy, characterized by the 'fourth power' and a 'countervailing power', based on the empowerment of the people and the promotion of cooperative conflict resolution; II) Proximity Democracy, devoted to increasing communication between citizens, public administrations and local authorities, but based on a 'selective listening', with decision-makers cherry-picking citizens' ideas; III) Participatory modernization, a model where participation is only one aspect in New Public Management strategies, aiming at increasing the legitimacy of public policies in a context where the State is trying to become more efficient and legitimate; IV) Multi-stakeholder participation, corresponding to a top-down approach that does not enable a cooperative countervailing power to emerge; V) Neo-corporatism, also a top-down model, with local government playing a strong role, since it is surround by organized groups (NGOs, trade unions, and employers' associations), social groups (the elderly, immigrant groups and so on) and various local institutions, a model that excludes non-organized citizens; VI) Community development, a model in which participation includes the phase of project implementation, with fairly clear procedural rules and a relatively high quality of deliberation.

This typology reveals, above all, that the original PB model, started up in Porto Alegre, has been transformed over time into diverse participatory possibilities, with different consequences on democracy and on people's lives. Within this story, Ganuza and Baiocchi (2014) draw attention to the PB's double journey, which has fostered the construction of the successful idea of participation beyond particular contexts and the policies under which it could be implemented. In fact, much of the literature on PB goes back to Porto Alegre. The symbolic association with this particular location provided a benchmark for claiming the authenticity of a political model travelling under a pragmatic credibility license that cannot be underestimated (Peck & Theodore, *quoted in* Ganuza & Baiocchi, 2010).

The complexity of the story of PB is made apparent by the claim made by some authors and actors that in its trajectory and spread PB lost its soul (Baierle, 2007), while others suggest that the same path may be read as the emergence and spread of a social and political movement (Dias, 2014b). Building on the latter position, a growing amount of literature is now focusing on the particular relationship between PB as collective action (Levin & Nierras, 2007; Albert, 2010; Stortone, 2010), or, more specifically, on PB as a social movement, stressing the dimension of conflict within the process. Some analyses conclude that, in fact, PB may involve a call to mobilization, in some cases a strongly politicized one, but keeping in mind that PB remains a program of government, which encourages participation, to be sure, but limited by the authority and resources of government (Albert, 2010).

Today, the PB process is not the same as it was when it was launched in Brazil, and it could not be, since democracy itself, throughout its history, has always been contested, criticized and reinvented. Across the particular history of PB, a trend towards the hybridization of the process was recently identified and characterized (Sintomer *et al.*, 2013). The perception is now that PB turned into a less complex and radical process when compared to its original model of Porto Alegre. PB is now often articulated with other participatory practices as well as combined with community development structures. This hybridization involves as well the introduction of concerns with gender equality into the process and, more recently, the use of new technologies, encouraging more interactivity through the use of ICTs, which plays a complementary role to face-to-face participation within PB, a change which deserves further study.

3.5. The evolution of technology in participatory budgeting processes

As discussed by Allegretti, Matias and Schettini (2007), Sampaio (2010), and Spada and Allegretti (2012), the early experimentations of ICTs in PB processes were ineffective due to the mistrust of the organizers of these processes that privileged face-to-face interactions, prematurity in the technology and another number of path dependent issues. However in the last decade most of these issue have been overcome and a number of best practices of hybrid participatory budgeting have emerged.

The reason of such a change originated in the attempt to solve several problems (as redundancy of proposals and narrow-visions of single actors) and respond to criticisms raised by the chaotic spontaneous overlapping of multiple channel of participation in the same territory (and often by a real competition for conquering for audiences). The common denominator of this new approach was the attention given to the coordination of channels and tools created for isolating specific actors, through forms of outreach capable of attracting specific groups of citizens, and stimulating process of gradual fidelization to the participatory process. Even if are still rare to find, cases of cities which ar-ticulated PB with other participatory devices, as an engine or a pivot of a larger 'system' of democratic innovations (as in the Brazilian city of Canoas), are growing in number, and even transcalar systems of participatory devices which include PB (as happened with Kerala in India, Lazio Region in Italy or Poitou Charentes in France) are emerging at different latitudes.

The highest difficulty in 'straighten' and 'readdressing' the initially tense relation between PB and ICTs came from the fact that many ICT tools in the last two decades have been often used in public policies to support the shrinking of welfare state and an optimization of cost-recovery capacities of the public sector (as is the case of several orthodox tools of New Public Management), while PB never lost the strong link with its original 'imaginary', so with perspectives of empowerment of citizens

and vulnerable social groups. The need to challenge such a gap of perspectives brought to a slow process for 'redeeming the origins' of both PB and ICTs (especially thinking about the sociocultural milieu which allowed the first spreading of Internet: see Cardon, 2010) in order to find a stronger core feature for strengthening their dialogue based on elements devote to amplify their 'emancipation potential'. Such a shift needed the adoption of a perspective where 'digital-era governance' (as in Dunleavy et al, 2005)¹¹ is seen as a paradigm ontologically different from that which generated New Public Management blueprints.

The first successful introduction of e-PB was implemented in Belo Horizonte (Brazil) in 2006, when a digital PB was added as a third pillar of this particular process. This new window was soon internationally recognized as a good practice, inspiring many other cases that adopted this new channel of participation, albeit adapted to different contexts and circumstances (Peixoto, 2008; Cabannes & Lipietz, 2015).

Today, different uses of digital technologies in PB are spread worldwide: 1) to collect proposals for PB; 2) for engagement and mobilization; 3) for didactic and playful goals, namely a pedagogic role, especially with the younger generation, who feel more attracted by them; 4) for discussion and interaction among citizens; 5) for remote voting via web or SMS; 6) for online monitoring; 7) for online overview of PB development (Sintomer *et al.* 2013). E-participation, which emerged as a way out of problems with efficiency and sustainability, has become a key element of the process.

One of the main opportunities of ICT is fostering e-dialogue and e-participation in deliberation (Gaventa, 2006)¹². This new frame of participation represents not only a clear strategy to increase citizen involvement in the process and to modernize PB through the use of ICTs (Stortone & De Cindio, 2014, 2015), but it also contributes to process sustainability, making it more attractive and cost-efficient (Sintomer *et al.*, 2013), since it reduces participation costs for citizens, as well as organizational costs for institutions. That said the existing technology of e-deliberation is still extremely limited and mostly based on asynchronous text based interactions that are prone to a number of problems that are well known and have generated a vast literature. Problems such as strong group polarization (Sunstein, 2006; Chen 2013), informational cascades (Hansen, Hendricks, & Rendsvig, 2013), low signal-to-noise ratio (Cotton & Yorke, 2006), information overload (Losee, 1989), scattered con-

¹¹ See DUNLEAVY, P.; MARGETTS, H.; BASTOW, S.; TINKLER, J. (2005), "New Public Management Is Dead—Long Live Digital-Era Governance", in Journal of Public Administration Research and Theory, Volume 16, Issue 3, pp. 467-494

¹² Other references in De Cindio, 2012; De Cindio & Schuler, 2012; Davies & Gangadharan, 2009; Wenger, White & Smith, 2009, Foth, 2011.

tent, redundancy, non-collaborativeness (Klein, Cioffi & Malone 2007; Klein, 2012, Klein, Spada & Calabretta, 2012) have been extensively analysed since the emergence of the first Bulletin Board System more than thirty years ago. Only very recently, drawing on insights from the theory and practice of deliberative democracy, collective intelligence and informal logic, scholars and practitioners have begun to design and experiment with online platforms that aim to solve these problems, often promoting traits and behaviours associated with intellectually humble dialogue and high quality deliberation (Iandoli et al., 2017). To our knowledge no e-PB platform to date has experimented with these new approaches, and there is still limited understanding as to how ICTs can support deliberation. Although EMPATIA was not able to explore this avenue within its pilots, it is collaborating with Prof. Graham Smith (Westminster University) and Michael Morrel (Connecticut University) in another project on e-deliberation, as described in chapter 6.3.4.

E-participation represents also a strategy to promote more inclusiveness in the process, especially of those young people who do not participate in the PB and of members of the upper social classes (Cunha *et al.*, 2010). ICTs can also encourage the participation of those who would never participate in other ways, the internet-only participants as identified by Spada et al. (2016). However the introduction of these new publics in PB processes need to be carefully balanced at the risk of losing legitimacy. Often internet-only participants are more privileged than face-to-face participants due to digital divide and this difference might undermine the overall legitimacy of PB as in the famous case of Recife described by various authors (*e.g.* Spada & Allegretti 2014).

The introduction of digital tools in democratic innovations has also generated a renewed attention on behavioural incentive structures that can easily be added in the choice of architecture. These incentive systems are often described as gamified systems and have been rarely used in PB processes. The EMPATIA consortium is dedicating a specific task force to the analysis of the pros and cons of gamification and how serious games can contribute to democratic innovation. The first concrete result of this work is Empaville, a gamified multi user experience described in section 4.3.

Lastly security is a crucial debate that is underdeveloped in the literature. The majority of Participatory Budgeting that employ digital voting are not secure, in the best case they employ very basic dual authentication based on providing a telephone number. Only in countries in which a secure digital ID exists the online voting mechanism of PB, and any other similar democratic innovation, is slightly more secure. The debate on the security of e-voting is beyond the scope of this document, but a clear solution of problems such as "over the shoulder threat", does not really exist. There is a reason why we have secret ballots in most democracies and why the majority of reports on e-voting conclude that it is not safe enough, especially in light of actions by interest group (Spada et al., 2016).

PB must continually enhance its technological toolset without abandoning the democratic radicalism that originally characterized PB (Dutra, 2014). The deepening of the radicalism of PB process, as already mentioned, is a political and cultural challenge for which no magic solution exists, especially in the short-term. Only a constant and pragmatic experimentation with new tools under a diverse set of conditions and applications can continually update democratic innovations and bring us to better understand what works, when and where. In this sense the EMPATIA project is not only a specific set of interventions and a digital platform, but also a blueprint for a pragmatic optimization agenda that can be adapted to any democratic innovation and any new technology.

3.6. Pilots

This section of chapter three briefly introduces the four cases in the overall architecture of the EM-PATIA project, WP 1.3 presents more details about each case ethical and socio economic background, while WP 3.1 presents more details on the preliminary design of each democratic innovation in each case.

3.6.1. The evolution of the EMPATIA pilots

The original line-up of cases included Bonn in Germany, Říčany in Czech Republic and Lisbon in Portugal. The three case locations were selected in order to compare very different environments and very different applications of the EMPATIA platform. As detailed in our original proposal (see page 18, pilot description), each pilot was chosen with a very specific testing scenario in mind and was mostly focused on evolving the participatory budgeting process. In Germany, a country that has mostly experienced consultative digital participatory budgeting processes, the pilot was primarily designed to explore how to integrate a face-to-face channel of participation and how to make it a more inclusive and empowering process. Portugal, that has a very different tradition of mostly face-to-face processes, the pilot focused on strengthening the ICT component, while in the Czech Republic that has practically no experience with participatory budgeting the pilot was supposed to explore a full local solution.

The EMPATIA project was designed from the start as an agile and adaptable project due to the fact that local conditions can change rapidly. However, due to changes in the political leadership in Bonn as well as changes in the PB schedule, the collaboration with the city of Bonn could not be sustained. The EMPATIA consortium was designed to be adaptable to changes, having selected national partners that work on multiple participatory budgeting processes, and thus the pilot in Bonn was quickly

substituted with a pilot in Wuppertal, a city of similar size, with the willingness to explore new innovative ways of PB together with EMPATIA.

Additionally, the political situation in Říčany and Lisbon also affected the original plan for such pilots. A detailed description of these changes can be found in D3.1. In summary the city of Říčany chose for a minimal implementation of EMPATIA that could be integrated with their existing citizen panel. Říčany has an online community of citizens that is recurrently consulted on local issues, and the city chose to give prominence to this existing technology while limiting the EMPATIA implementation to an ancillary ideation and information website. Lastly, Lisbon opted for adopting EMPATIA as a full integrator of all the existing participatory technologies providing a unified login and also adding to this architecture a new continuous ideation platform.

At the same time two new opportunities emerged during the course of 2016. During the summer, EMPATIA was invited to support the digital voting phase in the Portuguese town of Condeixa. Thus, in the fall of 2016, we beta tested the voting module of EMPATIA. The city of Condeixa is now interested in designing with the consortium the next cycle of their PB process. Lastly the city of Milan has requested to use the EMPATIA platform in a large PB process. At first, EMPATIA was implemented to support the monitoring of the previous Milan PB - what we refer as 2nd cycle. It was later integrated in a side-by-side approach to support the new PB cycle, which started in October 2017 and will end in March 2018.

The details of these changes are described at length in D3.1 and are beyond the scope of this report. For this report's purposes it is important to highlight how the implementation of participatory technology in the wild is significantly affected by political volatility and the changing desires of city partners. Thus it is fundamental that the EMPATIA project, and similar future projects funded by the EU, anticipate the possibility of such volatility and engage with flexible partners that are capable to enact contingency plans.

One of the key elements that allowed EMPATIA to be so resilient and adapt to the changing local conditions was the multi-method process of requirement gathering that implemented a constant dialogue not only with the pilots' site, but also with a number of different actors around the world who are adopting multichannel digital platforms. The next section describes the methodology we employed.

4. Requirements Gathering

This chapter describes the methodology adopted for gathering and developing requirements for the EMPATIA platform, during the first year of the EMPATIA project. Requirements gathered in the first phase of the project are presented in chapters 5 and 6. The EMPATIA project integrated multiple methods to gather requirements in order to maximize its resilience and agility. Initially, the large body of literature on democratic innovation was analysed in the light of the diverse experience of the EMPATIA team. From this initial work a preliminary set of requirements was generated. These requirements were then discussed in each pilot with local institutional representatives, citizens, and representatives of NGOs. At the same time EMPATIA deployed multiple user experiences in conferences and public debates around the world that gathered experts of the field. This initial set of user experiences (UX) was focused on the voting multichannel platform, data visualization of the results of the vote, and ethical challenges of data visualization. The feedback gathered via the UX was instrumental in allowing EMPATIA to quickly deploy the voting tool in the Condeixa pilot (See D3.1 for more details). Lastly, EMPATIA leveraged the significant assets of its research board to gather additional feedback. Some of these processes are still ongoing, while the implementation - or not - of some of the requirements initially suggested in the first version of this report, are described in the next sections of this document.

4.1. A multimethod approach

The main objective of this deliverable was to generate a set of guidelines and instructions that should give impulse and steer the activity of two core Working Packages of EMPATIA:

- (→ WP2) technical guidelines for the development of the digital platform and tools to support the implementation of multichannel participatory budgeting processes
- (→ WP3) operational guidelines for the design of the pilots to be delivered by the end of the project, in Lisbon (Portugal), Wuppertal (Germany), Říčany (CZ), and Milan (IT).

More details regarding the interaction between this document and other past and future activities and deliverables are contained in Figure 1 (p.14).

Following a system engineering approach, we specify these guidelines as functional and nonfunctional requirements, where functional requirements describe what a platform/tool is supposed to do, and non-functional describe how it is supposed to work. Functional requirements are usually in the form of "system shall do <requirement>", for example the EMPATIA platform should send an

email to every user that performs the registration, non-functional requirements, instead, are in the form of "system shall be <requirement>", continuing the previous example a non-functional requirement could dictate that the system is highly responsive and such email must be sent in under two seconds.

Adapting this approach from the ICT environment to the institutional design environment of EMPA-TIA implies integrating multiple source of knowledge in a dialogic process that defines an initial set of requirements, tests them, review, and updates them. We can divide this source of knowledge in three different families.

Theoretical knowledge regarding Democratic Deepening

There is a vast literature on the norms and contours of democratic theory, and what does it mean to deepen democracy. This includes minimal conceptions of democracy to more robust roles for citizens to participate, such as in deliberative and participatory democracy (see Fung 2007, pp. 448- 450.) However since early 2000s, many authors have begun to propose a syncretic approach that, instead of focusing on just one of the various theories of democracy, combines them. These meta-theories identify principles, functions and 'democratic goods' that are consistent with multiple democratic traditions.

For example Saward (2003) describes four principles, political equality, inclusion, expressive freedom and transparency. Mansbridge (2012), instead, identifies three functions: the epistemic, ethical, and democratic. Graham Smith's conceptualization of democratic goods is particularly useful for analysing democratic innovations, such as civic technology (Smith, 2009). Smith identifies four democratic goods — inclusiveness, popular control, considered judgment, transparency — as well as two institutional goods — efficiency and transferability. EMPATIA has adopted Smith's approach to assess different civic tech applications and draw non-functional requirement for each democratic innovation system.

But it is important to notice, as all these authors of meta-theories do, that these lists of principles are not exhaustive and can be compared to a toolkit of imperfect metrics that capture different correlated characteristics of the same phenomena.

The first democratic good introduced by Smith is inclusiveness, which requires even participation from all segments of society to promote equality. It requires the inclusion of all types of people – a critical condition for an informed, contested environment. Inclusiveness requires processes that create effective incentives for participation, for people across different social groups with varying prior civic knowledge and awareness.

Second, popular control regards the degree to which citizens have actual power or control over decision-making. In this schema people act "not merely as objects of legislation, as passive subjects to be ruled, but as autonomous agents who take part in the governance of their society, directly or through their representatives" (Gutman & Thompson, 2004).

Third, considered judgment requires thoughtful and reflective judgment (Smith 2009). It is related to epistemic democracy to "produce preferences, opinions, and discussions that are appropriately informed by logic and are the outcome of substantive and meaningful consideration of relevant reasons" (Mansbridge, 2012: 11). Considered judgment enables citizen's considerations to be discussed, aired, and appropriately weighed (see also Habermas, 1996). It empowers individuals in deliberative settings to conduct rational, good faith discussions to enhance democratic governance. Civic talk, when applied to policy specification and implementation, can make public policies more competent (Freeman, 2002; Richardson, 2002; Cohen, 1989).

Fourth, transparency requires that rules and information are clearly presented to citizens. Through transparency, citizens can effectively weigh and assess the democratic system, which is critical for a well-functioning democracy (Warren, 1999). It includes actively releasing information, such as data, as well as providing policy pressure whereby information induces policy change. The targeted transparency "action cycle," as developed by Fung, Graham, and Weil (2007), traces how information moves from disclosure to become a part of decision-making routines. Through providing transparency people can actually read and understand information in a new way.

Then Smith describes two institutional goods, efficiency and transferability, i.e. the ability of not wasting scarce resources and the ability of a democratic innovation to be transplanted effectively in another context. Additional institutional goods not discussed by Smith that are particularly interesting when evaluating technological innovations include efficacy and resilience. Efficacy is the capacity to achieve the intended result, while resilience is the ability to resist capture from malicious attacks.

These eight goods help evaluate current civic tech practices along eight axes. As Smith notes, goods do not necessarily reinforce each other, and often the promotion of one good enters in conflict with the promotion of another one. For example, the promotion of considered judgment might reduce efficiency by requiring slower decision-making processes that evaluate all available information.

In order to overcome these conflicts, Fung, building upon Dewey's (1954 [1927]) pragmatic idea of experimentation, proposes a research agenda that uses experimentation to identify institutions with the best possible combination of democratic goods (see Fung 2007 for discussions). The recent pa-

pers in Systemic Deliberative Democracy propose similar practical criteria to evaluate trade-offs and deepen the overall democratic system (Mansbridge, 2013).

The EMPATIA project was designed exactly as a pragmatic experimentation of different configuration of multichannel democratic innovations. Therefore a lot of attention in the requirement gathering phase was devoted to link requirements to specific democratic goods. A crucial task of the first year was completing the analysis of the social, ethical and legal implications of the technological choices that steered EMPATIA's technical development (see D 1.3 for details).

Civic Technology Knowledge

The first body of knowledge described above is mostly normative, and offers a set of overall ethical and social goals that the EMPATIA platform has to achieve. These goals are mediated by the technological and institutional solutions adopted by EMPATIA. However these solutions are not 'neutral' and are not established once and for all. These solutions are an ever-changing 'becoming' that involves ideas, people, and objects.

Different solutions generate different democratic goods. Some solutions promote one democratic good, while undermining another. For example, introducing digital voting might undermine the inclusiveness of the process, as described in various examples in chapter 2. Thus the body of empirical knowledge at the intersection of computer science and the study of democratic innovations, often referred to as civic technology, had a crucial role in identifying the requirements for the EMPATIA platform.

This body of knowledge included not only the research on possible solutions for coding and software development, but in general the study of practical participatory processes that have introduced ICT solutions.

Civic technology in the broadest sense adopted by the EMPATIA consortium includes both new digital tools specifically designed to promote democratic deepening, and also repurposing of old digital tools (e.g. social media campaigns) with the new objective of deepening democracy. And it also includes face-to-face technology, such as deliberative polls, participatory budgeting, citizens' juries, and hybrid innovations that combine in person and online civic technology. For a repository of the variety of participatory technology, see our partner's website Participedia.¹³

¹³ www.participedia.net

Two crucial activities were conducted in the first year to leverage this knowledge. On one hand the EMPATIA team did a review of existing participatory technologies comparing them with respect their ability to achieve democratic goods such as transparency and inclusion (see D1.3). On the other a constant dialogue between technical and non-technical partners informed the creation of a shared language and knowledge that is described in more details in section 5.8.

Territorial Situated Knowledge¹⁴

This body of knowledge is grounded in the territory where pilots are taking place, their socio-political contexts, their participatory traditions, the quality of e-governance mechanisms and the local experience with Democratic Innovations. A detailed analysis of each of these settings can be found in deliverable 1.3, for the purpose of this document we will simply highlight the EMPATIA strategy in choosing the macro setting for each pilot. Germany, Portugal, Italy and the Czech Republic have very different traditions with democratic innovations and thus offered a perfect lab in the field approach to evaluate how different local conditions interact with EMPATIA.

PB in Germany has been closely connected to online participation right from the beginning of the diffusion of Participatory Budgeting in the early 2000s. Today, the large majority of German municipalities with Participatory Budgets (about 100 in number) make intensive use of online platforms on which citizens can submit and discuss their proposals. As almost half of all municipalities with Participatory Budgets in Germany have run a PB process for at least three times, they have collected a good amount of experience with the use of ICT. That said, most of these processes are consultative and have insufficient feedback for the participants (see buergerhaushalt.org). There is not a clear preestablished amount of money that citizens decide upon which may generate a lack of legitimacy and retention of participants that is well documented in the literature (Nitzsche, Pistoia & Elsäßer 2012). However, this methodology could potentially allow to discuss projects that go beyond small public interventions, and it has to be acknowledged that the roots of why PB has been initiated in Germany are different than for example in Brazil, hence the consultative model with a focus on asking for proposals regarding the whole budget, not just a separate amount for citizens.

PB in Portugal instead was mostly based on face-to-face technology, and only recently, has begun introducing hybrid processes. Initially most PB processes were consultative, but these processes did not survive over time (Alves & Allegretti 2012). The new generation of processes is mostly empow-

¹⁴ We refer here to situated knowledge as a "form of objectivity that accounts for both the agency of the knowledge producer and that of the object of study" (Haraway, 1988), in order to emphasize the importance of the standpoint of the observers in the production of knowledge regarding the territory.

ered, i.e. the city declares initially a sum of money that will be fully controlled by the process. This landscape has similarity with Germany in terms of diffusion, but it is completely different in terms of institutional design.

PB in Italy sits somewhat in the middle between Portugal and Germany, with a number of face-toface only experiences and a growing number of hybrid ones (Stortone & De Cindio 2015). Many of the PB processes remain consultative and cities, apart some exceptions, invest very small amount of funds in PB.

Lastly, there are almost no experiences of PB processes in Czech Republic, and thus our third environment was almost at the opposite of the spectrum with respect to the first three that are among the countries in Europe with the most PB processes.

Beyond the knowledge generated studying each pilot setting, EMPATIA conducted a census of all participatory processes at the municipal level in Brazil as a pilot process to analyse the diffusion of multichannel processes and digital participatory budgeting. Based on the experience gathering this dataset, EMPATIA has developed a survey, and crowdmapping platform (https://oidp.empatia-project.eu/) in four languages (Portuguese, English, French and Spanish). The initiative was launched in March 2017, in partnership with Participedia and IODP, a network of more than 2000 cities implementing democratic innovations around the world. This census is based on a two-step methodology that combines crowdsourcing and case studies. For more details about this activity, and its preliminary results, see section 4.4. The results of these mapping processes were important to understand the diffusion of different multichannel democratic innovations around the world around the world, and amplify the discussion between practitioners and academics, which we were not able to develop within the small scale of EMPATIA pilots.

A dialogic approach to knowledge integration

The integration of these three bodies of knowledge during the first year was conducted in a dialogic fashion across partners. Before the pilot processes begun, the EMPATIA consortium was already discussing requirements on the basis of the vast knowledge of each partner and generating the first five-use case scenarios described in the next section. After such initial phase that was mostly theoretical, negotiation at the local level between partners and local institutions became more intense on the basis of such use case scenarios. The results of these discussions with bureaucrats and city experts of participation was a definition of the requirements in each pilot that is described in detail in D3.1. In what follows we describe in detail what occurred before the actual negotiation with each city and we also present some general details of what happened after (more detailed description will

be available on D3.2). EMPATIA, adapting the agile approach to an institutional design project, continue to iterate its use cases and thus the pilots are seen as an intermediate step of refinement.

This dialogic process has enabled a multidisciplinary environment where these three mechanisms of knowledge production and dissemination cross-fertilized each other and generated a consistent body of knowledge able to provide three corresponding outcomes:

- Increase the academic literature and knowledge regarding DIs and PB, in particular by providing new theories and hypothesis centred on the concept of multichannel participation and its possible uses in social research. EMPATIA is also supposed to apply its theoretical framework to study the pilots and potentially other situated case-studies (see D4.1 for more details on the impact evaluation plan and D5.3 for details regarding the academic and non academic publication plan).
- Develop and implement a platform and other ICT tools for PB management able to meet the actual needs of the pilots contexts and in general of those who are seeking new solutions of managing Democratic Innovations as PB. In addition, the technological outcomes must be able to collect data from pilots and field experiences necessary to test the hypothesis already built in theory. At the same time, ICT outcomes have to be formally and substantially consistent with the vision and value of EMPATIA, aimed at democratization, inclusiveness and social justice.
- Expand the knowledge regarding the territory by providing new methods of data collection and analysis and empower local actors engaged in pilots of EMPATIA by providing skills and tools necessary to future sustainability of PB in each context.

Challenges to an integrated approach

A common issue in multidisciplinary projects as EMPATIA regards the risk of misalignment between these three streams of knowledge production and the persistence of path dependencies in each one that limit the expected cross-fertilization (Prieto-Martín, de Marcos, & Martínez, 2011). When it is not adequately managed, such a misalignment leads to negative outcomes, for instance, when the theoretical premises are contradicted by the technological developments or when the ICT tools produced are not actually useful to meet the needs of Pilots and in some case directly not used at all.

Three main groups of challenges have to be faced at this stage and in the future advancements of EMPATIA.

First of all, each mechanism of knowledge production is grounded in its own methodological background, and those backgrounds are not perfectly and easily interoperable:

- Production of theoretical knowledge in social sciences generally follows a deductive process rooted in the analysis of existing literature (as in Chapter 2 and 3 of this report) and in generalizations based on the qualitative and quantitative analysis of case studies (Yin, 2003; Johansson, 2003). In our particular case, we could define our approach as loose deduction (Emigh, 1997), an approach where we define theoretically the initial research hypothesis, but still keeping it open to re-thinking and redesigning according to the feedback received from field research.
- Technical knowledge generally relies on a positive model of science, based on grounded theory (Glaser & Strauss, 1967; Charmaz, 2006). Knowledge is produced through an inductive approach that systematically tests possible solutions, analyses results and data, and consequently provides explanatory theories.
- Finally, the production of situated and territorial knowledge relies on a complex set of mechanisms characterized by a reflexive perspective. Here, the point of view of the subjects providers of information regarding the territory has to be considered as an integrated component of the situation observed (Karvonen & van Heur, 2014). Knowledge is produced in the interaction between subject and local context through its different stages of "intervention, process activation, structuration and reconstruction" (Burawoy et al., 1998).

Second, there is an issue regarding authorship, quite common in social research: It is to highlight how just partially these kinds of knowledge are directly produced and managed by the partners of the consortium. Indeed, for each dimension, an additional range of actors have been interacting in knowledge production and circulation and will continue to do all along the project, modifying continuously the scenarios. For example it is easy to imagine situated territorial knowledge as the outcome of a collective process that will involve local actors: citizens, politicians and technical bodies of the entities engaged in the pilots. Differently the scale where theoretical and technical knowledge are cross-fertilized is larger, involving for example segments of the academic community and/or groups of civic hacktivists and code developers at international level. Theoretical knowledge is produced collectively as well as territorial and technical knowledge are: a dynamic and mutable picture destined to be transformed along the same timeframe of EMPATIA when external innovations (in the academic environment, in the ICT domain or simply taking place in the contexts of pilots implementation) will surely take place. In addition, it is to remark as, even if collective intelligences contribute to the

development of the body of knowledge that underlie EMPATIA, these collectives do not pertain to the same domain and not necessarily do move in the same direction and at the same pace, making the overall cadre even more complex and dynamic.

Third, the formal timeline of EMPATIA requires each mechanism of knowledge production not only to interact with the other, but also to produce a certain number of deliverable and outcomes according to the calendar planned in the original proposal. The schedule of EMPATIA was planned already considering the time required for multidisciplinary integration. Nevertheless, the strict timeline of the project (2 years) as well as the number of external variables encountered in the actual implementation have transformed those deadlines in obstacles excessively rigid.

Adapting the 'Agile' software development approach to institutional design

Given the extreme variability of local conditions that are the norm in the field of democratic innovations, the EMPATIA consortium adopted a methodology for requirements gathering loosely inspired by the Agile Methodology (Manifesto for Agile Software Development, 2016). This methodology is almost a standard in modern software development, but it is completely unknown to institutional design approaches. The pilots of EMPATIA effectively had to either build a new political institution in each city, or have significantly altered existing institutions integrating them. That is why it was important to keep in mind that the platform was just a minor aspect of the pilot, and the crucial element that decree the pilot success is how the platform was implemented in an overall institutional design. Hence, we decided to adapt the Agile methodology in order to be more responsive to volatile local conditions and generate a meaningful dialogue with our partner cities.

The agile methodology refers to a set of principles that have been developed by a group of ICT experts and coders more than 15 years ago (although it is rooted back in the 80s), as an attempt to overcome the limits of sequential and procedural approaches to software development.

- Individuals and interactions over processes and tools
- Working software over comprehensive documentation
- Customer collaboration over contract negotiation
- Responding to change over following a plan

From these principles, a range of innovative methods has spread out. Agile approach encourages multidisciplinarity in the team development, and the flexibility required to adapt the strategy to changing contexts. In addition, it promotes the iteration of rapid productive cycles of software delivery aimed to obtain a continuous feedback from users and clients.
Accordingly, we translated Agile principles for our purposes as follows:

- Sharing Knowledge: Theoretical and practical knowledge related to the use of ICTs in Democratic Innovation is shared between Scientific, Technical and Implementation partners within the consortium and multidisciplinary teams work together for the core deliverable of EMPA-TIA. We implemented not only recurrent face-to-face meetings, but also weekly Skype calls.
- Fast release of Beta versions for testing purposes: As soon as priorities were defined, we
 proceeded with coding and release for testing in real-life setting. After each release, priorities were analysed and reviewed according to the feedback received. The Empaville user experience platform described in section 3 of this chapter was developed exactly for such purposes.
- Engage Users and Managers in continuous feedback: From the initial interviews used to create the Use Case Scenario until the phase of pilots' implementation, passing through focus groups, simulations, beta-testing occasion, we aimed at engaging citizens, civil servants and decision makers of Democratic Innovations in providing a continuous feedback able to recalibrate the development accordingly. EMPATIA by design gave a crucial role to process managers in cities and partners that are the core users of the EMPATIA's back office and installation suite.
- A flexible strategy based on the continuous analysis of the field: From the development of initial Use Case Scenario, to pilots implementation, until spread-out dissemination, the team of EMPATIA coordinated its development strategy keeping one eye on the timing of the proposal and the other on the actual context of its implementation. We were careful and ready to adapt to changes occurred in each one of the three scientific dimensions engaged as for example in the academic environment of social sciences an innovative theory regarding Democratic Innovations research, in the ICT world a new unforeseen technical solution provided by some competitors, in the context of pilots implementation a social or political transformation.

4.2. Case-Oriented Requirements Gathering

The EMPATIA project begun by collecting use case scenarios developed by the partners of the Consortium. These cases represented a non-functional description of possible uses of the platform in realistic scenarios which they have encountered in their work implementing democratic innovations. Starting from these use case scenarios, we 'extracted' the description of a preliminary list of func-

tional requirements regarding what EMPATIA was supposed to do at the highest precision possible. At the time, the gathering of requirements for the first 2 versions of this document has been delivered by experts in DIs management and just partially involved other potential final users of the platform: as a consequence, it has overexposed the point of view of DI experts (the partners) that pictured themselves as potential EMPATIA's managers. Lather steps of refinement of functional requirements were provided only after the first version of the platform was made available. This meant that while some pilots started to test and plan the implementation of EMPATIA, which included direct engagement of citizens, civil servants and policy makers – who were the actual users of EMPATIA - a number of changes and adaptations emerged and had to be dealt in an agile manner. Although, due to the nature of the project, adaptations and changes were expected and for this reasons response was planned accordingly, there were some important lesson learned within this experience. A number of requirements, for instance, initially laid out in this documents by the DI experts, turned to be either contextually irrelevant or too forward thinking to pilots' local expectations. Moreover, the complexity to quickly respond to these changes and demands meant that some improvements in the modularity and flexibility of the technology had to be postponed to later stages. This means, for instance, that EMPATIA back office will be further developed in the remaining months of the project, to retain the flexibility for super users who want to innovate and require an extreme level of customization, while at the same time providing a template and a wizard that would allow anybody to design a multichannel or e-participation process quickly.

Next, we briefly present the initial process of requirement gathering, which followed five main steps, that are reported in detail in the following two chapters 5 and 6.

I Development of Use Case Scenarios

Five Use Case Scenarios regarding possible uses of EMPATIA tools and methodologies were developed, starting from a common matrix that helped to keep a standard format for the exposition. The development of use case scenarios was based in the analysis of convergences and divergences between the original theoretical model of PB presented in EMPATIA proposal and foreseeable hypothesis of PB implementations.

II Analysis of the non-functional requirements described in Use Case Scenarios

A detailed analysis of the main insights from Use Case Scenarios were developed, including relevant and/or recurrent issues, and priorities highlighted by the partners. Moreover, a standardization of the analytical framework of Scenarios was devised, according to the conceptual framework provided by EMPATIA, to inform the research on multichannel participation (Phases of PB)

III De-Synchronization of Phases into Actions

De-structuration of the synchronous Phases of PB into asynchronous Actions that represent the basis for the development of the digital tools in EMPATIA, according to the conceptual framework provided by EMPATIA to the research on multichannel participation.

IV Development of Tools/Component of EMPATIA and description of functional requirements

An analysis of the channels of participation used in the use case scenarios was made, distinguishing between online and in person alternatives for channel management. It included the development of possible ICT tools to support/deliver the actions of PB previously listed, where each tool is associated to an action. The first attempt to describe the main requirements of each tool, was structured based on:

- Description of Main Features
- Examples (Links to existing tools/platforms)
- Non Functional Requirements for Users and Managers of the platform/tool

V Primary Requirements

Identification of primary requirements in each use case on the basis of a trade-off between what can be achieved in the short period of the project and the most important requirement to promote democratic goods.

4.3. Gamified multi-users experience: Empaville

Parallel to this primary process of requirement gathering and analysis, the EMPATIA consortium also quickly developed a roleplaying game that could be used to gather feedback on early iterations of the unified login, voting and data visualization modules of EMPATIA. These three modules were identified as the minimum common denominator across all use cases that included participatory decision-making.

The target personas for this gamified experience were groups of specialists and practitioners who deploy democratic innovations around the world. In order to quickly find this public, at zero cost, the EMPATIA consortium promoted specialists' conferences.

The first session of Empaville, EMPATIA multi-users experience (MUX), was held on the 22nd of May 2016, at the 4th international conference on participatory budgeting in North America (Boston). The audience, composed by 25 participants within different backgrounds and nationalities, embraced the challenge to enhance citizen deliberation in the policymaking process through a multichannel approach.

Each participant role-played a resident or a worker of Empaville, a fictitious city designed to simulate the typical conflicts of modern metropolis. Empaville is a guided experience that starts with small group discussion over the problem of the city, followed by project proposal and voting. The experience mimics the flow of many democratic innovations such as participatory budgeting or citizens' juries.

The voting phase is conducted via multiple devices, from mobile phones, to laptops to voting machines that EMPATIA specifically built. Then the data is gathered and analysed by the EMPATIA platform, Empaville is a live instance of EMPATIA, and a suite of data visualizations is displayed via a projector.

The game is an evolution of a game that was developed and refined over the course of sixteen years by Giovanni Allegretti and later by Jez Hall, one of the members of our research board who works in the UK PB Unit. The game is designed to generate conflict within districts and across districts and showcase how a participatory process deals with such conflicts.

EMPATIA took the model and transformed it in a user experience of a hybrid participatory budgeting with a particular focus on login, voting and data visualization. The logic of injecting conflict and difficulties was expanded to the technological aspect introducing lessons regarding the biasing effects of different voting mechanisms (e.g. what happens when negative voting is introduced?), the difficulty of casting digital votes and crucial lessons regarding the risk of transparency and data visualization when dealing with small samples of users. Many of our test subjects had never casted a vote before via a digital medium, and experiencing the difficulty of reviewing many projects and casting a vote was an eye opening experience that made them reflect on digital divide.

To date Empaville has been deployed more than 20 times with different publics in different conferences around the world (for details see D5.3), including 6 sessions in the scope of the Portuguese Network of Participatory Municipalities.

This workshop allowed the participants and the EMPATIA team to foresee some limitations, challenges and amendments to the platform design that were pointed out during the game as well as through the evaluation questionnaires. The survey respondents highlighted the usefulness of Empaville as a learning tool that allowed them to test the use of technology in a realistic scenario of participatory budgeting. The majority of participants argued that it is safer to have these experiments as a game to test all the fragilities that should be avoided in the real situations. Through the slogan "learning by failing" Empaville shows an astonishing potentiality not only as modular UX platform,

but also as a learning experience, recognizing that failures, conflict and difficulties often offer the best lessons.

Empaville has also been adapted as a teaching tool for middle school students in Portugal, and has already been implemented in 5 schools in Portugal. Furthermore, the EMPATIA consortium is currently exploring new scenarios and new modules to be included in the UX. Some of the current ideas that we hope to have the time and resources to implement during the rest of the EMPATIA project are including A/B testing of different small group management technologies (similar to the design pioneered by Spada & Vreeland, 2013), different voting mechanisms, and different incentive structures for project proposals. For more details about how Empaville works, please check its report, on ANNEX A of this report.

4.4. Mapping additional use cases in collaboration with IODP

As we have seen in chapter two the EMPATIA research consortium has created an initial list of theorized advantages and disadvantages of multichannel engagement. In order to test properly such advantage and disadvantages a set of cases that is larger than our own four pilots is required. Thus the EMPATIA consortium has partnered up with IODP and Participedia to conduct an innovative survey of research design that combined crowdsourced mapping with experts' interview, to better understand the relevance of the initial hypotheses generated by EMPATIA. The objective of this side-project was to test and revise these hypotheses, by comparing with the experiences of cities that have adopted multichannel engagement platforms.

Methodology: drawing lessons from successful and unsuccessful cases

In order to explore the previous hypotheses we have combined active and passive data collection methods.

In March 2017 we deployed a crowdsourcing website for the entire IODP network based on the methodology pioneered by Participedia, but significantly simplified to reduce the cost of submitting information (passive tool). In practice the crowdsourcing website is a combination of a very simple survey (15 questions), a map and a set of instructions and guidelines (see https://oidp.empatia-project.eu/). The survey website was made available English, Portuguese, French, and Spanish. The information gathered via survey website has enable us to test how practitioners and academics see and understand the language and framework developed around multichannel participation. The questionnaire of the survey website can be found in Annex D.

From April to June 2017 we have invited all the IODP members to fill the questionnaire and declare their willingness to become members of the IODP working group on multichannel democratic innovations. The results are quite interesting.

First of all of the 135 cities that replied to the survey, almost all implement multichannel innovations. This is quite important to understand the crucial importance of the development of platforms, such as EMPATIA, that can rationalize and optimize multichannel innovations and integrate them in participatory systems.



Figure 2: How common are multichannel innovations?

Second, exploring the most common democratic innovations that are adopted by cities we can see that Participatory Budgeting remains the most adopted innovation followed by traditional public consultation and issue reporting software, (e.g. fix my street) and open government initiatives.



Figure 3: Variety of Processes

With respect to the digital presence of these innovations we find that the majority of cities have a website that simply provides information, but interestingly enough a growing number of cities have adopted an integrated platform that integrates all innovations together, even if we suspect that the level of integration is extremely rudimentary and is probably just a container with links to different websites.



Figure 4: Does the city have an integrated digital platform?

Lastly the data shows that from a governance perspective most cities have a centralized office that manages all participatory innovations.



Figure 5: What is the governance structure of the various participatory processes?

The second largest group is composed by cities that have a decentralized approach, while only a minority of cities have adopted an approach that combines an office that deals with communication and engagement that supports a variety of offices implementing each innovation.

Has your city experimented in the past with some digital innovation and then abandoned it because it was too costly, or it had unintended consequences, or it did not generate the expected results?



Figure 6: Outcomes of Digital innovation initiatives

This preliminary data collected at the end of June, and its results, are described as Phase I of this activity. We have also collected around 70 emails of cities that are interested in joining the IODP working group on multichannel democratic innovations and are willing to conduct an in depth interview with us. In particular we have identified 20 cities that have described they have experienced a failure in the implementation of a digital democratic innovation.

Phase I clearly shows that most cities are multiplying their engagement initiatives, that most cities are building an integrated digital platform, but also that the level of integration is still very rudimentary.

In May we conducted a pre-test interview with the city of Canoas, in the Brazilian state of Rio Grande do Sul, that is a pioneer of the implementation of multichannel democratic innovations and participatory systems.

The former administration (2009 – 2014) call it a systemic view of participation, and through the 8 years of government has implemented 13 participatory channels which they categorized as: "Collective Tools" (including PB); Individual application tools; Collaborative tools; Strategic Development Tools and Coordination tools. These are represented by the figure below.



Figure 7: Participatory System of Canoas, Brazil

A number of tools implemented in Canoas have been inspired by other experiences in Brazil and abroad, and some of its innovations, such as "Mayor on the Street" have been replicated by other 20 cities. Data collected from the contextual and political background also suggests that Canoas internal informatization of the whole city hall system (which was obsolete and limited) have contributed to the planning and integration of a participatory system. Meaning, how tools and the internal (communication) processes were design, facilitated the its overall implementation.

Overall the preliminary results show that there is a growing demand for integrated platforms for citizens engagement and that most cities do not yet integrate efficiently all their engagement processes.

Initially, as described in the previous version of this report (v1.4), we have planned (phase II) to conduct interviews and build case studies with selected 20 cities from original survey. However, based

on other interactions with the IODP as well as with partner organizations and practitioners, it became evident that more needs to be done to engage collaboration in the growing multichannel network, and in creating documents which are both more practical and policy oriented. As a result, and motivated by the Task 1.2 – the development of the EMPATIA "Quick Guide for Decision Makers (see chapter 7) – EMPATIA team has diverted the focus of phase II to devise a Best Practice document. This document should be inspired ad built in collaboration with the network, following a similar mapping exercise of phase I. The planning of this activity is still at its initial steps, and its collaborative development will probably go beyond the last months of the project.

4.5. Mapping existing e-democracy tools

During the course of the first year of the EMPATIA project a team coordinated by CES begun mapping commercially available collaborative platforms currently used in the management of DIs in Europe, Latin America, Canada and United States. The analysis focuses on the state of the art and aims to collect additional requirements for the EMPATIA platform. The initial focus was on ethical and data protection standards in order to inform best practices to be adopted in the deployment of EMPATIA. Our cursory overview of existing platform during the development of the project proposal in 2015 had highlighted how most existing platform had unclear informed consent practices and nebulous terms of use. To our surprise some of the existing applications of these platforms did not even comply with national laws of data protection.

Therefore from the beginning of the project we devoted a specific task force to analyse these problems and come up with a set of potential solution. Deliverable 1.3 and 1.5 report the first year of work of this task force. For the purpose of this document is important to highlight that our procedure to devise the EMPATIA requirements not only draws from the needs and requests of the local clusters of cities and implementers, but also pushes them beyond current practice by devising innovative solutions such as our proposed advanced informed consent platform that will be described in chapter 6.3.2.

4.6. One to One UX with experts

Since the first version of the EMPATIA platform was ready, we have begun to showcase the potential of its back office tool to a selected group of experts. These included both academics and experienced practitioners.

Over the course of the fall of 2016 we have gathered feedback in UX with David Asher, of the technology development team of the Participedia project and former VP of product development of the Mozilla Foundation; Professor Susan Halford and Professor Leslie Carr, Directors of the Web Science Institute at the University of Southampton; and with a number of technology and participation experts that work for the city of Lisbon. In the following months we conducted similar UX with stakeholders in each pilot and with additional members of our research board. These UX are one to one experiences in which the test subject is guided through the process of using the back office tool of EMPATIA to develop its own participatory process.

5. EMPATIA Theoretical Use Cases

This chapter presents the use case scenarios developed in order to gather the preliminary nonfunctional requirements. We start by complementing chapter 4 with the detailed methodology for the development of EMPATIA Use Cases, followed by the use cases description. These use cases were the basis for the requirements described in the following chapter. Yet, it is important to stress that we do not provide in this chapter – or in this document – a narrative (or analysis) of how these proposed scenarios were received, adapted and later implemented by each pilot context. This will be provided with the pilots' final report (D3.2), and for this reason we recommend that both documents be read side by side.

5.1. Methodology

As previously described, the use cases were the preliminary step to gather and define the EMPATIA platform requirements. This work was grounded in the analysis of convergences and divergences between the original theoretical model of PB (presented in EMPATIA proposal) and foreseeable hypothesis of PB implementations.

Use cases have been developed starting by a common template (cf. Annex C) based on the PB model described at EMPATIA proposal (cf. Annex B). Five detailed use cases were designed, three based on the EMPATIA pilots' context (Germany, Portugal and Czech Republic) and two derived from partners' experience of worldwide PB implementations.

The process defined to develop the use cases was split in four main steps:

- 1. Use case general description
- 2. PB cycle
- 3. PB cycle phases
- 4. Final notes/recommendations

The first step describes the overall use case providing an outline of the scenario and its main objective and limitations. This description identifies the main features of the use case, focusing on transversal issues that are not specific to a particular phase of the process.

Afterwards, the PB cycle description step, aims to analyse the EMPATIA initial proposed PB cycles and propose the required changes to better represent the use case specific cycles and phases. Step 3 describes all use case phases and compares them to the state-of-the-art for each phase at the time that

the Use cases were proposed (based on the existing knowledge or previous PB implementation experience in each pilot). State-of-the-art describes how and under which circumstances is PB currently carried out, defining when possible, the citizens' engagement channels (i.e. assemblies, focus groups, online forum, mobile phones) and the current use of ICT. The use case description focused on desirable changes and how the EMPATIA platform could transform the current state-of-the-art.

5.2. Use Case 1

This sub-chapter presents EMPATIA Use Case 1 (UC1) developed using as reference the consortium expertise in Germany PB implementations and based on German pilot objectives and focus.

5.2.1. Use case general description

The following is a description of 'typical' German PBs, although it should be noted of course that there are in fact many variations to this typical, predominant model, of PB.

PB in Germany is often performed almost exclusively ICT-based. It is mostly a consultative process without a pre-defined budget. Proposals can openly be submitted by citizens both for spending and for cost-cutting ideas.

In some PB cases (e.g. Bonn), not only the citizens, but also the city administration puts to debate proposals. Citizens can submit proposals online, discuss (via comments) and vote (via pro, con and sometimes neutral votes). On-site events are usually only for informative purposes, not for deliberation or voting.

Through voting, a top list of proposals is generated, and these proposals are evaluated by the administration with regards to feasibility of implementation, costs, etc. The proposals and statements from the administration are passed on to the city council for deliberation and final decision.

Feedback to the citizens is given in an accountability report and on the online platform. A monitoring process of the project's implementation rarely exists.

The weakest links in the PB cycle in Germany are the disconnection between proposals gathering, voting and evaluation. This leads to a very high number of proposals, many of them actually not feasible but that are still part of the 'top list' of proposals (which end up being rejected by the city council at the end, often leading to participants' disappointment).

The disconnection between participants in the proposal phase is high. Better support for face-to-face meetings and local communities could improve the process of this use case.

The accountability phase could provide better feedback on the city council's decisions and the implementation cycle should be improved, mainly by better communicating the successes cases, the implementation status and the PB impact.

This use case (through EMPATIA) aims at improving the quality of the proposals by:

- Adapting the PB cycle to the EMPATIA model, adding face-to-face events and adding additional ICT tools/features like proposals versioning and SMS verification.
- Adding multichannel participation through face-to-face events for proposals submissions and evaluation, and multichannel voting.
- Increasing community building support and empowerment of participants to promote their proposals.
- Proving better support to the municipality managing the process, aimed at increasing accountability and improving monitoring of internal processes (requires the definition of administration procedures).
- Improving secure authentication of users and avoid fraud.
- Increasing support for mechanism and tools to avoid 'similar proposals', and ensure more transparency within the process for citizens.

5.2.2. PB cycle

The UC1 PB cycle is an adapted version of the original EMPATIA PB cycle for a consultative process, as described in Figure 8.

UC1 PB cycle merges the proposal gathering and voting phases. This phase will generate a top ranking proposals list that is then evaluated and decided, by the municipality, which proposals are feasible or not. As a consultative process, the proposals are suggestions for the political representatives to decide which ones should move to the implementation phase. As so, the accountability phase is one of the most important phases of the DM cycle. Finally, only proposals that are approved by the Public Budget Approval phase are implemented.





5.2.3. PB cycle phases

This use case is composed of the two EMPATIA cycles, the Decision Making and the Implementation cycles. Next we describe the phases that compose this PB cycle.

DM1: Preparations and definition of rules of the game

The project management tools in this early phase is responsible for the municipal internal communication process and citizens within the steering committee. The tools should support the organization and management of meetings, workshops, documentation share, and message exchange.

State-of-the-art: city council decides to do a PB, administration starts with preparations (often they are supported in the design of the process by external consultants' agency like Zebralog). Usually at this stage there is no citizens' participation, except in some cases, where a steering committee is formed and includes citizens. ICT is rarely used in this phase; most of the communication is done by e-mail.

DM2: Information and mobilization

In this phase citizens are actively involved both by supporting the information and mobilization of other citizen (individually and through local citizen centres) and by being able to access detailed information of the PB process (including the process rules and budget information) through posters and flyers, but also available online information. In the consultative model it is especially important to show what parts of the budget are actually negotiable and what parts are fixed by law.

State-of-the-art: currently the mobilisation is performed through flyers, posters and press releases, and sometimes cities organize informational assemblies (not very often). ICT is currently supporting the publication of information by usage of an online platform sometimes with open budget visualisations and FAQ features. E-mail is still the main dissemination method to communicate with stakeholders (e.g. initiatives, neighbourhood leaders). Citizens are rarely actively involved in the mobilisation process.

DM3: Proposal gathering and voting

In this phase citizens and the municipality submit proposals to an online platform. At the same time all submitted proposals can be supported (i.e. voted). At the end of this process the most supported proposals pass to the next phase. It should also be allowed to create different versions of one proposal (including by multiple contributors) and be able to visualize the different versions of the proposal. This feature allows proposals to starts as ideas and after a collaborative process to finish as complete proposals.

Additionally, this phase will include mechanisms to decrease the number of proposals submitted and increase the quality of the proposals put to support. To achieve these objectives several actions will be taken:

- Advanced proposals presentation and filtering options, and clustering and merging features.
- Integrated multichannel approach that includes the online platform, face-to-face assemblies (after proposals gathering period, to present and discuss them with municipal staff and undertake a first feasibility review), and voting.
- Novel collaboration mechanisms for citizens to develop proposals, connect with each other, and to promote their proposals.

State-of-the-art: Germany proposals gathering and voting mostly happens at the same time (only in some cases the two processes are separated). There are some cases where proposals are first gathered, then evaluated, and finally put to vote, but this is an exception. Mostly there is no face-to-face assembly/meeting to foster participation, and proposal submission and deliberation only occurs online, via postal letter, or via phone call to a hotline number. The voting leads to a ranking of proposals, only the top ranked proposals (number defined by the municipality) are evaluated further. Commenting on proposals is only performed online. Voting on proposals (pro, con, neutral; one vote per proposal per person; in total unlimited number of votes) is only possible online. These processes are based on ICT platforms with proposal submission, commenting, liking and voting features.

DM4: Technical Review

The proposals review process starts after the voting process and allows citizens to interact with municipal staff in order to analyse the feasibility of the proposal. This interaction is performed both through the online platform and through face-to-face assemblies.

Internally, the municipality relies on the online platform to manage the proposals' review process by the different municipal departments. The review only concerns the top voted proposals.

State-of-the-art: the review phase is usually done after the voting phase, sometimes it is done parallel and rarely it is done between proposal and voting phase. Most often, a central person within the administration coordinates the feedback. Citizens usually are not actively involved in this phase (just as recipients of information). The municipality staff mostly uses e-mails to manage the process and communicate with the citizens. Usually, the online platform is only used for documentation processes but not for coordination of the review and evaluation process. Often, a municipal team of editors has access to the backend of the platform to register the review feedback.

DM5: Political deliberations and decision making

Public political deliberation meetings are prominently announced. Political representatives are engaged actively in PB, and specifically in proposals analysis and selection.

State-of-the-art: proposals and review statement from the administration are passed into different political committees and finally to the city council. The political representatives deliberate about the proposals and finally decide which proposals are to be implemented. There is no participation of citizens in this phase. They could theoretically go to the public city council meeting, but these are rarely advertised. The ICT platform is updated with the council meetings information and decisions.

DM6: Accountability

The decisions and reasons of the municipal council are made public and properly disseminated among the citizens. The online platform provides an easy way to publish the decisions for each proposal. This process is supported by visualisations and highlights in the PB and municipality main dissemination means. Citizens can easily and quickly have an overview of the accepted and rejected proposals.

State-of-the-art: this phase is extremely important in German PB because not all proposals in the top list will be accepted by the municipal council. Accountability is mostly done with the help of a report in which all proposals are listed, together with the decisions of the council and the reasons for ac-

ceptance and rejection of the top ranked proposals. Some municipalities also publish the decisions on the pages of the proposals on the platform.

DM7/I1: Integration of successful proposals in public budget

This use case was not analysed in the perspective of the implementation and monitoring cycle.

I: Implementation and monitoring cycle

This use case was not analysed in the perspective of the implementation and monitoring cycle.

5.3. Use Case 2

This sub-chapter presents EMPATIA Use Case 2 (UC2) developed using as reference the consortium expertise in Czech Republic PB implementation, and based on Czech Republic pilot objectives and focus.

5.3.1. Use case general description

This use case refers to a municipality implementing a PB process for a first time, in a country with low citizens' participation initiatives. At the time, the municipality had not allocated funds for the PB, and dates and conditions for the PB were being debated. The municipality had already performed several participation activities with good outcomes. Previous information and mobilization campaign included: volunteers with information leaflets in the streets, at bus stops and train stations; billboards; city lights; regular info pages in monthly local publications; regular Facebook posts with Mayor personal messages; direct email invitations and reminders.

This use case focused on creating the PB methodology and assuring that the process is easy and motivating for the citizens. PB objectives and rules should be properly clarified and publicly announced well in advance. Town Hall had committed to train its staff and other PB coordinators/moderators.

5.3.2. PB cycle

UC2 implements the proposed EMPATIA PB (cf. Annex B) cycle with no deviations.

5.3.3. PB cycle phases

This use case is composed of the two EMPATIA cycles, the Decision Making and the Implementation cycles. Next we describe the phases that compose this PB cycle.

DM1: Preliminary enabling actions and definition of the rules of the games

In this phase is important to support the definition of the PB methodology, creating a process that is easy and motivating for the citizens. Other PB implementations should be analysed and taken into consideration to avoid technical difficulties and unnecessary costs. The PB process needs to be clearly explained (specifically the allocated budget details) to citizens.

State-of-the-art: Town Hall allocates budget for the PB.

DM2: Information and ideas brainstorming

In this phase it is required the organization of information meetings, before the process starts, to introduce the PB concept to the public and to provide advice on how to submit proposals. It includes involving associations, sport clubs and organizations; nominating delegates (active citizens, known personalities) as links between the Town Hall and the public.

State-of-the-art: Town Hall uses existing information channels to disseminate PB process information. Mayor organizes meetings with citizens to hear their ideas, suggestions and complaints (however the response usually is very low with no applicable outputs).

DM3: Identification of local needs and gathering of proposal

In this phase it is important to avoid difficulties gathering citizens' proposals. Adequate filtering of the proposals is required to provide users with a limited set of proposals at once. Also for city PB coordinators, a high number of proposals are impossible to process and it is unrealistic to meet submitters expectations of support and feedback. Public meetings can be held, managed by professional teams and supported by tablets to enable online submission of the proposals.

DM4: Analysis and co-design of proposals

Responsible officials in the Town Hall should be advised how to evaluate the submitted proposals; how to distinguish between feasible and not feasible ones; proposals which need partial adjustments and changes; and proposals that could be merged with others. The number of proposals for evaluation should not exceed a defined threshold that will guarantee that the Town Hall officials have enough time to properly analyse and support all proposals. Town Hall should clearly explain and clarify the decision to reject proposals, on the basis of compelling arguments to avoid bias accusations.

DM5: Vote to define priorities

The voting phase should be performed both online and offline (paper ballots). The final number of proposals on the ballot paper should not exceed 25. Citizens' authentication can be performed using multiple methods (e.g. e-mail, SMS or pre-registration) to minimize the risk of frauds, ballot stuffing

and multiple voting. The voting period should be of two or more weeks. Ballot scanners can be used to count ballots votes. Voting analytics with map and socio-demographic data should be provided and made available.

DM6: Integration in public budget

Immediate implementation of the costs for the winning projects into the city budget is required.

DM7/I1: Implementation

Further work developed with the winning projects (planning, work schedule, control mechanisms).

I7: Monitoring and feedback

Open access to all information on PB, submitted and winning projects. Official written justification of why some proposals were rejected. PB coordinator communicating with the citizens all year round.

5.4. Use Case 3

This sub-chapter presents EMPATIA Use Case 3 (UC3) developed using as reference the consortium's expertise in Portugal PB implementations and based on Lisbon pilot objectives and focus.

5.4.1. Use case general description

This use case focuses on improving an existing PB process, mainly with respect to the number of proposals for technical analysis. Additionally, it is intended to better integrate the PB process with other participation tools and initiatives.

New and better integrated voting tools are also an important aspect to address in this use case to avoid fraud in multiple voting channels (e.g. online, SMS, face-to-face).

This use case corresponds to the 10th PB process in the municipality and involves a new political and technical team that intends to introduce changes and improvements in their PB process methodology.

In previous editions, citizens were able to make proposals online and face-to-face in participatory assemblies. Online users introduce their proposal, but in assemblies the municipal staff is responsible for introducing them. The technical analysis is done online in the platform.

5.4.2. PB cycle

UC3 implements the proposed EMPATIA PB (cf. Annex B) cycle with no deviations.

5.4.3. PB cycle phases

This use case is composed of the two EMPATIA cycles, the Decision Making and the Implementation cycles. Next we describe the phases that compose this PB cycle.

DM1: Preliminary enabling actions and definition of the rules of the game

This phase includes the revision of the PB process based on previous experiences and political decisions on the process methodology and rules, including the budget to be allocated. The PB budget will be split in two, one for structural/transversal city projects (total of $1.000.000 \in$, maximum of $500,000 \in$ per proposal), and another for the 5 parishes (total of $1.500.000 \in$, maximum of $300,000 \in$ per proposal, equal budget for each parish of the municipality). Citizens are not included in the participation at this stage.

State-of-the-art: the PB process methodology and rules are reviewed and specified. The budget is allocated. All details are published in the PB platform. Citizens are not included in the participation process at this stage.

DM2: Preliminary enabling actions and definition of the rules of the game

Information is published within the PB portal together with the process history.

State-of-the-art: information is published within the PB portal.

DM3: Identification of local needs and gathering of proposal

In this phase it is required a good articulation between the online and in person process of collecting proposals. The platform should support the delegation of proposal to the operational units in the municipality involved in the PB process

State-of-the-art: Proposals can be submitted online or in person in participatory assemblies. Online proposal submission requires registration in the platform. The proposals submitted via participatory assemblies are manually introduced in the platform by the members of the PB team. There is no debate regarding proposals submitted online. Proposals are verified to check if they comply with the PB rules. The proposals are routed through the platform to the designated department. The department is informed by the platform that it has received a proposal to analyse (by email).

DM4: Analysis and co-design of proposals

To facilitate the analysis process, it is required a platform with different access levels and responsibilities. In the first stage technicians from different municipality departments can run a checklist for each proposal and then be validated by the PB coordination team. It has to promote the articulation between the municipality and the parishes, and with the proposals proponents (e.g. regarding the

proposals, complaints period). Spokesperson (one or more) for each parish should be selected to facilitate and improve the articulation between the municipality and the parishes. The validation of all proposals requires the validation from one spokesperson before PB team analysis. At this phase, only proponents can submit complaints.

State-of-the-art: the first technical analysis is done by the municipality to verify municipality competence, local, time of execution and if there are other plans or projects that affect the proposal. If the analysis is negative the proposal is rejected. If positive, the services check the internal department with competence in the proposal. Then, the parish is informed of the project in order to receive a local validation (the final decision belongs to the municipality). If validated by the municipality the proposal is transformed in a project and similar proposals are aggregated in a single project. The PB team is notified that the project has been elaborated and reviews the texts. The provisional list is published and proponents can submit complaints. After analysis of complaints, the final list of projects is published.

DM5: Vote to select funded projects

A complete integrated voting system (e.g. online, SMS and in person) cross-checks citizens votes and verifies each person votes avoiding fraud.

State-of-the-art: citizens can vote using several channels: online, SMS and in presence. Each citizen has two votes online or in presence, and two votes via SMS, being one vote for each class of projects (parish or structural/transversal projects). Voting support sessions help citizens that do not have access to computer or internet, or are not able to understand the process.

I: Implementation

The platform supports the municipality in the publishing process to proponents, PB participants and all citizens, of the status of PB process, proposals and project in a constant flow of information, including execution details, problems or delays that need to be communicated. It should provide tools to monitor the execution of projects and promote the evaluation of the process by the citizens that participate in the process.

State-of-the-art: the winning projects will be the ones that gather the largest number of votes for each group of projects, until they reach the designated amount of money allocated for each category. The results are announced in a public ceremony after voting period ends and will also be published in the PB portal. The municipality provides regular information regarding the situation of the winning projects (implementation and execution) through periodic reports that are published and made avail-

able in the portal. Citizens are invited to provide their opinion by filling a questionnaire that can be sent by email or via the portal. There is an annual review of the rules and principles of the PB process.

5.5. Use Case 4

This sub-chapter presents EMPATIA Use Case 4 (UC4) developed using as reference the consortium expertise of PB implementations in Italy.

5.5.1. Use case general description

In this use case the platform should support multisite, in order to simultaneously support several entities that intend to implement a PB process (e.g. municipality, school, private organization). Beside facilitating the management of several PB processes, it also allows the connection between the different PB processes, allowing enrolled citizens to participate in more than one PB process and interact with other PB process participants, if authorized (e.g. interaction between municipalities and schools PB processes from the same city).

Each entity should be composed by three spaces: Community Space (CS), that goes beyond PB, e.g. idea gathering, aggregation mechanism; Deliberative Space (DS), PB process, according to the PB model, e.g. proposals, supporting system, ranking system; Personal Space (PS), private dashboard, e.g. public profile, timelines.

The DS is related to the PB process: proposals, supports, likes, votes, etc. These tools and features are not exclusive of the DS, since similar ones can be part and used in the CS for free (or less finalized) interactions. Every section and action within the DS is limited in time and finish when the relative stage of the PB also ends, the Political Space that include all the PB process formal actions necessary for it to work.

The CS refers to all participation tools available that are not related to the PB process, allowing citizens to participate beyond the PB process. CS consists of: forum, for general debates; calendar, to share events (personal, internal to a group, or public); reporting problems, e.g. fix my streets; ideas, to gather consensus, comments and build a community around it; group spaces, reserved for associations and communities who have specific ideas to develop. This space can be called as Civic Space, since interactions do not pertain to the management of the whole community but just to the private sphere within it. Tools, such as rating systems and clustering methods, can be part of it, and be used in the CS as well as in the DS, depending on the purpose.

CS should support citizens to solve problems and to accomplish their ideas beyond the PB (either making petitions or turning it into a concrete projects and implementing them directly) and work in parallel to the PB. It may happen in two different ways: gather supporters in order to send a petition to the Municipality (solve it, do it); provide a working space for the communities that rise around problems or ideas, with appropriate tools that can help them to organize to pursue their aims.

This working space may have an internal: forum; wiki; calendar (to set the agenda and meeting); electoral system, to allow member to vote for the administrator – who will be entitled to organize the group and build the project – and to vote for the final project; advanced solutions for advanced groups: a kind of deliberative process (e.g. Liquid feedback) to build the best decision.

These CS tools empower communities around proposals. In fact, if these communities are already enrolled, they have already gather around ideas and projects, they will be ready (and be able) to make more reasonable and more shared proposals and to support them alongside the (following) PB process. Vice versa, once enrolled (to propose and/or vote), people will find it easy to get communication to perform further actions or to keep participating again.

Similarly, the platform must be also able to support citizens (individuals, associations, groups, and all those who want to work for the public good) who do not have a virtuous Municipality but who want to start working for PB anyway, by making proposals, debate and then vote for the priorities. The platform should help these groups to motivate their Municipality to start a PB process or, at least, to implement some participation processes. In the best scenario it would be a platform where citizens can enrol and build (and participate) their own PB process, seen as a collective decision-making process. Therefore, some functionalities should allow citizens to vote for the admin (the 'mayor' which will have access to the configuration of EMPATIA in order to set the PB process), for the experts who will be entitled to evaluate the projects, etc.

Being grounded on debating, deciding and making proposals under specific thematic issues, the platform supports informal groups and associations (the so called 'civil society') to be visible, present themselves, to collect 'followers' or rank, and files, in order to establish contacts useful for the promotion and the development of their projects.

Another important tool, which can be part of the CS, but also integrated in the DS, is the ranking of the thematic priorities. People are asked to rank thematic areas according to their priority. It may be a very basic component that provides just the ranking of citywide priorities. Instead, it could be more complex, and be related to the position (geo-referenced) of the participants, like neighbourhood priorities. This tool is useful to measure the weight of each theme within the budget and to address the

local authorities in their expenditures (how to distribute and to allocate the whole budget among the thematic areas).

Another useful tool, which can be within or outside the DS is the idea of gathering preliminarily to the stage of proposing. This can be part of the PB process or just a tool used to encourage people to debate, aggregate and then be ready to make proposals when it allowed (DM3).

Finally, PS relates to the management of the individual participation, in terms of management and public accountability, it includes: profile setting, timeline, dashboard, public profile, etc. For instance, it is quite useful to retrieve and to evaluate the activity of the proposer, which is supposed to be the delegates of the proposals that pass the DM3 and that will become the final projects to vote. The personal space should also have a timeline which give people the capacity to follow what is going on in the PB: new proposals, new enrolment, new comments, statistics, etc. The timelines are of two different types: one for the Entity, where all the relevant (public) actions performed by the registered users are listed chronologically (and according to some algorithm); one for each User, according to his/her network (action performed by her/his 'friends' (or followers) or within a specific space (a Forum/Thread/Idea/etc.). This gives an overview of the activity within the platform, thus stimulating the participation by the citizens, especially those who have not enrolled yet. PS also offers a private dashboard for citizens to find the summary of her/his activity and to manage it (notification, etc.). This has a similar space, the public profile, which should allow all the registered people (or just the friends, according to the profile settings) to see the activity of each citizen. This is useful for the PB with delegates: when these citizens are also delegates, it is useful to show their personal profile and the activities performed online. This networking system links people and establish connections.

5.5.2. PB cycle

The UC4 PB cycle is an adapted version of the original EMPATIA PB cycle, as described in Figure 8. UC4 PB cycle only addresses the decision making cycle (DM) and some phases are renamed.



Figure 9: Use Case 4 PB cycle

5.5.3. PB cycle phases

This use case is composed of one EMPATIA cycles, the Decision Making. Next we describe the phases that compose this PB cycle.

DM1: Preliminary actions

UC4 integrates the citizens in setting the rules of the PB process. A citizens' committee is fostered to support the organization of the PB process. Additionally, a bottom-up approach is taken to involve citizens in the revision of the process rules and methodology. An easy collaborative platform is required to support citizens to comment the rules, propose changes and vote them. A simple forum is the selected tool for discussion and organization.

State-of-the-art: the advisory body and the PA meet to set the rules and to organize the PB process (logistic, advertisement, etc.). Usually, a statute (Carta della Partecipazione) is published afterwards. Usually, there is no citizen involvement in this stage. In some rare cases, a steering committee is formed that includes citizens or civil society organizations. Staff meets with the civil society organizations to inform about the PB process and to ask for collaboration and for local advertisement.

DM2: Information and ideas brainstorming

An 'idea & network' tool allows people to raise basic ideas (naming, describing, geo-tagging and categorizing them), to comment and/or follow them, to propose alternative ideas (if contrary), to make alliances with other ideas in order to build new and more shared (and accurate) ideas and then be ready for the next phase. Posters and flyers can be downloaded from the platform, widgets are made available to embed on other websites and blogs. Community building tools, such as visualization

tools for statistics and public budget, highlight what is available for the citizens' decisions. A mechanism to help citizens to meet and discuss ideas they like or which are similar to others, in order to stimulate aggregation and merging of ideas and proposals. It cannot substitute the individuals' will (such as algorithms or semantic analysis for the civil officers) but suggest actions that are deemed useful.

State-of-the-art: distribution of posters and flyers, press releases. Public meetings to inform about the process and the state-of-the-art (e.g. resources available). Public meetings (together or separated from the previous) to raise the issues at stake, to brainstorm and to create the first connection among citizens around shared needs and proposals.

DM3: Gathering and support of proposals

Citizens can select delegates to put forward their proposals by allowing citizens to rank priorities in order to suggest the most appropriate distribution of budget among the themes. Proponents send their draft proposals to the operational units in the municipality involved in the PB process (or to other trusted experts) in order to receive useful feedbacks about the feasibility of the proposal. Proposals can be downloaded and edited into predefined templates. A data management and visualization tool allows citizens and municipality staff to quickly analyse data from the PB process.

Citizens can make proposals (title, description, category, geo-reference), support proposals, add comments (favour or against). Accounts and identity can be verified, in order to reduce the risk of manipulations. Proponents can also draft proposals before submitting them. Proposals coming from assemblies and/or forms can be manually introduced in the platform by the members of the municipality PB team.

Proposals can be made online as well as offline: public offices and/or mobile stations receive citizens' proposals and supports. Ballot cards and ballot boxes are distributed throughout the municipality.

State-of-the-art: citizens make proposals and ask fellow citizens to support them so their proposal can go to the next stage (only the most supported ones go ahead). The proponent automatically becomes the delegate of the supporters.

DM4: Analysis and co-design of projects

In order to foster a more deliberative scenario, citizens directly support delegates and rank thematic priorities (*e.g.* education, health, environment), to allow delegates to debate more broadly, adapt their original proposals and design shared projects to put to vote. Direct support of proposals freezes them and impede delegates to interact with each other and modify the proposals. List of the finalist

proposals with the delegate contacts and the communication and co-design tools are made available to collaboratively finalize the project.

Delegates should be able to send proposals to the municipality staff involved in the PB process to validate and support the proposal. The platform supports the internal verification workflow process, and the sum of the internal process is then made available to the delegate (internally, the process creates a validation group similar to a co-design forum). Additionally, by making available a municipality glossary (built, managed and extended by the PB team), delegates can get additional information about how to build their project. Citizens can improve their proposals (versioning) according to the feedback received (other citizens or the municipality PB team).

State-of-the-art: municipal offices evaluate the feasibility of the most popular ('top') proposals. They verify if proposals are of municipality competence, if there are other alternative plans or projects for that place, etc. Unfeasible proposals are rejected, while the partially and fully feasible ones go on. Delegates are called to begin the co-design, as they are entitled to finalize the proposals with the support of the municipal officers, detailing them and estimating the project cost. The delegates are welcomed to merge their proposals.

DM5: Vote

In this phase a variety of voting algorithms should be made available to be selected by the municipality. Is it important to cross-check the authenticity and the eligibility of voters. Integration of online and offline votes, and cross-check citizens' votes is performed to avoid vote frauds. Data management and visualization tools analyse data from PB process and increase accuracy and transparency.

The platform lists projects (organized by district, when necessary) randomly to avoid reference points and focus only on the first proposals of the list (potentially motivating the analysis of all projects). In the voting section, projects are listed but people read them fully by opening the relative webpage. Citizens can download the project details, trace its history, the proponent details and the supporting community (followers and supporters). Authenticated citizens can express their preference.

Votes are casted online and offline through mobile polling stations and within the public offices. In small town the vote can be made through paper ballots distributed door-to-door and in several public places, and then collected in ballot boxes in predetermined public locations. General or distributed assemblies (or an election day) start/end the voting stage. Final assemblies are organized, where participants can cast their vote again (to incentive the participation).

State-of-the-art: estimated proposals (projects) are put to vote to determine which will be funded.

DM5: Implementation/monitoring

Considering the diversity of the projects, and the different administrative stages to implement them, a horizontal timeline 'tells the story' (filled by the municipality officers), that is, a constant flow of information that describes each proposal status and implementation details. A dedicated form can be submitted by the municipality officer to set the deadline for each stage. He is then committed (advocacy) to update the details of the project before the deadline, and allowing automatic calculation of the municipality efficiency (and the officers involved) and providing additional tools for PB implementation planning evaluation.

An additional timeline is available, where citizens (or project delegates) can 'tell their story' and post information about the status of the project. This additional timeline motivates the municipal officers to provide status updates and details before citizens submit complaints.

State-of-the-art: projects implementation and usually an information static page describe the status of the project (sometimes supported by a blog with basic interaction).

5.6. Use Case 5

This sub-chapter presents EMPATIA Use Case 5 (UC5) developed using as reference the consortium expertise in Portugal PB implementations and based on a small town (~20.000 inhabitants) with experience in PB processes.

5.6.1. PB cycle

UC5 implements the proposed EMPATIA PB (cf. Annex B) cycle with no deviations.

5.6.2. PB cycle phases

This use case is composed of the two EMPATIA cycles, the Decision Making and the Implementation cycles. Next we describe the phases that compose this PB cycle.

DM1: Preliminary enabling actions and definition of the rules of the game

At UC5, a more participative approach is desirable, one where citizens are informed beforehand about a toolkit for evaluators and implementers, and which part of Municipality Budget is allocated to Participatory Budgeting. To achieve a more participative and collaborative approach, volunteers/delegates from under-represented sectors of the population will redefine the rules (using inclusiveness indicators within multi-disciplinary groups). Additionally, an alternative funding scheme for the projects will be available (such as crowdsourcing).

State-of-the-art: In most cases only public servants are in charge of the definition of the rules of the PB process, in some rare exceptions citizens are invited to update the rules or affect some elements of the rules such as the voting age.

DM2: Information and ideas brainstorming

Citizens are informed through a guideline book about current expenditures, and relevant information about municipality taxes. Citizens, delegates, and office manager have the possibility to work together in a co-constructive way for the definition of the regulation.

State-of-the-art: this phase is not implemented, however the PB regulations (including all the amendments and improvements that have made for that year) are published every year.

DM3: Identification of local needs and gathering of proposal

To avoid a reduced or invisible deliberation, it is made available to citizens: an online forum (where people can share opinions); the possibility to upload proposals in real time (after discussion in assemblies); transmit public assemblies in real time using live-streaming (for those who cannot attend in-person); and a wiki (where participants' follow-up proposals and provide comments/suggestions).

State-of-the-art: citizens make their registration beforehand and then present their proposals using the ad-hoc form, either in assemblies or in the Internet. Each citizen can only submit one proposal in the framework of PB-youth or PB within the town. However, all citizens are invited to participate to the debate of the Participatory Assemblies, regardless of their age. The assemblies promote the dialogue and the debate among citizens and its proponents (the only space reserved to that). Through the online platform the discussion is not enabled (this platform only gathers the proposals).

DM4: Analysis and co-design of proposals

This phase promotes convergence of proposals by creating tags to identify commonalities among proposals, mapping the proposals in the territory, using geo-referenced data, discussion online, and track of the evaluations by public servants.

State-of-the-art: the municipal commission for technical analysis of proposals is in charge of defining the proposals feasibility and submit the results for citizens' discussion. If a proposal has been excluded by this commission, proponents can always revise and amend it according to the feedback provided. Everything is done internally. After submitting the proposal, proponents can revise their proposals with public servants, if necessary, in-person. Currently the filtering phase is not implemented between citizens and public servants, what causes redundancy and time-consuming issues.

DM5: Vote to define priorities

The platform simplifies the voting process and supports different algorithms. Citizens are able to rank their preferences in terms of costs and social impact. Mechanisms are in place to avoid fraud in voting, like the possibility to vote in the same projects using different channels. Votes are tracked and limited according to the rules.

State-of-the-art: the voting procedure is quite complex. Multiple voting is possible, with maximum amount for the two processes: general PB (OPG) and junior PB (OPJ). Citizens have one vote per group of projects: projects that can include more than one parishes/union of the parishes; projects between $25.000 \in$ to $50.000 \in$ regarding the scope of the parish or the municipality; and projects up to $25.000 \in$ regarding the scope of the municipality. Each citizen up to 35 years old has three votes in the OPJ and one vote to the OPG. Votes have different weight: 1 vote with 3 points in the proposals of OPJ; 1 vote with 2 points in the proposals of OPJ; 1 vote with 1 point in any proposal of OPG. Citizens above 35 years old have two votes, one for the OPG and another one vote in OPJ. Votes have different weight: 1 vote with 1, 2 and 3 points in the proposals of OPJ.

Citizens make their registration with ID card number (or VAT number), and then a code will be sent by post, to access online and vote in the platform. All citizens can cast their vote online or in person.

DM5: Integration in public budget

The platform provides for each project to be implemented a detailed costs plan of maintenance to better calculate the sustainability of the process and the annual cost of the winning project proposals, if applicable, in order to give the possibility to the citizens to improve their own proposals.

State-of-the-art: there is no transparency about the public expenditures of the projects. Citizens cannot identify the costs or the sustainability. Only the proponents can track some of these figures.

DM5: Monitoring and feedback

The platform provides targeted information to support actions and avoid citizen's disbelief and loss of interest. All the information regarding amendments is public, allowing citizens to provide feedback and comments.

State-of-the-art: monitoring and feedback is not public. Citizens can only consult the proposals online when they are approved or excluded. Those excluded are published with a short summary of its exclusion.

5.7. Additional use cases

The previously described use cases were developed in the first half of the first year during the preliminary negotiation phase in each pilot site. Since EMPATIA advanced negotiations started, after the summer of 2016, the models that were used as starting point for discussion have significantly changed. Three new use cases have emerged. Their description is covered in detail in D3.1.

Additionally most of the initial use cases were focused on participatory budgeting, but due to the local conditions and the demands from our partners, some of EMPATIA pilots have gone beyond participatory budgeting. For instance, Lisbon has requested the construction of a multichannel platform that can integrate all the existing participatory processes in a unified system. The pilot in Milan is effectively the only pilot we were able to test the monitoring feature of EMPATIA. The Říčany pilot is the one that deviates the most from its original use case. In Říčany the adoption of the EMPATIA platform is minimal and is restricted to an anonymous ideation website. No integrated login was implemented and most of the participatory process was conducted via a pre-existing technology.

5.8. Use Case analysis

The analysis of UCs focuses on the way through which the original model of PB proposed by EMPATIA has been framed and interpreted in the cases studied. The following *Figure 10* summarizes the main insights from UCs (relevant and/or recurrent issues and priorities highlighted). As a result of this analysis it is proposed a new PB model for EMPATIA.

As referred in chapter 2, we use the term *phase* in its general meaning: a democratic innovation phase is a set of specific actions aimed at achieving a specific goal in a specific amount of time. The initial proposal defined up to 13 detailed phases that compose the cycle of PB. As you can read in the following table, the focus on detailed micro-phases showed an extreme rigidity in its practical use and led to significant misunderstanding even within the team of EMPATIA. As a consequence, the original subdivision in a high number of phases required a simplification in a smaller number of 'macro-phases' that revealed more useful to grasp and describe actual cases of PB and the related hybrid (online and/or in person) actions that are included in each phase. Figure 10 describes the new EM-PATIA PB Model.



Figure 10: New EMPATIA PB Model

The phases can be described as follows:

- 1. **Agenda Setting**: definition of the rules of the game and preparatory actions, including basic information and capacity training sessions
- Ideation: initial brainstorming phase, in which participants generally organized by territorial units – propose potential public projects and seek consensus and support for their proposals, filtering them based mainly on quantitative criteria.
- 3. **Development**: intermediate phase, in which the proposals are developed and filtered according to qualitative/technical criteria and prepared for the final selection. This phase generally entails the active engagement of the Technical body of the Entity in charge.
- 4. **Selection**: this phase entails the final selection of the proposals to be funded, generally through a ballot or polls. The selection generally is officialized through the legal enforcement of PB proposals (*e.g.* the approval of the provisional budget).
- 5. **Monitoring**: this phase regards the monitoring on the implementation of the proposals. Implementation can be considered as a sub-process composed by a subset of micro-phases that change significantly depending on the content of each proposal and the related administrative procedure. While the rest of the phases are repeated cyclically every year, the monitoring phase can cover a different time-frame and remains as a permanent memory that keeps the history records of PB.

Table 2: PB Phases Conversion

Initial vision	New PB model
DM1) Preparation of basic rules, including the 'pot of money' set aside in the	Agenda Setting
public budget, eligibility rules for project proposals, and rules and processes by	
which citizens will participate;	
DM2) Publication of these rules to the wider community and the provision of	Ideation
relevant information on past and current public expenditures to guide citizen	
proposals;	
DM3) Development of initial project proposals by citizens, either singly or in	
public assemblies, often including a deliberation and voting process through	
which a selected group of proposals pass to the next stage of consideration;	
DM4) Technical review of project proposals by public staff to determine eligi-	Development
bility, assess potential legal or practical conflicts, and recommend improve-	
ments to the proposals where possible;	
DM5) Voting on final project proposals by the wider community;	Selection
DM6) Integration of the winning project proposals within the public budget	
framework;	
DM7) Formal adoption of the public budget.	
I1) Formal adoption of the public budget;	Monitoring
I2) Detailed planning of project implementation, including a projected time-	
line, itemized budget, milestones, and work plans;	
I3) Development of the delivery procedure, including eligibility rules and selec-	
tion process for implementation partners and other third-party contractors;	
I4) Selection of implementation partners and transfer of funds to begin opera-	
tions;	

I5) Implementation of the project work plan, constructing the facilities or cre- ating the services envisioned in the selected project;
I6) Management of the new facilities or services in an ongoing manner;
I7) Monitoring and feedback, both to improve the implementation of already- funded projects and to guide any modifications of the decision-making process for future projects.

5.8.1. Agenda Setting

This phase corresponds to the DM1 phase of the original EMPATIA PB model.

As identified in the UCs, this phase is supposed to be delivered directly by the entity in charge of PB. Most of the scenarios do not foresee any specific engagement of citizens at this stage. In some scenarios, it includes the engagement of a restricted group of citizens in the co-design of the rules of PB, and of the general public more loosely, through idea gathering and collaborative tools.

The rules must include some mechanism for the allocation of the money, in order to avoid discretionary and variable decisions, so to increase the stability of the process. The platform should allow citizens/users, delegates and office manager the possibility to work together in a co-constructive way for the definition of the regulation.

EMPATIA is expected to provide additional tools to make more transparent the choices regarding the rules of the game:

- Presentation of the Municipality Budget in a transparent manner, in order to oversee which part of that Budget is really allocated to Participatory Budgeting.
- Introduce criteria for budget allocation based on technical criteria aimed to promote equality and social inclusion (*e.g.* HDI or similar indexes provided by third parties).
- Possibility to ask participants to rank thematic/geographic areas to modify budget preallocation accordingly.

Capacity building sessions also for Managers, Facilitators, Civil Servants and Political Personnel can be useful such as workshops, courses, and role-playing games. Some internal 'project management' tools in this early phase could be helpful in order to enforce the collaboration between administrative staff, consultants, and citizens within the steering committee.
5.8.2. Ideation

This phase corresponds to the DM2, and DM3 phase of the original EMPATIA PB model.

In this phase, accessible information is the key issue, as highlighted in various UCs. This can be achieved through a guideline book about current expenditures or publicizing relevant information about taxes that municipality has to deal with. In the consultative model it is especially important to show what parts of the budget are actually negotiable and what parts are fixed by law. An active engagement of citizens is foreseeable in the organization of capacity building sessions such as workshops, courses, and role-playing games. Engagement of organized groups and their communication channels can foster dissemination of key information through the activation of decentralized communication mechanisms.

EMPATIA is expected to provide tools to make more clear and shareable the information.

The development of ideas/proposals is a sub-process in which boundaries do not exactly matches with established stages of the main PB process: there are many people who still have their proposals in mind and are just waiting for the beginning of the PB to put them forward. Some others take advantage of the PB, and the tools that have been provided, to make their own. The more the PB is re-iterated (cyclic nature), the more likely that the sub process happens. In its offers, EMPATIA should distinguish 'community' tools (for the sub-process) from the 'institutional' ones (more linked with the main PB process). *I.e.*, the supporting, the ranking and the deliberative assemblies are ad hoc tools for each PB model. However, they can share and use the same 'community' tool which could help people to gather and develop shared proposals for the PB, separated from the PB process. This eventual tool may be useful if the platform will be conceived also as a community space, then open to everybody beyond the PB stages.

Measures (both online and in-person) should be implemented to deal with the large number of proposals submitted, with the quality of the proposals put to vote, with multichannel options and with community building online:

- Presentation of proposals can be improved (*e.g.* advanced filtering options are fundamental).
- Clustering and merging options are important for this phase.
- In-person assemblies should take place after proposals (or ideas) gathering in order to develop ideas into proposals, discuss them with municipal staff and undertake a first feasibility review.
- Ad hoc mechanisms are needed to get the full proposals back online, to consolidate with the original ones and to cluster them.

- Participants should be able to connect with each other and to promote their proposals, for example by making proposals 'downloadable' in a poster form.
- EMPATIA should be able to make online proposals more interactive with offline assemblies (in-person meeting should be able to identify and to debate online proposals as well as to put online their proposals).

The key issue to solve regards the reduction of redundancy even in early ideas through the application of early filters and collaborative tools. EMPATIA's integration in the ideation stage is expected to provide:

- Mechanisms to exclude from the process what does not constitute a 'proper' proposal (e.g. general ideas, example critical reviews).
- Mechanisms to aggregate similar proposals on the base of their affinity.
- Mechanisms to suggest the aggregation of similar proposals on the base of the will of proponents.
- Mechanisms to collect and publish online proposal during/at the end of in-person meetings.
- Solutions how to ensure a good overview of proposals for citizens.
- Early Versioning of Proposals: It should also be allowed to do some 'versioning' to the proposals so that what starts as an 'idea' can be developed into full proposals.

A supporting/voting function is expected to take place at this stage in those PB that have a high number of proposal collected. Some PB could have this stage split in two: people first submit proposals, then choose those to support. However, when the PB is reiterated, people are just ready to submit proposal since the first useful day.

In some cases, people can directly elect/choose the delegates to put forward their proposals. Solutions regarding community building and empowerment of (groups of) participants to promote their proposals are envisaged.

5.8.3. Development

This phase corresponds to the DM4 phase of the original EMPATIA PB model.

Filtering is a subsequent stage of the ideation, where the ideas are taken to a higher level of detail, thanks to the contribution of various sources of knowledge (expert and non-expert). The difference between this phase and the previous one (Ideation) is limited to the role of technical/bureaucratic knowledge and to the interaction with the civil servants, but the actual distinction is questionable. In some cases, the work of the technicians is parallel to the Ideation phase. In other cases, it follows a preliminary 'filter' (supporting, rating, etc.), to be sustainable. As far as possible, proposals should be

evaluated in advance in order to avoid frustration by the proposers, especially when they have to look for supporters and likers.

EMPATIA should facilitate the construction of a glossary (or FAQ) from the specific answers given by the experts in order to recall them every time it needs.

This stage typically engages experts and technical bodies responsible in the entity, whose interaction with the participants requires to be empowered. EMPATIA's implementation is expected to make this relation more transparent and direct. For instance, EMPATIA should acknowledge and highlight feed-back from public officials. It must implement also a rewarding system that appoints people acknowl-edged as experts by the users.

A technical support system for the internal review procedures needs to be established and thought together with the monitoring system.

Reduction of redundancy is an important issue: one of the expected improvements for this stage is to have some mechanism to reduce the number of proposals that will proceed to the following stages of vote/selection.

Participatory Design might include:

- Using online collaborative tools for co-design, *e.g.* gather suggestions/comments, storytelling, collaborative writing, and wiki-kind of tools.
- Versioning of Proposal throughout this stage.
- Methodological solutions for multichannel participation, *e.g.* proposal evaluation at a faceto-face event and then getting these back online for voting.
- Integrate co-design to existing social networks and online forums.
- Creating, online and in-person, or other narrowed participatory sessions involving a limited number of citizens/groups as for example: the same proponents; focus group including social groups that are traditionally socially excluded; delegates elected in previous stages; representatives of infra-municipal bodies.

Moreover, usually the review only concerns the top voted proposals. Ways to deal with the many other proposals – without the breakdown of administrative staff – would be useful (*e.g.* distributed review including third parties).

5.8.4. Selection

This phase corresponds to the DM5, DM6 and DM7 phases of the original EMPATIA PB model.

Voting – for defining which proposals will be funded – is generally conceived as a multichannel stage. This means that, better integration between different methods is required:

- Votes can be casted online as well as offline through ballot papers, or tablet via mobile polling stations, or within the public offices.
- In small town the vote can be made through paper ballots distributed door-to-door and in several public places, and then collected in ballot boxes at the same public locations. This reduces the control of frauds, as people can manipulate these cards.
- General or distributed assemblies or an election day can start or conclude the voting stage.

Authentication issues, even if transversal, are often associated with voting, related to the risks of fraud or deceitful uses.

Different voting methods should be made available (*e.g.* multiple vote, negative vote, weighted vote, Condorcet method, Borda count, Bucklin method, etc.) including guidelines for their use. Integration of popular vote with other variables as for example multiplication coefficients related to HDI or to specified sectors or geographic area of intervention, or the vote of other bodies (*i.e.* district councils).

Vote must be 'democratic': similar to the elections, in order to guarantee democracy and deliberations, people have to have access to every proposal to vote, in order to see the alternatives. With this respect, SMS and any other solution which allow people to directly vote only for a single project should be discouraged, although it increases participation.

It is important to keep available the whole history of each proposal's development at the final stage of vote.

In some case (*e.g.* Germany) the selection of the proposals to be funded does not imply any kind of vote, but relies on a direct selection from the entity responsible. Nonetheless, even if non-binding also in the German cases there is usually a poll, which produces a 'Top list'.

In case some proposals were rejected an official justification is required.

5.8.5. Monitoring

This phase corresponds to the full Implementation cycle of the original EMPATIA PB model (7 phases).

None of the UCs foresees specific hybrid functions of participation during the implementation. Participation to the implementation is intended as 'Monitoring on the implementation'.

Training and organization of the technical body of the responsible entity and its direct engagement in the 'backend' is considered crucial for the empowerment of accountability. Explore the possible interaction with OpenData published by the responsible entity.

Citizens should also be able to indicate online, whether they would like further participation in this proposal/if they would like to play an active role in the implementation process. The hypothesis of developing a co-construction session is quoted but not clearly defined in any UC.

EMPATIA should allow (in some way, oblige) the entity to set and describe the implementation timetable in order to be then accountable. Afterwards, it can report the state of the art, through text (descriptions) and uploaded materials (photo/video/documents).

The proponents of the winning projects (and, in some way, those who are interested), as well, should be capable to 'report' the state of the art, as a 'counter power'.

Some cases highlight the possibility to integrate alternative possibilities for co-funding the projects as crowdsourcing/crowdfunding initiatives.

No UC considers as a relevant issue the long-term perspective of proposals, meaning the extension of monitoring on the costs and performance in long term management.

Basic requirement is the publication of information regarding the outcomes of PB in real life.

Emphasis is also given to the possibility to integrate monitoring functions with whistleblowing functions coming from individual participants, organized groups or groups created ad hoc (*e.g.* the promoters of the same proposals; the delegates of a given neighbourhood).

Using Third Parties data (*e.g.* UNDP Human Development Index, other geo-referenced indexes of quality of life) is required to evaluate the inequalities of territory and urgent needs.

There should be open access to all information on PB, submitted and winning projects.

A notification system should be implemented in order to allow citizens to follow the advancements of processes on long term.

The possibility to have an evaluation session (Focus Groups, Questionnaires, etc.) at the end of the deliberative process of PB should be considered. Questionnaires can be launched automatically after a specific time.

The online platform should provide an easily usable backend in which decisions can be published for each proposal (*e.g.* 'traffic light' system).

There should be visualisations and an announcement prominently on the home page. There needs to be a quick overview of accepted/rejected/implemented proposals.

There needs to be an archive function (*i.e.* accessibility of proposals from past years).

The monitoring phase also requires some mechanism for citizens to give feedback on the monitoring: possibility to say 'thank you' or for general evaluation and feedback in the implementation phase. There could be a participative element online, *e.g.* a shout box ('Tell us about your experience with PB...').

5.9. Non-functional requirements

Most of the previously described UC maps are based on a pilot or concrete expertise in ongoing PB process. Also according to these, a ranking of non-functional requirements was gathered. This ranking, described in Table 3, identifies the most valuable requirements for the pilots and PB processes.

The most critical issues to focus on EMPATIA are:

- Mechanisms and tools for **collaborative writing** of proposals and management of the interaction between multiple and varied authors/editors/users.
- Improvement of the capacity of **data-analysis** applied to the cycle of PB.
- Development of reliable mechanisms of **voting**, enabling an efficient management of multiple means and channel for vote.

Priority	UC1	UC2	UC3	UC4	
	Germany Pilot	Czech Republic Pi- lot	Portugal Pilot	Italy Pilot	
1	Versioning of pro- posals	Data analysis	Proposals develop- ment	Data analysis	
2	Secure authentica- tion	Voting Prioritizing	Focus Group	Proposals refinement	
3	Multichannel voting	User Management	Data analysis		
4	Monitoring tools	Process Manage- ment	Vote		

Table 3: Ranking of non-functional requirements

6. Requirements

This chapter focuses on the description of requirements developed for the EMPATIA platform. Moving from the analysis of UCs presented in the previous chapter, the phases of PB are de-constructed in a-synchronous actions in the following first sub-chapter. In the second sub-chapter there is a preliminary list of the possible tools necessary for the delivery of actions. For each tool, a first list of detailed features has been developed.

6.1. De-constructing PB: from Phases to Actions

The simplified macro phases of PB (*i.e.* Agenda Setting, Ideation, Filtering, Selection, Monitoring) are here de-constructed in order to analyse the actions that compose them.

It is important to restate here that the use of the term *Action* in this deliverable, refers to a deliberative function that a user can perform within a participatory process, generally implying an interaction between two or more different players. Each phase is indeed composed by an organized set of actions, which to achieve a specific goal in a specific amount of time (see chapter 0).

Many actions are repeated through the phases, even if their actual delivery takes different form for each phase. For example all the phases of PB contain an 'Information' action; however, the content and the channel used in each phase are significantly different. For this reason the term Action can be framed here also as 'category of actions'.



Figure 11: From Phases to Actions

The main actions observed in PB process have been aggregated in the categories listed in the following sub-chapter.

Process Related Actions

Here are grouped all the categories of actions strictly related to the functioning of a PB process.

- Information

This category includes the interactions based on the unidirectional provision of information, meaning the creation, editing and management of public information and data regarding the process. The source of the information provided can be the same entity or a third party.

It includes in general three categories of information:

- a) Related to the functioning of PB (*i.e.* regulations, calendar of the public events, official announces regarding the process)
- b) Related to the activity of the Entity in relation to the process (*e.g.* the approval of the provisional budget, launch of a consultation on specific topics)

c) Related to other news and events indirectly related to the process. (*e.g.* supra-municipal decisions affecting PB management, local private initiatives of urban transformation, etc.)

- Community Management

This category includes all the non-structured interactions between users and groups of users, where free and non-finalized discussions can take place.

- Participatory Design

This category is the core of structured interactions within the platform, where the structure of the Deliberative process is defined. Indeed, the definition of the PB process correspond to the definition of the process through which proposals are created, refined, filtered, supported, merged, forked, evaluated.

- Voting/Prioritizing

This category includes voting and prioritization actions, intended both as a specific stage in PB or as a complementary element of other stages/processes.

- Feedback

This category includes all the actions related to participatory monitoring and implementation of the Participatory Decision-Making process, and is focused on collecting structured feedbacks (mainly through surveys) from the various categories of participants.

Extra

Here are grouped all the categories of actions that are complementary to the functioning of a PB process (non-core).

- Capacity Building

This category includes Capacity Building actions for different users (Citizens, Facilitators, Civil Servants, Politicians, etc.).

- Deliberative Session

This category refers to all the deliberative sessions, open (*e.g.* general or neighbourhood assemblies) or restricted to specific kind of public (*e.g.* experts, random samples, organized groups, ad hoc groups), independently of the function they cover in the process and of the methodology used for their delivery (*e.g.* Facilitated or not, Focus Groups, OST).

- <u>Co-implementation</u>

This category refers to active engagement of citizens/groups of citizens in the implementation of services/works. It includes co-funding in money (*i.e.* crowdfunding), in goods/services or in (unpaid) working time.

Configuration Actions

Two other categories of actions are performed by the organizers and in some cases by participants that have acquired administrative privileges via repeated participation, appointment, sortation or election. An example of the latter are experienced participants that are called to become community managers or facilitators in many participatory budgeting processes.

- Process Management

This category refers to the users that will manage the entity, and includes internal hierarchical structure of permissions and access based on roles.

- User Management

This category refers to all citizens that engage the system as users. Some users, depending on their involvement and the entity configuration may have moderation, collaboration, or other user roles, that will allow them to have access to restricted actions.

The following Table provides use case examples for the actions described in relation to the five macro-phases of PB.

Phases	Actions	Use Cases Examples
Agenda	Information	Information Regarding the rules of the game defined and published by the entity
	Deliberative Session	Engagement of restricted groups of citizens (randomized, representatives, infra- municipal, participatory elites) in the co-design of the process and/or specific sub rules
	Capacity Build- ing	Capacity Building sessions (Courses, handbooks, theatre, etc.) focused on PB rules and/or Budget analysis
	Vot- ing/Prioritizing	Ranking Thematic/Geographic Priorities; ranking regulation options.

Table 4: From Phases to Actions

	Feedback	Questionnaires regarding the clarity/Test regarding the accessibility or usability
Ideation	Information	Information regarding the Public meetings organized, the budget available, the suitable use of it.
	Participatory	
	Design	Development of initial ideas and early versioning, <i>i.e.</i> suggested/based on affinity
	Community	Engagement of organized groups in the ideation of proposal: collaborative pro- posals, delegations, etc. Creation of new groups. Elections of Dele- gates/Spokespersons based on geographical/thematic criteria.
	Vot- ing/Prioritizing	Express support to ideas in the early stage in order to aggregate them and reduce the number of proposals
	Deliberative Session	Mini-publics. Focus Group including weak social groups/weak neighbourhoods that are traditionally excluded from decision-making mechanisms. Deliberative meetings to foster the aggregation of ideas
Filtering	Information	Information on the means of participatory design (how the proposals will be technically developed)
	Participatory Design	Collaborative design of proposal and advanced versioning, including contributes from technical bodies of the entity.
	Community Management	Organized Groups are engaged in development of proposals in roundtables pro- moted by the entity
	Vot- ing/Prioritizing	Support a specific version of the proposal or the possibility to fork it
	Deliberative Session	Mini-public or panel of Experts in the topic covered by the proposal
Selec-	Information	Public Campaigns on the ballot/information on the results of selection

tion	Community	Communities of people gather and organize themselves to promote specific proposals (Forum for discussion, Calendar for events, etc.)
	Vot- ing/Prioritizing	Vote to decide the proposal to be funded
Monitor- ing	Information	Publication of Information regarding the advancement of project/services im- plementation; Push Notification System.
	Feedback	Evaluation Questionnaires
	Community	Creation of monitoring groups related to specific projects/proposals, associated to individuals or pre-existing groups
	Co- Implementation	Integrate crowdfunding mechanisms; Provision of complementary services on voluntary bases.

6.2. Requirements Description

Based on the actions (or category of actions) defined in the previous sub-chapter, we provide in this section a brief description of tools and their main general features (including some examples), suggested for the EMPATIA platform.



Figure 12: Requirements Description Structure

Figure 12 describes the hierarchical relation between actions, tools and features that defines the structure of Table 5, where requirements are described. In addition, the requirements have been shaped according to the perspective of two main groups of possible users:

- Users: Citizens with the basic level of permissions
- Managers: All the categories with advanced level of permissions (Admin, Managers, Facilitators, Civil Servants, Politicians Legislative, Politicians Executive, Others)

Table 5: Requirements Description

1. Process Core Interactions

	Tool	Ex.	Features	Requirements User	Requirements Man- ager
ш					
	Content Man- agement System (CMS)	http://www.dr upal.org/ https://www.j oomla.org/ http://wordpr ess.org	Content Management System for publishing, editing, modi- fying, organizing, deleting, and maintaining content re- garding the functioning of the process. This tool should be managed by Process Manager.	Read/Comment - News/Page - Calen- dar/Events	Configure and Man- age - Static Pages - News - Other Categories - Calendar/Events - Newsletter
	Data Analysis	http://budget. g0v.tw/budget http://openbu dgets.eu/ http://www.ta bleau.com/ http://www.o penbilanci.it/	 Allows measurement, collection, visualization, analysis and reporting of data regarding: participation within the PB process (finalized actions) participation beyond the PB process (non-finalized actions) Other relevant accessible open dataset (<i>i.e.</i> Public Budget) Web analytics 	 Ac- cess/Downl oad Open Datasets Configure and Manage Visu- alization fea- tures 	 Configure Web analytics Configure and adapt data structure and standards Configure interactions with third parties Open Datasets Configure and Manage Visualization features
Information	Social Media Aggrega- tor	https://wordp ress.org/plugi ns/social- media- aggregator/	Automated integration of ex- ternal sources of information (<i>i.e.</i> Social networks) based on selected criteria (<i>i.e.</i> Tag, RSS, etc.)	- Read - Comment	- Configure rules/sources for Social Media Aggre- gation

Notifica- tion		Automated Notifications/push services system. It is sup- posed to be used both in structured interactions and non structured interactions. Notification could be deliv- ered through different chan- nels (web, mail, SMS, etc.)	 Visualize Notification (web/app/mai I/SMS) Configure/Choose Personal Notification Sources Configure/Choose Personal Notification Sources Configure/Choose Personal Notification Channels 	 Create/Manage non automated Notifica- tion Configure Associa- tions between Noti- fication and other existing tools
Imple- menta- tion Monitor	https://www.fi xmys- treet.com/ https://www.b uergerhau- shalt- lichten- berg.de/	It allows monitoring the im- plementation of the pro- posals, according to the pro- cedure(s) followed by the En- tity.	 Read (Text/Map Visualization Options) Com- ment/Report/ Contribute 	 Configure/Adapt Implementation Procedures Configure and Manage Monitoring Datasets and Access Option Configure interactions with Open Datasets

	Social Network- ing Tools	https://en.wiki pe- dia.org/wiki/C ompari- son_of_social_ network- ing_software	Set of tools that provide the basis for community driven content sharing and social networking	 Post Comment Follow Like Connect with other Create and manage groups Manage rela- tions with structured in- teractions 	 Define rules for Forum Creation and Management Official Forum Creation and Management Official Forum Creation and Management Define Rules for the management of Relations with Structured Interactions Define Rules for Safe Space - Civilized discussions only (keywords, levels)
Community	Forum	https://www.d iscourse.org/ https://app.te em.works	Online forum where people can share opinions.	 Create Discussion Respond Like Moderate/approve Manage Relations with Structured Interactions 	 Define rules for Forum Creation and Management Official Forum Creation and Management Official Forum Creation and Management Define Rules for the management of Relations with Structured Interactions Rules for Safe Space Civilized discussions only (keywords, levels) Facilitation functions

	Social Neigh- bour- hood	http://neighbo rgoods.net/	Tool to support the enforce- ment of local networks at neighbourhood level. It can also correspond with infra- municipal bodies (<i>i.e.</i> parish- es, zones etc.).	 Geo-tag items from the plat- form Add/Search Items Offer/Ask Ser- vices Offer/Ask Time 	 Configure rules for: o Geo-tagging o Item Descriptions o Services Descriptions
Participatory Design	Collabo- rative Proposals	https://hackpa d.com/ http://liquidfe edback.org/ http://etherpa d.org/ https://etherc alc.net/ http://demo.o pendcn.org/pr oposals/index/ 2/1	It allows people to raise basic ideas (naming, describing, geo-tagging and categorizing them), to comment and/or follow them, to propose al- ternative ideas (if contrary), to make alliances with other ideas in order to build new and more shared (and accu- rate) ideas and then be ready for the following stages.	 Creation of items Collaborative Text Writing Comment Editing (Text and media) Versioning Versioning Merge Fork Collaborative Spreadsheet Writing Crowdsourc ed Basic Info (non- numeric content) Calc (nu- meric) 	 Design flow and configure proce- dure for proposal's development (Pro- cess Stag- es/Users/Intermedi ate Polls) Definition of rules and standards for proposal's devel- opment (fields) Definition of rules and procedures for interactions with technical bodies of the Entity (<i>i.e.</i> fea- sibility check). Approval/Reject be- tween each stage

	Redun- dancy Reduc- tion Tool	https://pol.is	A mechanism/algorithm that help people to meet with ide- as they like or which are simi- lar to others, in order to stim- ulate aggregation and mer- gers. It must not substitute the individuals' will but just suggest people some actions which are deemed useful	 Choose option on available criteria (<i>i.e.</i> distance on map, or in- serting key- words) Choose be- tween textu- al/Graphic visualization 	 Define Criteria for algorithm(s) func- tioning: o Geo-based o Theme/Category o Keywords o Others
Voting/Prioritizing	Polls	https://www.d 21.me/ https://vote.h eliosvoting.org http://democr acyos.org/	It allows people to create and participate in polls to vote/support/prioritize be- tween multiple options. A range of voting method could be adopted (multiple vote, negative vote, weighted vote, Condorcet method, Borda count, Bucklin method, etc)	 Vote/Support Read, Down- load and Ex- port Results Create and Configure polls (in rela- tion with Community tools) 	 Define rules/limitations for polls Creation Applicable Voting Methods Create and Manage polls Define Coefficients for weighted vote
Monitoring	Report	http://digiwhis t.eu/	It provides 'digital whistle- blowing' functions to us- ers/groups of users.	 Create, Edit ticket (text, multimedia) Com- ment/Report/ Contribute 	 Configure/Adapt Ticket management Procedures Ticket Management

t	Ques- tionnaire	https://www.li mesurvey.org	It allows to create, manage, and fill surveys and question-	- Fill question- naires	- Create Question- naires
		<u>https://open.ji</u> ra.com/wiki/di splay/WST/Ho <u>me</u>	naires. Users could use it in non-structured interactions (<i>i.e.</i> internal surveys in a group/neighbourhood)	- Read, Down- load and Ex- port Results	- Define rules/limitations for Questionnaires Cre- ation

2. Extra

	Tool	Ex.	Features	Requirements User	Requirements Manager
Ł					
icity Building	Courses	https: //mo odle. org/	E-learning tool that deliver training courses	 Attend Courses, text exams Access didactic documentation Communicate with trainers Propose new courses (upgrade to trainer) Achieve user up- grades (<i>i.e.</i> author- ized facilitator after 	 Create and Manage Courses: Appoint Trainers Content manage- ment (Text, Audio, Video, ppt) Create tests/exams Communication trainers/trained
Capa				a course)	

	Serious	http:/	Games that allow simulations	- Ad hoc User Re-	- Ad hoc Manager Re-
	Games	/www	of PB, segment of PB or other	quirements	quirements
		.serio	participatory processes for the		
		usga	purpose of training and edu-		
		<u>me-</u>	cation.		
		<u>sinsti-</u> tute.c o.uk/	Serious games differ from a perspective of gamification of PB by establishing reflexive points where users are invited to compare their game expe-		
			rience with real-life experi-		
			ence (to be used in combina-		
			tion with Sur-		
			vey/Questionnaires tools)		
	0-	http:/	Online Library of didactic and	- Search	- Configure cita
	Library	//////////////////////////////////////	informative documents re-	Jearch	tion/hibliography refer-
	LIDICITY	iabre	leased in Open Access (CC or	- Read	ence manager
		f.org/	other similar), indexed	- Download/Upload	ence manager
		<u></u>	through a bibliography refer-	- Edit Metadata	- Download/Upload
			ence manager.		- Edit Metadata
			_		
	Live	<u>http:/</u>	It allows to receive and	- Attend a live ses-	- Define rules for creation
	Session	<u>/www</u>	transmit live video transmis-	sion	and configuration of live
		<u>.ustre</u>	sions that connect a narrowed	- Remotely partici-	sessions
		<u>am.tv</u>	deliberative session to a	pate to a live ses-	- Create and manage a live
		L	broader public online.	sion	session
		<u>https:</u>	The public can interact	- Facilitate a live ses-	
		<u>//ww</u>	through chat (video?) accord-	sion	
		w.per	ing to the specific rules de-		
Ę		iscop	fined for each session.		
ssio		<u>e.tv/</u>			
ve Sé					
Li					

	Crowd-	<u>https:</u>	Crowdfunding tool that allows	- Propose and man-	- Define rules for creation
	funding	<u>//ww</u>	to gather additional resources	age crowdfunding	and configuration of
		w.cat	to complement proposals al-	initiative related to	Crowdfunding Initiatives
lementation		arse.	ready publicly funded or to	existing/new pro-	 Propose and manage crowdfunding initiative
		me	fund ex-novo proposals thatposal (link with Cdidn't receive public funds.laborative Pro-	posal (link with Col-	
				laborative Pro-	related to existing/new
			Resources could be offered in	posals)	proposal
			money, time, goods.	- Make Offers	
-Imp					
Ŝ					

3. Transversal Functions

	Tool	Features	Requirements Us-	Requirements Manager
			er	
Process	Process	This tool allows to	NA	Define general rules for
Management	Management	set up the process,		the entity and process:
		defining basic rules		- Languages
		for each structured		
		process managed		- currency
		through the plat-		- Countries
		form.		- Time zone
				- Number of structured
				processes
				- Time-life of structured
				processes
				- Pot(s) of money allo-
				cated
				- Geographic map and
				subdivisions
				- Roles/permissions
				manager
				- Authentication meth-

om	00	tia
CIII	ha	la

				ods - Personal Data Policy (ethic/legal issues)
User Man- agement	User Man- agement	This tool allows to manage: Users, Permissions and Au- thentication.	 Registration Authentication Authorization Accounting Profile management Activity history Messages history ry 	NA

6.3. Additional requirements and tools

Chapter five of this document identified a ranking of non-functional requirements based on the input of the consortium partners. However our multi-method approach to requirements gathering included also secondary procedures that were described in chapter four. In particular we highlighted three additional processes:

- 1) Empaville: *i.e.* a gamified multi-user experience (see chapter 4.3)
- 2) Mapping additional use cases (see chapter 4.4.1)

3) One to One user experience (see chapter 4.6)

These three activities have generated insofar three additional functional and non-functional requirements that have promoted the development of new tools. On top of these three activities the internal discussions within the consortium highlighted the lacuna of existing e-deliberation technologies. A recurrent problem that is reported also in section five is the problematic platforms used for collaborative production of projects, versioning and refinement of ideas. Thus identifying better solution for e-deliberation is still a priority for the EMPATIA project. Section 6.3.4 explore the current requirements developed around e-deliberation and a new spinoff project that a member of our research board has dedicated to the problem. Lastly, EMPATIA team has realized that the platform should consider further improvements on its data management and visualization tool. This is due to growing interest on easy, integrative and dynamic data visualization tools, and its potential for improving comparative analysis and planning of PB processes, to name a few. Hence, a research and analysis of existing open source data visualization tools was conducted, including its application on existing participatory processes around the world – with a particular focus on PB. A report was created with some examples and recommendations, and this is described in section 6.3.5.

6.3.1. Voting

Our gamified multi user experience, Empaville, described in more detail in section 4.3, allowed us to test and re-test a voting process that integrates multiple media. This procedure promoted a constant updating of the voting procedures and an improvement of the user interface, its stability and scalability. This process allowed us to deploy the Condeixa pilot that required only the voting module, in less than a month. For a description of the Condeixa pilot see D3.1.

The multi user voting experience has also highlighted how difficult it is to vote with digital tools and how time consuming it is when the available voting tools are limited. Therefore EMPATIA is now exploring the adaptation of a hybrid technology that would allow participants to vote on paper ballot, but then would employ a dedicated ballot scanner that could upload the votes quickly. This solution seems fundamental for participatory processes that target demographics that do not have access to the internet.

6.3.2. Informed consent

As anticipated in chapter 4.4 our mapping of existing e-participatory solutions highlighted a gap in user data protection and informed consent practices. More details about the mapping process can be found in deliverable 1.3. For the purpose of this deliverable we highlight the following requirements

that we have identified for the EMPATIA platform informed consent guidelines. We have identified four crucial requirements:

- the separation between Privacy Policy and Terms of Service (ToS). Both has to be clearly indicated and opt-in, in every page of the platform, by different links. If possible, the opt-in should be provided during the first user login;
- the use of a non-legal jargon to present these documents. The links to the original legal texts can be provided from human-readable landing page (i.e. Information Sheet). Different levels of documentation can be provided, by short videos, written documentation in accessible language, technical manuals;
- the hosting of every part of the core and the admin components on servers under a single European country in order to avoid possible legal issues and complications;
- the publication of the FAQs, of manuals and documentation, of the source code in the case
 of free and open source platform, on a website directly managed by projects partners following the consortium Agreement. Replication of these data can be useful, also on commercial
 platforms, but it is crucial to preserve the integrity of the original data. Any other option, including the publication of open source repositories such as github.com which is the case for
 every FLOSS platform analysed implies the multiplication of ToS, privacy policy and licenses
 the user has to read and agree with.

These requirements have been translated in specific policies that have been adopted by the consortium and are described in section 5.2 of deliverable 3.1. For the purpose of this report, what we want to highlight is how the multi-method approach of requirement gathering enriched the standard procedure of case-oriented requirement gathering and generated actual tangible effects.

6.3.3. Wizard & templates

One to one UX focused on the usability of the back office tool. As mentioned in section 4.6 this testing has started only in the fall of 2016. Over the course of the fall of 2016 and the first half of 2017, we have gathered feedback in UX with a number of experts, user test exercises and pilots participants feedback. Among the experts: David Asher, of the technology development team of the Participedia project and former VP of product development of the Mozilla Foundation, Professor Susan Halford and Professor Leslie Carr, Directors of the Web Science Institute at the University of Southampton, and with a number of technology and participation experts that work for the city of Lisbon.

The initial feedback we have gathered has been very interesting. The current back office tool is optimized for experienced practitioners and bureaucrats that have implemented participatory processes many times. This is not surprising because most of the partners of the EMPATIA consortium fit per-

fectly such persona. Thus, the existing back office was immediately understood by practitioners and bureaucrats who work in the digital engagement teams of the city of Lisbon. However both David Asher and the academic professors from Southampton highlighted how difficult for them the current back office tool was. These users have very limited experiences with implementing participatory institutions and have a more general perspective with respect usability. Asher highlighted how it is crucial to develop an interface that can speak to naïve users and is curated and guided. On the basis of such feedback the EMPATIA consortium has identified the need of a Wizard tool and 'templates' that are designed for users that have no experience in democratic innovations and thus need significance guidance. The ultimate goal is to have a back-office tool that can engage three different types of users:

- 1) the technician who has no interest in democratic innovations and is interested in reusing the tools for its own purposes that might be completely unrelated to the goals of EMPATIA.
- the expert practitioner who knows in details a variety of processes, but has no knowledge of coding and needs a highly flexible platform that can implement diverse institutional designs.
- 3) the non-expert user, a bureaucrat, an academic, a practitioner, who is implementing for the first time a democratic innovation and requires a guided experience with significant explanations and the possibility of directly implementing what we called templates, *i.e.* "the model of Milan", "the model of Lisbon". These templates will combine a pre-set system of features with an extensive set of guides.

The first two goals have already been achieved, through the procedure that was discussed in section 5 and 6, the latter goal instead will be one of the main challenge for the remaining 5 months of the EMPATIA project.

We have begun experimenting with a preliminary Wizard, but the current iteration is still too complex. That is why we are also experimenting with templates, *i.e.* pre-configured packages that implement an entire process and offer guides for tweaking.

6.3.4. E-deliberation

One of the key weaknesses of digital participatory processes is the lack of a robust online edeliberation environment. This problem has recurrently emerged in the discussion within the consortium and it is one of the top requirements identified in section five that touches both the versioning of proposals and the development of proposals.

The EMPATIA consortium discussed this issue recurrently during the first year and concluded that existing technology is still not robust enough to sustain high quality deliberation. For such reason all our pilots are integrating online deliberation with thick face-to-face deliberation based on the state of the art technology inspired by deliberative polls and similar democratic innovations.

That said, the EMPATIA consortium was interested in testing new technologies for deliberation in a safe environment that could not negatively affect real life municipal multichannel engagement pilots that are often deployed in the midst of political opposition and need to rely on proven technology.

For such reason a task force composed by some members of the research board (Paolo Spada and Graham Smith) and external academics (Michael Morrel) designed a new academic research project and obtained dedicated funding to deploy it in the spring of 2018. The project is based on a state of the art randomized controlled trial specifically designed to explore new tools dedicated to optimize e-deliberation. For more information regarding the project that can be effectively considered the first spin-off of the EMPATIA platform that received external funding, see Annex E.

6.3.5. Data Management and Visualization

Data management and visualization tools are considered fundamental to increase accuracy and transparency of PB processes. These tools enable citizens' monitoring, while improving comparative analysis and planning of PB. A growing number of data management and visualization software tools are being incorporated by participatory processes in the world, aimed at increasing planning, participation and inclusion.

Despite EMPATIA platform already having data visualization and publishing tools, EMPATIA team believed these could be improved by integrating alternative, and widely tested solutions, that seem to have been effective elsewhere. For this reason, a report was created (see annex F of this document), comprising of an analysis of on a selection of Open Data platforms (i.e. CKAN, DKAN and Socrata) with data management and visualization capabilities that could be potentially be integrated with the EMPATIA platform. Based on a comparison of these tools general capabilities as applied to the EM-PATIA platform, some recommendations are drawn regarding the most well fitted Open Data platform, in relation to the purposes, as well as best integration, with EMPATIA.

7. A quick guide for decision makers

Based on the experiences with the actual use of the EMPATIA platform by different municipalities, EMPATIA partners have collaboratively created a "quick guide for decision makers" which focuses on different models and functionalities of EMPATIA as an integrated multichannel platform. The aim of this quick guide is to provide an easy to read overview of EMPATIA's features in order to support the decision making process of people interested in the EMPATIA platform. Looking at the current use of the EMPATIA platform by different municipalities, the guide not only focuses on different models and functionalities with regards to participatory budgeting, but embraces EMPATIA's multi process platform features as a second major use case.

The guide (see annex G of this report) was developed in the framework of Task 1.2. The purpose of Task 1.2 (Reference scenarios and requirements) is to identify and highlight what are the most prominent uses of the EMPATIA platform. While originally it was also foreseen to produce a collection of technical and non-technical requirements within this task, the consortium decided that a more useful undertaking would be to outline EMPATIA features in an easy to read (non-technical and non-scientific) manner, and to synthesise the discussions that were led amongst EMPATIA partners and/or with pilot municipalities on some key features in order to develop pro and con lists to guide decisions on different features. While in a previous version of D1.4 this task was referred to as "best practice toolkit", the name was changed to "quick guide for decision makers" in order to stress the focus on practitioners' needs and on the EMPATIA platform. A more comprehensive best practice toolkit would also be an interesting undertaking but would need to go beyond the limited experiences made in the four official EMPATIA pilots.

With the EMPATIA project coming towards its end, it is now extremely important to develop materials that can support the exploitation process. The user guide is, thus, aimed at the following objectives:

- 1. Identify and describe how the EMPATIA platform suits different use cases of participation in different contexts, based on how EMPATIA is used in the pilot municipalities.
- 2. Identify and describe the major technical features integrated to the EMPATIA platform, including a discussion of pros and cons of some of the 'politically relevant' key features.

 Set the basis for dissemination and exploitation activities, explaining functionalities in an easy to understand way (which can be used for user manuals, a functionalities decision tree, or the like).

In order to suit the needs of the target group, the quick guide is a rather short, non-technical, and non-scientific document.

Section I: Use cases of EMPATIA

Section I aims to give answers to the following questions:

- For which purposes and in which contexts is it useful to use the EMPATIA platform?
- Which use cases does the EMPATIA platform cover?

Thinking in terms of dissemination and exploitation, the aim of the guide is to describe the key features of EMPATIA from the perspective of initiators of participation processes, notably municipalities: Their main interest will be to understand whether the EMPATIA platform suits their needs, i.e. whether it provides the appropriate features for the non-technical and technical requirements with regards to their envisioned use case.

Looking at the different EMPATIA pilots, two main use cases of EMPATIA can be identified: The two main identified use cases are the use of EMPATIA as a single participation process platform vs. the use of EMPATIA as a multichannel platform.

EMPATIA as a single participation process platform: The first use case is EMPATIA as a single participation process platform with a focus on participatory budgeting processes, such as implemented in the EMPATIA pilots of Wuppertal, Říčany and Milan. Municipalities interested in EMPATIA as a single participation process platform can choose flexibly whether they want to use all or only some of the phases modules and their respective features. This means, for example, that EMPATIA can be used only for the ideation process, collecting ideas or proposals online, such as in the case of Říčany. Alternatively, they can use it for the full PB process including all phases – such as in the case of Wuppertal. While the pilots are focusing on participatory budgeting processes, the platform is not limited to this model. The platform can very well also be used for other kinds of online participatory processes, for example consultations regarding city planning.

EMPATIA as multi participation process platform: The multi process platform as it is in use in Lisbon is an online platform that has the capacity to host different participation projects in one single platform. It suits the needs of municipalities that are interested in a citywide portal for participation, with the possibility to conduct an unlimited number of online consultations and online dialogues,

under the roof of one single platform. It has the capacity to integrate a number of single participation processes under one roof.

Since EMPATIA is an open source platform, new and individualized modules can of course be added at all times.

Section II: EMPATIA features

Section II aims to give answers to the following questions:

- What are core features, and what technical configurations are available?
- What are pros and cons of different technical configurations?

An advanced discussion on the core features has been held at the General Assembly in June 2017. The collection and discussion of configuration options included:

- Different models of voting and expression of preferences
- Comment moderation configurations
- Permission settings
- Information requested at registration

The listed features were chosen with a view to being very prominent choices a municipality has to make when implementing a PB process using EMPATIA. It has become apparent during the course of the EMPATIA project that pros and cons of different configurations need to be evaluated in the face of different socio-political and cultural contexts. While it is a standard procedure to ask for fiscal numbers in order to participate in Portugal or Italy, this is rather a 'cultural no go' in Germany. It is envisaged that the collection of perspectives combines the insights from different political and cultural cultural contexts the insights for prospective municipalities that want to use EMPATIA.

The different features are divided into relevant options of choice. In order to ensure a balanced picture on pros and cons, the different pilot partners were asked to add their individual perspectives in July and August.

You can find the full "quick guide for decision makers" in Annex G of this report.

8. Conclusions

This report has covered three main objectives.

First, in Chapters 2 and 3 we developed a preliminary analytical framework to research multichannel participatory processes. Starting from the definition of a participation channel as "institutions that integrate messages and participatory spaces targeted to different segments of the population in a system specifically designed to increase and deepen citizen participation in the political decision making process". The main challenge of multichannel participation is the design of an engagement process that is adapted to different publics it aims to reach, as opposed to technology driven approaches. A consistent methodology to research (and to manage) multichannel participation is still distant: our contribution is still in a raw format and requires to be refined and tested in field research. The EMPATIA project is a first step in a pragmatic research and testing agenda.

Second, we developed a first set of non-functional and functional requirements for the EMPATIA platform prototype. In this way, we proceeded through various stages of clarification and refinement through the adaptation and implementation steps of project. Chapter 5 described the initial "super-set" of requirements and a preliminary ranking based on the Use Cases. Chapter 6 provided a preliminary systematization of the possible requirements for the EMPATIA platform. Yet, feedback and implementation of the technological requirements and suggested components into the pilots of the project is still lacking. This will be addressed in D3.2.

The WP1 deliverable has, however, been fundamental in refining and selecting those tools and components necessary to position EMPATIA at the frontline of innovative platforms for inclusive and engaging multichannel participatory processes.

Third, with this report we provided the basis for other work packages of this project. Further refinement of the EMPATIA platform will continue through a process of dialogue, following the suggestions and analysis described in this document.

Additionally, this report has been a basis for discussions and analysis within EMPATIA which have inspired a number of spin-off products from the project. These products can be used independently of D1.4, for both dissemination and actions aimed at improving and expanding multichannel participation. For instance, a number of academic articles are in the process of being published, including scientific articles on, for instance: Multichannel participation, gamification and inclusion. The *Empaville* role playing game and its report (as a guide to the game), can be used as an effective tool for planning Participatory Budgeting processes, or to open up discussions on participation and deliberation

in, among others, schools, universities, civil society organizations, and movements. The independent report on Data Visualization and Management (DVM) is another example of by-product that can be used to disseminate existing best practices of DVM tools aimed at enhancing the planning and analysis of participatory processes, while improving transparency and understanding of citizens. The DVM report adds to other reviews, but with a particular – and often overlooked – focus on participatory budgeting digital platforms.

Lastly, the document "quick guide for decision makers" provides an overview of the main features of the EMPATIA platform, including some pros and cons, which might affect planning and configuration of Participatory Budgeting processes. The guide, written in an easy to read format and target at practitioners, can be used to disseminate the EMPATIA platform while facilitating a quick set up of the process. We expect that D1.4 will continue to inspire the last stages of EMPATIA, as well as many of its dissemination activities.

Keywords of EMPATIA

Note: this is a brief glossary prepared with the purpose to create a common language within the partnership of EMPATIA. The glossary is limited to essential keywords that connect the first theoretical component of this deliverable with the second one, oriented to the development of EMPATIA's platform, tools and methods.

Action

The use of the term Action, refers to a deliberative function that a user can perform within a participatory process, generally implying an interaction between two or more different players. Typically actions in face-to-face participatory processes include listening, talking, reading, ranking, and voting. Example of online actions are generating, editing, commenting, versioning and ranking ideas and proposals.

Channel

A Channel of engagement is defined as a combination of messages and participatory processes designed to encourage a specific behaviour in a (specific) target public.

Civic Technologies

In this deliverable we refer to the framework for analysis of civic technology provided by (Wenger, White, and Smith 2009) that focuses on 4 levels of definition: the configuration of technologies that a community and its members use; the platforms into which vendors and developers package technology; the tools that support specific or bridge between types of activities; the features of tools and platforms that make them usable or differentiate one offering from another.

Democratic Innovation

We adopt the term of Democratic Innovations to define institutions specifically designed to increase and deepen citizen participation in the political decision-making process. The big majority of Democratic Innovations are commonly 'Invited Spaces'. PB can be considered as one of the most complex democratic innovation.

Hybrid PB

Hybridization is a term meaning many different things, but always indicating the gradual abandonment of a supposed 'pure archetype' of PB. Three main trends of hybridization are analyzed in this paper, not limited to the mere mix between in-person and online channels of participation.

- a) Dynamics of continuity with pre-existing democratic experiments
- b) Convergence of different tools and methods into PB
- c) Cross-pollination of different discursive models of democracy

Multichannel Democratic Innovation

Multichannel democratic innovations are institutions that integrate messages and participatory spaces targeted to different segments of the population in a system specifically designed to increase and deepen citizen participation in the political decision making process.

Participatory Spaces

The definition of a participatory space in this deliverable distinguishes between 'invited spaces', participatory spaces designed by a government/organization to involve citizens and 'invented spaces', participatory spaces claimed by bottom-up social movements

Phase

The majority of Democratic Innovations are structured through subsequent phases. In this deliverable, a phase is defined as a set of specific actions aimed at achieving a specific goal in a specific amount of time. Each phase can be significantly different in design, and allow participants to perform different set of actions, but do not target different publics; hence, they are not different channels of engagement. For Example PB processes are commonly divided in phases of Agenda Setting, Ideation, Filtering, Selection and Monitoring.

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ANNEX A: Empaville Report

Empaville Report



Empaville Map

Overview

Empaville is a role-playing game that simulates a gamified Participatory Budgeting process in the imaginary city of Empaville, integrating in-person deliberation with digital voting.

Participatory Budgeting (PB) is a decision-making process in which citizens deliberate and directly decide how to spend part of a public budget. The game is based on real PB experiences combined with gamification elements in order to provide an educational and critical experience on public participation. It also allows one to use Information and Communication Technologies (ICT) adaptations to implement democratic processes. All the online phases of the game take place within the EMPATIA UX (User Experience) digital platform that technologically supports the process. This gives users the opportunity to test various tools and modules like uploading proposals, digital voting, reporting modules and data analysis.

Gamification - Refer to: Page 8

(Noun)

The application of typical elements of game playing (e.g. point scoring, competition with others, rules of play) to other areas of activities to afford gameful experiences and to encourage engagement with a process, service or product.

During the game the participants are invited to discuss and elaborate **project proposals for the City of Empaville**. A specific proportion of the public budget for civic projects will be decided democratically after project proposals have been developed on the platform. They are asked to describe the proposals and indicate their geographical location, budget range and category chosen from predefined selection of: security; public parks and environment; public works; social and cultural activities; accessibility and transport. After being uploaded in the platform, the proposals are presented and voted individually. The game is designed to generate conflict within and across neighbourhoods to showcase how a participatory process deals with such conflicts.

The imaginary city is divided into **three neighbourhoods** each with different features:

- **Downtown,** the lower socio-economic part of the city: lacking services and inhabited by workers who are often employed in other areas, this is where the harbour and stadium are situated.
- **Middletown,** the economic and cultural hub of the city: it hosts most of the services and business activities and it is the most populated area.
- **Uptown,** the most residential and richest area of the city: aesthetically well kept and catering to luxury services.

The participants **play as citizens of Empaville** according to the characters cards distributed to each one before starting. Each card provides personal data of the character i.e. age, gender, citizenship, profession, place of residence, workplace, interests & motivation and behavior. The features trace the profiles that the participants will have to perform throughout game, which stimulate two gaming dynamics. At the individual level, participants are motivated to empathize with social actors that have different personal and social characteristics from their own. At the collective level, the game benefits from a virtually varied group, which carries different interests that could potentially be in conflict.

The **simulation ends** with the announcement of the winning proposals. Thereafter, the data analysis and debriefing take place, giving the opportunity to examine the process in detail from outside the game. This is important to highlight critical issues and discuss the process in both methodological and practical terms.

The **number of participants** can vary from a minimum of 12 to a maximum (currently) of 60 people.

In each game session, a team of facilitators (generally between 3 and 5) guides the activity, in whole and in smaller groups. Facilitation focuses on the deliberative phase and digital support, with the possibility of taking confederate actions within the group in order to encourage realistically distorted dynamics that can be analysed at the final stage.

History

The current game is an evolution of an offline game that was developed and refined over the course of sixteen years by Giovanni Allegretti and later by the UK PB Unit. This version of the game has been developed by the Center for Social Studies (CES) of the University of Coimbra (Portugal) with the support of the IT company OneSource within the consortium of the EMPATIA Project - Enabling Multichannel PArticipation Through ICT Adaptations, funded by Horizon 2020 EU programme, Call: ICT-2015/H2020-ICT-201, grant agreement n. 687920. Currently, thanks to constant updates and partner support, it is available in four languages: English, Portuguese, Italian and French. Dozens of Empaville sessions have been conducted in several countries, including Portugal, Italy, United States, Canada, UK, France, Germany, Sweden, Spain and Czech Republic.

Objectives

Empaville's role-play aims to foster digital evolution and the culture of public participation, providing critical tools to the participants in order to reveal benefits and challenges on the use of technologies in public participation. In particular, the game seeks through gamification and direct experience to reach the following objectives:

- To stimulate the role of citizens as proactive actors in the community. This goal is framed in the citizens' empowerment, which is a key element for a substantial and effective participation base.
- To empathize with other categories of the society, potentially different from the personal prospective in terms of gender, age, profession and social status. This allows to highlight the complexity of social instances and to promote the importance of mutual respect within the community.
- To encourage collaboration situations of conflict and to promote group work on public issues as an approach, which is able to overcome the one-on-one dialogue with institutions.
- To provide the possibility for politicians, technicians and public officers to sit on the sidelines of participatory processes, understanding the procedural and practical difficulties and discussing how to improve organization and tools.
- To point out the positive and negative elements of a digital democracy, with particular reference to the balance between safety and privacy on the one hand, and accessibility alongside the increase of participants on the other. This goal is crucial to convey the need of taking the procedure seriously, while giving attention to the technical skills.
- To strengthen the role of games as learning methods for adults as well as for children. This point is examined in more depth, in the "Gamification" section. It promotes critical learning through empirical experiences and fun, without hindering its limits and potential risks.
- To test new methods and tools in the framework of democratic innovations. Small groups in monitored environments can offer vital opportunities to experiment innovative dynamics, platforms and tools in both an online and offline context. This can later be applied in real world contexts. The simulation also offers securer environment to safeguard against potential ethical dilemmas, subject to the information and consent of the participants.

Target

Empaville addresses **three different targets**, the first two groups have the same type of game structure, but partially different goals emerge and some phases take on more importance.

Firstly, there are the **practitioners such as politicians, technicians and public officers.** The emphases of the simulation for them is experiencing a participatory process as participants and not just as organizers; testing a digital platform for participation; experimenting with the dynamics of digital

voting; and scrutinizing the game process and data analysis at the end of the process, focusing on topics such as safety, timing and possible distortions.

The next target is dedicated to **citizens** participating in a predetermined public issue and the focal points of the simulation become: understanding the dynamics of a participatory budgeting process; familiarizing themselves with online participation platforms; reflecting on the limits and potential of digital democracy; and empathizing with other social categories.

In addition, a version of the game for **young people under 15** was recently developed as: **Empaville for Schools.** This simplified version is based on extremely different group dynamics and requires less technological equipment. The Empaville for Schools version asks students to develop proposals for an imaginary park frequented by six different groups: aficionados of traditional sports (football, volley and basket); skaters/roller derby (lovers of unconventional sports); dog owners (with environmental awareness); elderly residents; youngsters (who want to have fun and throw parties); park staff and businessmen/women. This simulation has already taken place in five different Portuguese schools, with over 200 students partaking in the game.

Phases Of The Game

The Empaville session normally lasts around 90 minutes. In addition, if predetermined, participants can comment on the proposals during the game, expressing positive, negative or neutral opinions/considerations. (It is possible also to allow for anonymous comments in the software.)

The role-playing game Empaville is structured in 7 phases:

1) **Presentation:** The main facilitator will introduce the context to the participants by describing the city, its neighborhoods and their features. After the storytelling the character cards and the rules are explained. Generally, to reinforce the narrative, one of the facilitators impersonates the mayor of Empaville assuming the neutral role of referee. From this moment, each participant is invited to recreate the character on their card, interpreting the profile described and acting only in his/her interests.

Suggested time: 10 minutes.

2) Deliberative Tables: Participants are divided into 'neighborhood groups' (normally one group for each area, with the possibility to split Middletown in two) to discuss and elaborate the project proposals. This is generally limited to two at a time. The platform allows groups to enter each proposal with the specifications of: title, description, location on the map, budget range, category, photos, videos and attachments. Depending on the settings previously discussed and chosen by the facilitators. The table facilitator generally proposes an initial round where the

participants can get-to-know-each-other in respects to their predefined and vastly diverse characters.

Suggested time: 20/30 minutes.

3) **Proposal Presentation:** One or more representatives per group are invited to briefly present the proposals uploaded on the platform. Generally, the facilitator-mayor coordinates the presentations and checks the time.

Suggested time: 15 minutes.

4) Voting Phase: Each participant will log into the platform and vote for the uploaded proposals. Each participant has 3 optional votes: 2 positive and one negative. The vote is personal and must be based on the identity of the assigned character. Participants can access the platform through different devices: computer, smartphone, tablet or an electronic kiosk (provided by us). The login is made by entering a user ID/email and password printed on their specific cards, by using a QR Code (Quick Response Code), or with a RFID (Radio-Frequency Identification) by the electronic kiosk.

Suggested time: 15 minutes.

- 5) Winning Ceremony: After the voting phase is closed, the simulation ends when the facilitatormayor showcasing the results and announcing the winning proposal(s). Winning proposal(s) (and real PBs) are not necessarily the most voted proposals, but the most voted ones that fit within the previously established budget. The most voted proposal has the 'first right' to the required budget. The following proposals are selected based on the remaining budget, sliding the voting rank in the process. For this reason it is often seen that lower budget proposals have more chance of winning. Generally, the winning group(s) are rewarded with a fake check. Suggested time: 5 minutes.
- 6) **Data Analysis:** Facilitators and participants proceed with the analysis of the data. The platform develops diagrams and data tables to facilitate the analysis of data. Currently, it is possible to analyze the: total votes, votes for each proposal, percentage of positive and negative votes for each proposal, votes by gender, votes by neighborhood, votes by age and votes by profession. At this stage, some risks and distortions may arise, for example the risk of compromising the privacy of the participant's vote, due to the collective data potentially being able to pinpoint a participant's specific vote.

Suggested time: 15 minutes.

7) **Debriefing:** The activity ends with an open discussion on the overall process of the game, the online platform, digital democracy, participatory budgeting, and on further topics that may emerge from the specific group at hand.

Suggested time: 10 minutes.

Gamification Elements

The Empaville covers the topic of democratic innovations, with the simulation of a Participation Budgeting process, however beyond this, the game is inspired and critically employs the dynamics and analysis of another important topic: that of gamification.

The vital book on the subject "The Gameful World", edited by Steffen P. Walz and Sebastian Deterding (2014), defined gamification as "ludic elements or qualities, or non-game objects and experiences that use design elements from game and/or are designed to afford gameful experiences". In recent years, gamification is emerging as an important trend in the field of public participation. Participatory processes frequently apply game dynamics to promote engagement of a more diverse set of actors and to incentivize participants' behaviors that are considered desirable by the organizers. In particular, it is possible to frame the role-play game Empaville in the so-called cluster of Pervasive games, defined by Sebastian Deterding (in "The Gameful World", 2014) as a game that can "take the substance of everyday life and weave it into narratives that layer additional meaning, depth, and interaction upon the real world".

Empaville uses gamification both to create an attractive, fun, and participatory context within it's activities, but also provides an practical example for it's participants, allowing them to generate a critical discussion on the ludification of democracy that generally takes place during the debriefing phase. The advantages and disadvantages of gamification applied to public participation are a central topic for the EMPATIA team and for its community.

It is possible to identify in Empaville the following main elements of gamification:

- 1. Learning By Experience: through fun and practical approach participants quickly acquire higher and more durable skills than by texts or tutorials;
- 2. **Projective Identity:** the role-playing game requires leaving their own identity and social role to impersonate a character; this encourages participants to relinquish the habitual learning context and offers them the opportunity to act with different behaviours.
- 3. **Competition:** no one likes to lose. Even in the presence of a purely symbolic prize, the context of the game pushes the participants to engage in the competition, both as individuals and as a group.
- 4. **Time Pressure:** in reduced time, checked and spelled, participants are pushed to focus on the problem and act. It is interesting to see how it can also lead to different decisions.
- 5. **Storytelling:** an accurate and engaging description of the context helps the participants to identify themselves in the game and so to be involved in it. Moreover, participants presenting the characters' profiles and interpreting them reinforce the narrative.
- 6. **Scarcity:** limited resources, as budget, encourage participants to strive to acquire and spend them artfully.

7. **Strategy:** individual and group dynamics, competition and prizes stimulate participants to develop gaming strategies. In the case of Empaville, for example, submitting a proposal with a minimum budget can lead a group to victory even if its content is controversial or even hostile to other groups.

Further Developments Of Game

Empaville is not a finished product, rather it is a constantly evolving process, both in its online and offline phases. The sessions and evaluation surveys carried out allow the participants and EMPATIA team to foresee some limitations, challenges and amendments to the platform design and to the game process. Many people, who answered the survey, highlighted the usefulness of Empaville as a learning and community tool that allowed them to test the use of technology in a realistic scenario of participatory budgeting and to thereafter critically analyse it. Most of the participants argued that it is safer to have these experiments set out in the format of a game, so as to test all the vulnerabilities that should be avoided in real situations.

Empaville's Short Term Developments:

- Working on the back-end of the platform to achieve a more intuitive and user-friendly software;
- Improving the platform's capacity to handle multiple sessions at a time;
- Simplifying the back-end path to access the data analysis;
- Fixing small visualisation errors in the user-page template;
- Organizing predetermined ID card packages in all EMPATIA available languages online (English, Italian, Portuguese, French);
- Continue translating the game in other languages with the support of partner organizations.

Empaville's Medium-Long Term Developments:

- Develop a version of Empaville which is completely "do it yourself" and can be freely distributed without relying on the facilitators/creators;
- Provide the possibility of a more detailed graphic customization, both in the general configuration and in the character profiles;
- Expand Empaville to become a "pervasive game" in the form of educative democratic roleplay, addressing many different targets, simulating different participatory processes and providing different settings.



Map of the possible evolution of Empaville

Practical Requirements:

(In order to carry out a successful Empaville Session)

- A team of 3/5 facilitators that could support the game delivery;
- Wi-Fi coverage (which can support a large number of devices);
- Room with minimum 4 tables;
- Projector/screen to visualize the presentation, the results and data;
- One laptop/tablet for each group (replaceable by paper and a digital station/laptop to upload the

ANNEX B: EMPATIA PB Cycle (from the original proposal)

The PB model described in EMPATIA proposal was organized in 2 main cycles:

The **decision-making cycle** is subdivided into seven distinct phases:

DM1) Preparation of basic rules, including the "pot of money" set aside in the public budget, eligibility rules for project proposals, and rules and processes by which citizens will participate;

DM2) Publication of these rules to the wider community and the provision of relevant information on past and current public expenditures to guide citizen proposals;

DM3) Development of initial project proposals by citizens, either singly or in public assemblies, often including a deliberation and voting process through which a selected group of proposals pass to the next stage of consideration;

DM4) Technical review of project proposals by public staff to determine eligibility; assess potential legal or practical conflicts, and recommend improvements to the proposals where possible;

DM5) Voting on final project proposals by the wider community;

- DM6) Integration of the winning project proposals within the public budget framework;
- DM7) Formal adoption of the public budget.

This final step in the decision-making cycle serves as the first of seven distinct phases within the **implementation cycle**:

11) Formal adoption of the public budget;

12) Detailed planning of project implementation, including a projected timeline, itemized budget, milestones, and work plans;

13) Development of the delivery procedure, including eligibility rules and selection process for implementation partners and other third-party contractors;

14) Selection of implementation partners and transfer of funds to begin operations;

15) Implementation of the project work plan, constructing the facilities or creating the services envisioned in the selected project;

16) Management of the new facilities or services in an ongoing manner;

17) Monitoring and feedback, both to improve the implementation of already-funded projects and to guide any modifications of the decision-making process for future projects.



ANNEX C: Template for Use Case Scenarios





Use Case Scenario: Main Issues

State of the Art:	Use Case Scenario
Describe how PB is currently carried out, defining where possible:	Describe how the integration of the EMPATIA platform could transform the PB case taking into account:
- The channels used to engage citizens (i.e assemblies,	- Desirable changes
focus groups, online forum; form online, mobile phones, etc)	- Possible risks
- The current use of ICT	
	If you think it is useful, you can add more than one alternative scenario
	omoo

games	
State of the Art:	Use Case Scenario
Describe how PB is currently carried out, defining where possible:	Describe how the integration of the EMPATIA platform could transform the PB case taking into account:
- The channels used to engage citizens (i.e assemblies,	- Desirable changes
focus groups, online forum; form online, mobile phones, etc)	- Possible risks
	if you trink it is useful, you can add more than one alternative scenario

Slide 6 is repeated for each stage of the PB cycle planned.

ANNEX D: IODP crowd mapping survey

Introduction

In recent years many cities started to integrate multiple channels of engagement - from public consultations to issue reporting mechanisms. In some cities such integration is implemented via an office or a city department that organizes all the engagement activities of the city. In some cities the integration makes use of a digital platform that collects and integrates all the data of participants, while in other cities engagement processes are kept separate. These experiences have been showing a patchwork diffusion of digital technologies for engagement, with both effective and not so effective results.

The objective of this exploratory survey is to map a variety of participatory processes implemented in each city. We aim at gathering information from members of the IODP network about the current state of implementation of multichannel engagement and the adoption of digital tools for engagement. The survey is divided in 5 groups of questions and takes approximately 5 minutes to complete.

Survey – Page 1

	Face-to-face	Digital	Hybrid	Other
	ICT is used only for informational purposes	the majority of processes are conducted via a digital platform (SMS or Web or app)	the process has two ways to participate, one that is face-to-face and one that is digital	(please briefly explain how the process work)
City-wide Participatory Budgeting				
District Participatory Budgeting				
Youth Participatory Budgeting				
Participatory Urban Planning				

What kind of engagement and participatory processes were, or are being, implemented in your city?

Public consultations on large public policies (<i>e.g.</i> citizens juries, town hall meetings, deliberative polls, <i>etc</i> .)		
Consultations of civil society groups and organizations		
Consultation based on randomly selected panel of citizens (e.g. citizens juries, deliberative polls, citizens' assemblies etc.)		
Issue reporting (<i>e.g.</i> fix my street, or telephone green line)		
Special programs to engage difficult to reach populations (<i>e.g.</i> homeless, drug addicts, etc.)		
Citizen Science programs (e.g. to measure pollution)		
Community currency		
Small grant programs		
Hackatons		
Transparency & accountability programs		
Citizens' Scorecard programs (<i>e.g.</i> citizens write reports on the functioning of local health clinics)		
Participatory monitoring programs (<i>e.g.</i> citizens participate in anti-corruption		

monitoring process)		
Other (please explain)		

Survey – Page 2

What was the governance structure of the previous engagement processes in your city?

Different city offices managed each of their own engagement processes separately

There is a communication and engagement office that supports other city offices in their engagement processes

There is a centralized office that develops and manages the majority of engagement processes of the city.

□ Other [Box: Please explain]

Survey – Page 3

Does your city have a platform for citizens' participation that goes beyond providing information online on engagement processes?

No, there is only information online, all engagement processes are face-to-face.

Yes, the city offer a website with various digital engagement processes in which the user can select the process they want to participate (for example decide.madrid.es).

Yes, the city has different websites that offer separate digital participatory processes (for example, an issue reporting software and a digital public consultation process, such as Boston Urban Mechanics).

Other [Box: Please explain]

Survey – Page 4

Does your city have mechanisms to encourage digital participation for citizens with limited digital access and/or skills?

No

Yes, there is a bus that goes around the city with computers for people to use

Yes, there are digital kiosks in public buildings/spaces (*e.g.* public libraries)

Yes, the city offers capacity building classes

Yes, there is an app targeted at mobile phone

Other [Box: Please explain]

Survey – Page 5

Has your city experimented in the past with some digital innovation and then abandoned it because it was too costly, or it had unintended consequences, or it did not generate the expected results?

No

Yes [Box: Please explain]

Invitation – Page 6

Would you be interested in participating in a IODP working group on multichannel engagement?

Yes

[Box asking for:"Name" and "email"]

No

ANNEX E: E-deliberation randomized controlled trial

This annex contain a spinoff the EMPATIA plroject that was recently funded by the Templeton foundation and that will be conducted by Graham Smith a member of our research board. The project will explore different e-deliberation technologies with a large multi user testing. It will employ as integrator the EMPATIA platform. The grant was focused on e-deliberation in comments in online media thus the user testing will focus on such application, but the results will be relevant for any application of e-deliberation. The grant assigned 225000 USD to the project. The experiment will be deployed in the spring of 2018.

Introduction

The public sphere around media outlets offers many examples of dysfunctional behaviors that undercut the intellectual humility of public discourse. This is particularly the case with online public comments sections on news sites. This project aims at utilizing a large-scale field experiment to explore how media institutions can adapt e-deliberation platforms to promote more constructive and reasonable dialogue in news comments.

Project members

Core project team

PI: Graham Smith (University of Westminster). Specialist in democratic innovation and experienced research project director.

CoPI: Michael E. Morrell (University of Connecticut). Specialist in deliberation and empathy.

CoPI: Paolo Spada (University of Coimbra). Specialist in e-deliberation and experimental design.

Implementation consultants

Perry Walker (Talk Shop). Specialist in participatory events

Mark Klein (MIT idealab). Specialist in representation-centric platforms

Rachel Collinson (Xtraordinary Integrated Fundraising). Specialist in digital engagement

International research and practice board

Deliberative democracy: Andre Bachtiger (Stuttgart), Hélène Landemore (Yale), Mark Warren (UBC/Participedia)

Social psychology: Hugo Mercier (Neuchâtel)

Digital engagement: Tiago Peixoto (World Bank Digital Engagement Unit)

Technology: David Ascher (Mozilla), Audrie Tang (Taiwan's Digital Minister), Luis Cordero (EMPATIA), Luca Iandoli (Federico II University), Colin Megill (Pol.is & Coral)

Digital media studies and practice: Alfred Moore (Cambridge), John Naughton (Cambridge), Cynthia Farrar (Purple States TV)

Research questions

The central research question we will investigate is: **Can the online environment for news comments be designed to promote reason giving and intellectually humble discourse?**

Sub-questions that flow from this include:

- How does the design of the platform affect the nature of dialogue on news items?
- How does the inducement of empathy through perspective-taking instructions affect the nature of dialogue on news items?
- · What metrics best capture the intellectual humility of dialogue in online interactions?
- How can e-deliberation platforms be integrated into the public engagement strategies of online news organizations?

Background and significance of the research questions

Online news comments tend to be relatively simple asynchronous threads that allow participants to add new comments or to respond directly to the comments of others (Mabande 2010). While these participatory platforms attract thousands of people everyday, they rarely manage to promote high quality discussion and intellectual humility. The existing literature that attempts to explain this phenomenon focuses mostly on the prevalence of incivility in comments (Coe et al 2014, Cheng et al 2015). Many studies investigate the detrimental effect of such incivility (Anderson et al. 2014; Rowe 2015; Rösner et al 2016), and what might foster more civil exchanges, from different authentication practices that alter the participants' perceived anonymity (Santana, 2014; Fredheim et al. 2015), to more dialogic engagement (Stroud et al. 2015) and cognitive cues interventions (Manosevitch et al.
2014). We could find no research, however, that focuses on the impact of the design of these participatory spaces on specific metrics of intellectual humility and quality of discussion.

This is a surprising lacuna because a well-developed literature at the intersection of computer science and social science highlights how asynchronous conversation-centric tools identical to the ones used in online comments often promote dysfunctional emergent behaviors that can undercut deeply the quality of discourse. This includes strong group polarization (Sunstein 2006; Chen 2013), informational cascades (Hansen et al. 2013), low signal to-noise ratio (Cotton and Yorke 2006), information overload (Losee 1989), and scattered content, redundancy, and non-collaborativeness (Klein et al. 2007). Recently, drawing on insights from the theory and practice of deliberative democracy, collective intelligence and informal logic, scholars and practitioners have begun to design and experiment with online platforms that aim to solve these problems, often promoting traits and behaviors associated with intellectually humble dialogue and high quality deliberation (landoli et al. 2014).

We are particularly interested in platforms that provide visual representations of dialogue as a key to promoting good deliberation. We believe that these *representation-centric collaborative platforms* can overcome the shortcomings of *conversation-centric tools* by supporting structured interaction and the creation of shared knowledge artefacts (landoli et al. 2015). Representation-centric collaborative platforms curate content by *topic* rather than by time, and represent a discussion as a map or network consisting of alternative *positions* on an issue and/or pro and con *arguments* for the proposed ideas.

Studies show that such representations encourage participants to clarify their thinking (Brna et al. 2001) and make it visible to others (Bell 1997); and foster information and knowledge awareness (Englemann and Hesse 2010), provide resources for conversation (Roschelle, 1996) and function as a 'convergence artefact' that expresses the group's emerging shared understandings (Suthers 2001). By displaying knowledge in a 'visual space', argument maps have been found to support several cognitive as well as practical tasks such as sense-making (Okada and Buckingham Shum 2010), distributed decision-making (Karacapilidis and Papadias 2001), and problem-solving (Cho and Jonassen 2002). The visualization of competing positions and arguments may be suited particularly to fostering more reasonable dialogue on contentious issues (Spada et al. 2016).

While significant research explores the ability of representation-centric platforms to promote deliberations in small simulations and mini-publics (Gürkan et al. 2010), this project is novel in exploring the potential of adapting these tools to improve the intellectual humility of dialogue in online news commentary. The study will investigate the potential of two different platforms, *Deliberatorium* and

Poli.is, that we have chosen because early pilots suggest their potential to cultivate intellectually humble discourse, and because they are designed to promote different forms of dialogue: *Delibera-torium* is more restrictive in its requirements of reason-giving; *Pol.is* more open to a broader range of dialogue types.

The *Deliberatorium* is one of the most flexible representation-centric platforms and is designed to enable the collaborative creation of an argument map that promotes dispassionate reasoning. Developed by Mark Klein (MIT), it is based on the widely applied Issue-Based Information System (IBIS) argumentation formalism (Conklin 2006). The elements of an IBIS argument map are issues (or questions that need to be answered), ideas (or solutions to the issues) and arguments which support or object to a given idea or another argument. Users can participate by creating any of the elements allowed by the formalism or commenting on and asking for the modification of one element. The *Deliberatorium* includes an algorithm that suggests elements of the map that might be of interest to participants.

Pol.is, by comparison, emerged from the experience of Occupy Wall Street and is much simpler in character. Participants are not required to obey any formalism; rather they simply provide a comment or agree or disagree with other participants' content. A machine learning algorithm then generates a map that visualizes clusters of agreements, together with the connections among people. While not yet verified scientifically, the developers of *Pol.is* argue that it induces a more emotional understanding of the perspective of others, highlighting networks of opinion and allowing participants to reflect on and change their position within the network.

The extent to which these platforms can promote more intellectually humble discussion in the setting of news media comments is yet to be tested systematically. We are able, however, to draw on the experience of early field pilots in different domains. The *Deliberatorium* was used by 400 members of the Italian Democratic Party to debate a proposal for electoral reform (Klein et al. 2012b); *Pol.is* was used by a social movement in Taiwan (g0v) where 1,800 people contributed to the definition of an Uber regulation (Tang 2016, Allegretti et al 2016). Both pilots suggest the potential of representation-centric platforms to support more intellectually humble dialogue, but a systematic comparison of their capacities has not been undertaken.

In addition to investigating platform designs, we are also interested in the effects individual empathy may have on online discourse. Inducing empathy through perspective-taking instructions has a long history in social psychology (*e.g.*, Batson et al. 1997; Davis et al. 2004; Stotland 1969); researchers have demonstrated that this can lead to lower attribution bias (Melburg et al. 1984), better outgroup

evaluations (Galinsky and Moskowitz 2000), increases in helping others (Myers et al. 2014), less prejudice (Galinsky and Ku 2004), and reductions in everyday bad behaviors (Hodges et al. 2011).

Although scholars have not studied the relationship between empathy-induced perspective taking and intellectually humble dialogue, some have examined predispositions to empathy and deliberation. This research provides evidence that individuals high on perspective-taking (Davis 1980) are more tolerant when exposed to rationales for dissonant views (Mutz 2006), and groups composed of individuals high in empathic concern and perspective-taking demonstrate more open-mindedness, mutual respect, and commitment to continued deliberation (Morrell 2010). These studies suggest that empathy can encourage intellectually humble public discourse.

This project will be the first field experiment to compare and contrast the performance of different online designs, including structures of comment platforms and empathy induction through perspective-taking instructions, in creating a space for more thoughtful, reasonable and intellectually humble discourse about pressing issues of public concern.

Congruence of the project with the RFP goals

News comments sections of media outlets are a prominent public space that realize to an unfortunate extent the range of 'traits and behaviors opposed to intellectual humility' that are laid out in the RFP: 'closed-mindedness, overconfidence in one's opinions and intellectual powers, dogmatism, an exaggerated sense of intellectual autonomy, reluctance to pursue and consider new evidence, intellectual arrogance, and intellectual vanity.' In experimenting with emerging representation-centric platforms, the project aims to demonstrate 'clear strategies for promoting intellectual humility in public discourse'. On the one hand, the project will generate novel and rigorous academic research that will contribute to the debate on the impact of platform design and individual empathy on intellectual humility and quality of deliberation in online news comments. On the other hand, the project will also generate practical evidence for media outlets on how to improve their comments platforms to support more constructive dialogue about divisive issues by 'developing a scalable model' of how e-deliberation platforms can be utilized and 'assessing the success and impact' of these platforms through a suite of metrics. These findings will have broader application, beyond news outlets, for institutions using similar engagement platforms.

This proposal is an explicit response to core topics raised within the RFP. In relation to Question 1, it investigates the characteristics of online engagement that aim to 'overcome the barriers that prevent people from engaging in open-minded, intellectually humble dialogue over socially and culturally divisive issues'. The RFP specifically highlights media institutions, and our focus on the design and prac-

tice of news comments is part of the process by which this important element of media practice can 'be structured to promote more constructive, and less strident, dialogue over issues of ultimate concern'. In relation to Question 2, the focus on the integration of e-deliberation platforms into news commentary means that the project will offer scalable interventions that aim to be 'effective...in promoting more reason-based, intellectually humble dialogue'. In analyzing the relative merits of the platforms, the project will also field test a set of 'metrics...to determine when and why there is a lack (or abundance) of intellectual humility and meaningful public discourse over particular divisive issues'.

Key research hypotheses

Drawing from existing theoretical and empirical work on online platforms, the two pilot studies, and previous research on empathy, we expect that both representation-centric platforms will encourage more behaviors and traits associated with intellectual humility than a status quo platform similar to those adopted by the Guardian and New York Times. We expect that the more structured form of dialogue generated by the *Deliberatorium*, since it reduces the emotional import of deliberation, will encourage these behavoirs and traits to a greater extent than the more open *Pol.is* platform. Finally, we expect that inducing empathy will increase intellectually humble discourse across all platforms.

Our key working hypotheses are thus:

<u>H1</u>. Deliberatorium will encourage more intellectually humble dialogue than Pol.is.

H2. Pol.is will encourage more intellectually humble dialogue than status quo technology.

<u>H3</u>. Inducing empathy in individuals through perspective-taking instructions will increase intellectually humble dialogue.

In addition to testing these hypotheses, we will also investigate interaction effects between platform design and empathy inducement.

Methodology

This project will utilize a large-scale, 3x2 fully factorial field experiment. The first factor will be platform design (Deliberatorium/Pol.is/control) and the second empathy induction (perspective-taking instructions/no perspective-taking instructions). Only through such experimental design can we assess and compare systematically the potential of the two representation-centric platforms and the empathy inducing perspective-taking instructions to encourage intellectually humble discourse in news commentary.

We will recruit subjects through a global engagement process managed by Rachel Collinson inviting readers of major national newspapers and interested individuals to participate in an experiment to explore the future of public engagement with news media. It will use a combination of Facebook and Google ads that target individuals with specific interests, and a more traditional outreach strategy focusing on the numerous associations and online groups interested in e-deliberation, media, journalism and innovative discussion technologies. We will leverage the extensive networks of the Mozilla Foundation, the Coral Project, Participedia, EMPATIA and gOv to reach out to practitioners, scholars and technologists who can amplify our message to interested citizens. Potential participants will enroll on a dedicated project website where we will administer a pre-test survey that will include demographic questions and measures of participants' intellectual humility, empathy and familiarity with online deliberations.

Our realistic expectation is that we can achieve a sample of at least 3,000 participants. The pilots of the two platforms in Italy and Taiwan generated 600 and 1,800 participants, respectively, without professional advertising and with samples drawn from smaller populations. This study's population of English speakers in the world is larger and we have a dedicated advertising budget, experienced engagement consultant and significant global networks. It is not unreasonable to expect a number greater than 3,000, in which case we will increase the size and number of experimental discussion groups, improving our ability to test our research questions.

Assuming an enrollment of 3,000, we will randomly assign participants to 30 groups of 100 participants each with stratification based upon gender, age, education and intellectual humility. We will then randomly assign these thirty groups to participate in one of the following simulated online newspaper discussion platforms:

(1) a control platform that mimics the environment currently used by newspapers such as the Guardian and the New York Times;

(2) an adaptation of the *Deliberatorium* platform;

(3) an adaptation of the *Pol.is* platform.

Within each platform, we will randomly assign half the groups to the empathy-inducing treatment by providing individuals with perspective-taking instructions.

In each environment the participants will read news articles generated by the members of our supporting network of journalists, scholars and bloggers; each platform will also include space for com-

ments and deliberation. The articles will cover a varying range of political subjects that are timely and salient globally. All groups will be exposed to the same articles to control for topic effects.

Replicating the successful experience of the Italian and Taiwanese pilots, we plan to engage participants over an 8-week period, during which time subjects' interactions with the platforms will be tracked. Participants will be surveyed before, at the end, and at various points during the process as well as 6 months after the completion of the experiment. The practice of multi-wave surveying allows evaluation of the development of and changes in attitudes and characteristics relevant to intellectual humility *during* the process that a simple pre/post design would miss. The 6-month survey will measure persistence of treatment effects. Surveys will not only focus on metrics of intellectual humility, but also user experience and usability of the platforms to inform future design.

In adapting a suite of measures for the analysis of online engagement, we conceptualize intellectual humility as a 'polythetic concept', where members of a class have shared characteristics, none of which are necessary and sufficient properties (Kellenberger 2010, 324). Lynch et al. (n.d.) argue that there are two 'camps' of thinking on intellectual humility (IH): 'IH realism' views it as 'a distinct and unified kind of psychological trait', while 'IH pluralism' sees intellectual humility as naming 'a cluster or family of features that are domain-specific in their application' (Lynch et al. n.d., 2). Our view is consonant with the latter approach, and since the domain of this study is public discourse surrounding news reporting, it resonates with Button's idea of 'democratic humility', in 'which we allow that which is outside of the self or group to enter in and work upon us, at least for a time'; this involves 'cognitive/affective openness' and 'a spirit of attentiveness and active listening' to others (2005, 850). Key elements of humility in this vein mirror many of those offered by Tangney: an accurate assessment of one's abilities; an ability to acknowledge one's gaps in knowledge and limitations; openness to new ideas, contradictory information, and advice; and an appreciation of the many different ways that people and things can contribute to the world (2009, 483). Although platform designers have not engaged with the research on intellectual humility, this conceptualization resonates with their approaches to public deliberation, and it is thus uniquely appropriate to this study.

Risk management and research ethics

We will seek approval for all research through the the University of Westminster's Research Ethics and Governance Frameworks and the University of Connecticut's Institutional Review Board.

Project timeline

In delivering the field experiment, the project can be divided into three phases: (1) preparation; (2) experiment; (3) analysis and knowledge transfer.

1. Preparation (January to December 2017)

The year-long preparation phase focuses on four elements: user testing of the news comments interface platforms, adaptation and verification of measurement items, creation of promotional materials, and platform facilitator training.

Initial design options (January to May 2017)

Spada will lead the work with our design consultants and specialists on the interdisciplinary advisory board to develop feasible options for how the representation-centric platforms can be integrated into the news comments environment of media organizations. Design options will be generated through a series of online workshops following an established procedure that we have already successfully implemented in previous large international projects to collect feedback and ideas from pro-bono collaborators. The project has selected partners with different sets of skills and capacities to advise in the design process:

- Mark Klein, MIT Center for Collective Intelligence, developer of *Deliberatorium*, draws on extensive experience designing representation centric platforms.
- David Asher, former CEO of Mozilla messaging, draws on extensive experience in open source software development.
- Audrie Tang, digital minister of Taiwan, developer of *vTaiwan* and activist in g0v (a global online community dedicated to new forms of digital democracy).
- Luis Cordero, expert in system integration; currently working with the EMPATIA consortium developing a platform to integrate multiple engagement tools.
- Prof. Luca landoli, expert in digital platform ergonomics.
- Colin Megill, CEO of Pol.is and front-end developer of Coral.

User experience testing and measurement adaptation (June to October 2017)

The initial platform options will be tested and developed further in light of the input from different user groups. A series of separate participatory design events will be held with citizens, journalists and media technology specialists. A larger event with technology experts will be hosted at the Mozilla

Festival in London (October 2017). Each activity will be followed by individual user experience (UX) testing sessions. The delivery of these participatory events will be supported by one of our implementation consultants, Perry Walker, who has extensive experience in participatory design work. This will be complemented with engagement with the online Coral project community that includes more than 250 practitioners, many working as community managers or technology developers in international media organisations. Overall, the process will generate insights into the needs and expectations of different stakeholders in the process – citizens, journalists, technologists – and will inform the final adaptation of *Deliberatorium* and *Pol.is* for the online news environment.

Running alongside the platform testing, Morrell will lead the adaptation of a suite of measures designed specifically for analyzing intellectual humility in online platforms. We plan to make use of previous work funded by the Templeton Foundation, including the General Intellectual Humility Scale (Leary et al. 2016) and the Comprehensive Intellectual Humility Scale (Krumrei-Mancuso and Rouse 2016). Group level metrics will also draw on the work of Klein (2012a), whose research in web science focuses on developing metrics and tracking algorithms for representation-centric platforms. The first deliverable of the project will be an adapted set of thoroughly-tested metrics useful for evaluating intellectual humility during online discussions.

Facilitator training and final testing (November-December 2017)

Drawing on the lessons from the user experience testing, a final beta design for both platforms will be developed. At the same time, we will train volunteer facilitators for the experiment. These facilitators will be recruited from graduate students in universities and online communities who members of the research team have already worked with in past experiments. The facilitators will then conduct a final test of the platform with undergraduates from the Universities of Connecticut and Westminster acting as participants as part of relevant teaching modules.

Members of the research board and extended support network will be invited to explore the platforms before the experiment begins as part of the final testing and will be encouraged to write blogs and articles about the experiment to contribute to the engagement campaign.

Preparation of promotional material and engagement campaign planning (June to December 2017)

The preparation phase will provide an opportunity to raise the profile of the project amongst prominent journalists, media experts, participation experts, technologists, anti-troll movements and other actors interested in improving online discussion. This engagement will be important for the longterm impact of the project, but also provide a source of textual and video endorsements that can be used during the engagement campaign. During this period Bugleux, a video artist, will develop short

video promos and other material for engagement in collaboration with Collinson, a veteran of the online engagement industry and currently one of the trainers of the FairSay e-campaigning forum, one of the oldest community of digital campaigners.

2. Experimental phase (January to April 2018)

The first two months of this period will focus on recruiting experimental subjects. The second two months will be dedicated to the implementation of the experiment.

3. Data analysis, writing and knowledge transfer (May to December 2018)

In the final phase of the project, our focus turns to the statistical analysis of the data collected and the production of deliverables. We plan to present the results of our experiment at international social science conferences and at technologist and practitioner events and conferences in the US and in Europe.

The core project team aims to generate five types of deliverable:

- Academic publications a substantive findings paper to be submitted to leading US political science journal; a paper on the design process for a leading ICT journal; a methodological paper for a research methods journal.
- Media policy brief, video and events with media outlets to promote key findings and recommendations.
- Software two open source platforms for news comments
- Metrics a field tested set of metrics for the analysis of intellectual humility at the individual and group level in online environments.
- Open access database the anonymized data will be housed on the repository of Participedia to ensure the widest access by the academic and other research communities.

Giving our interdisciplinary board early access to the the data to conduct analysis will extend the reach of the project. Additional deliverables will relate to platform development and ergonomics (Klein, Tang, Cordero, Iandoli, and Megill) and deliberative democracy (Landemore, Bachtiger, Farrar, Moore). We will exploit the various networks of the research and practice board, including Coral, EMPATIA, g0v Mozilla and Participedia to ensure the widest dissemination of knowledge.

Concluding remarks

This project is novel in its ambition to adapt representation-centric collaborative platforms to improve the intellectual humility of public discourse in online news comments. The experimental design not only promises to generate high quality social scientific knowledge, but the development of a

scalable model for how news media institutions (and others) can incorporate comment platforms that promote reason-based, intellectually humble dialogue.



ANNEX F: A Review of Data Visualization and Managements Tools



A Review of Data Visualization and

Managements Tools

Introduction

This report aims at providing guidance on the selection of Open Data platforms (i.e. web-based systems used to make data available to end users) with data management and visualization capabilities that could potentially be integrated with the EMPATIA platform.

In general terms, the EMPATIA plroject aims at delivering an integrated platform that allows municipalities to manage content derived from participatory processes, with special focus on participatory budgeting. Among some of the basic requirements for the EMPATIA platform architecture are data management and visualization features (e.g. website content, theming, page requests, etc.) combined with data cataloguing capabilities (e.g. accessing, editing, listing, and searching datasets).

While defining the requirements for data management and visualization within the architecture of the EMPATIA platform it is necessary emphasize that it can be contracted and deployed in two different ways: either as a service (i.e. EMPATIAaaS) or as a local installation, shaping in each case of use a different distribution of responsibilities regarding data ownership and management (see D1.3 and the Data Management Plan of EMPATIA).

Nonetheless, as stated in EMPATIA's public deliverable D2.3 – Platform Architecture and Requirements – EMPATIA architecture was designed in ways to promote the integration and interoperability with other existing platforms and tools, allowing the export of data through public APIs that comply with REST and JSON technologies, thus ensuring the openness of the generated data.

In this way, the EMPATIA platform could be integrated with external Open Data platforms that allow publishing, management, and sharing of open datasets in a unified and central repository. Data released from distinct deployments of the EMPATIA platform – that are, for instance, managed and hosted independently – could be federated into a single central portal, where data is displayed in a standardized user interface. Thus, data visualization would be unified, allowing users to search, filter and facet through numerous datasets in an integrated way. With that said, a coordinated and comprehensive approach for data management and visualization is crucial to leverage data and support better decision-making on participatory processes.

Report structure

This report is comprised by 3 distinct sections.

In the first section, standard EMPATIA scenarios on data management and visualization are detailed in the perspectives of managers and users alike.

In the second section, a targeted research overview of a few key Open Data platforms with data management and visualization capabilities is presented (i.e. CKAN, DKAN and Socrata). It provides a comparison of their general capabilities, perceived strengths, potential limitations, applicable data sources, and output of results as applied to the EMPATIA platform. Some examples on how the EMPATIA platform could benefit from some of the features presented are highlighted within subsequently separated text boxes.

Finally, in the third section, recommendations are drawn on the most well-suited Open Data platform, based on the reasoning laid out in this report, and best integration scheme with the EMPATIA platform.

Standard EMPATIA use scenarios on data management and visualization

In this section we present possible use scenarios for data management and visualization within EMPATIA future uses, using the perspective of two most relevant kind of users of the platform:

- The manager of the process, intended as the figure in charge of this core player do not necessarily have advanced technological skills and should be put in condition to manage data through a dedicated WUI. The manager has also the role of deciding what kind of data (between those collected and generated by the EMPATIA platform) should be made public, according to the policies for open data and privacy protection existing at local level.
- The user of the platform representing the average inhabitants of the place where the participatory process is delivered – should be able to access datasets and infographics that can expand his/her understanding of the process. Users should have the opportunity to reuse the knowledge already generated in previous processes and archived in the repositories of EM-PATIA. In standard scenarios, user should not be required to access the backend of the platform in order to access its open data.

Perspective of the manager

Generally speaking, the front end interface of the EMPATIA platform is associated with its browser and everything users can see and interact with, whereas the back end interface is associated with the management of its database.

With that said, data management is essential to acquire, preprocess, aggregate, cleanse, repair, restructure and standardize data in the back end, for presentation and consumption in the front end. The large amount of data derived from PB processes is mostly unstructured and it requires different approaches to extract useful information from it to be displayed in an useful and understandable format.

In order to do that, it is essential for managers to be equipped with data mining features to extract data; powerful back end analytics that is able to collect log data and build a full analytics pipeline; and interactive data visualization tools to convey the information into graphs, charts or maps, highlighting patterns and showcasing clusters and connections in the data.

In addition to that, a data manager of the EMPATIA platform generally correspond to the formal role of "data processor" for privacy purposes. This role requires one to ensure certain responsibilities. Any dataset that includes personal, potentially personally-identifiable information, and sensitive data, should undergo adequate security measures and protocols by the Data Controller in accordance to the provisions detailed in the privacy policies, and established for any Use Case of EMPATIA. For this reason the backend of data management tools should allow the manager to execute anonymization protocols (as for examples procedures of aggregation and clusterization of raw data) and offer advanced features of publication able to control permissions and access of users and third parties.

Perspective of the user

Within the front end interface of the EMPATIA platform, data visualization represents an important feature to convey, summarize and display information, trends, patterns, gaps and insights about large amounts of collected data in visually appealing ways, through the use of easy-to-read graphs, charts, key performance indicators, etc.

Data can be georeferenced into maps for geographical representation, associated with predefined categories, where users are able to tag and share through social network platforms, for instance, in order to enhance the visibility of the dataset.

By doing so, the main outcome of data visualization within the front end dimension of the EMPATIA platform is to display information in multiple visual formats to enhance transparency, and thus encourage increased engagement and informed decision-making in participatory processes. Elevating data into digestible analytics that provide instant performance visibility to users can only be achieved

if the correct data visualization approach is chosen, which requires a deep understanding on how to best represent the message that is being conveyed and its audience.

Data collected through the EMPATIA platform

In terms of data collect through the EMPATIA platform, Table 1 provides a descriptive overview on the main categories:

Category	Description	EMPATIA standards	Ethical review
Personal Data	Personal and socio- demographic data collected during registration and throughout the use of EMPATIA, with the main purpose of user identity verification	Personal and socio-demographic data is collected under each deployment's privacy policy. In general, the following datasets including personal and socio- demographic data are generated under ordinary use of EMPATIA, which include:	Data must be anonymized before publication

Table 1: Data collected through the EMPATIA platform

Process- related data	Data generated in any consultation process managed through EMPATIA	 Topics include: Ideas/proposals/projects: text and any other media generated and developed within each consultation process managed through EMPATIA Preferences/votes: data generated by the interac- tion between users and topics in any participatory process (possible multiple voting session for each process) 	Data that natively public does not require anonymization, whereas data that is locally defined generally requires anonymization
Surveys	Surveys and questionnaires are intended to be for voluntary use	 Questionnaires and surveys to the users regarding: Users experience with the service Other topics related to the democratic innovations managed through EMPA-TIA 	Data collected through surveys and questionnaires should be managed as additional personal data
Non-PII (Personally Identifiable Information)	Non-PII usually refers to the information that web browsers and servers typically make available, such as: Ad Views, Analytics, Browser Information, Cookie Data, Date/Time, Demographic Data, Hardware/Software Type, Internet Service	Data collected through analytics extensions (e.g. Piwik or Google Analytics), including browser type, language preference, referring site and the date and time of each visitor request. EMPATIA does not use such information to identify its visitors and does not disclose such information, adopting the same security and privacy measures described in the policy for personal	N/A

	Provider, Interaction Data, Page Views, Serving Domains, etc.	data	
Potentially PII (Personally- Identifiable Information)	It refers to: EU-IP Address, EU-Unique Device ID, Search History, Location Based Data, Clickstream Data, etc.	Data collected through the analytics (Piwik or Google analytics). EMPATIA does not use such information to identify its visitors and does not disclose such information, adopting the same security and privacy measures described in this policy for personal data	Data must be anonymized before publication
Other user generated content	Content (test or any other media) generated by users through their activity on the platform	User generated content is managed according to the Terms of Use of each EMPATIA adaptation, including: News and events generat- ed by users Comments Other content generated in the user profile area	Data that is natively public does not require anonymization

Data to be published in EMPATIA

EMPATIA follows the Open Access principles as defined by the European Union's Horizon 2020 Research and Innovation programme. Data collected and generated through the use of EMPATIA's platform shall be released in a public data repository and will be taken measures to make it possible for third parties to access, mine, reproduce and disseminate for any non-commercial purpose, free of charge for any user.

Yet, EMPATIA will only release non-personally-identifying information, clustering and aggregating information in a manner that will not be possible to identify personal data. Coming from a research standpoint EMPATIA team recommends that the following data should be published:

- anonymized data regarding the overall population of the platform and the samples of participants that are involved in any process delivered through the platform. As a default it includes :
 - a. gender
 - b. age
 - c. education
 - d. neighborhood
- 2) Data regarding topics generated within each participatory process (e.g. idea, proposals, project, etc) including all the public information associated to each topic along its development. It includes, for example, not only the original information at the moment of submission but also the data regarding its technical analysis, comments and multimedia annexes (e.g. pictures and video) created by other than the original proponents.
- 3) Data regarding voting session (at any level of a given process: e.g. preliminary vote, filtering vote, and final vote) that are associated to a set of topics. Data should be released disaggregated according to the parameters defined for the users point 1).
- 4) Non-identifiable information regarding the behaviour of users on the platform, collected through trackers and analytics such as Google Analytics and Piwik (e.g. IP address, latency, number of visits, number of pages visited, etc.).

Best practices associated with open source data management and visualization platforms (back end and front end dimensions)

This section analyses in detail three Open Data platforms (i.e. CKAN, DKAN and Socrata) that go beyond data visualization into visual analytics. These tools do not only enable the development of charts, graphs or maps in the back end interface, but also query, visually, and interact with data within the front end interface.

The conducted research aimed at achieving the following main objectives:

- Identification of functional aspects of the analyzed Open Data platforms, with deployment examples associated with the integration with EMPATIA
- Identification of standards and license models
- Support for Open Data access, assuring the interoperability with other platforms and respecting ethical principles

Given that no Open Data platform is created in equal terms, no single platform is significantly better than the others in every analyzed aspect. Open Data platforms actually mainly differentiate in their features and capabilities to use different data sources to interact, render, and visualize data. In this sense, the final recommendation provided in the last session of this report will be solely based on the solution that is most suitable for EMPATIA's use cases and needs.

Some aspects of the Open Data platforms that were analyzed are described below:

- Data formats: data formats supported by query tools
- Exporting capabilities: these include graphic formats, coded snippets to be incorporated into web pages or into apps via APIs, etc.
- Privacy concerns: Open Data access
- Data visualization: existing built-in graphing or mapping tools
- Search: existing search engines to sort data by different categories, keywords, geospatial selection, etc.
- Metadata: possibility to display key metadata (e.g. publication date)
- Data licenses: type of data licenses for each dataset
- Standards compliance: existing built-in support for various standards (e.g. data formats, such as .csv, .xml, .JSON, and metadata)
- APIs: available APIs to allow external data harvesting, discovery, analysis, cataloging through software
- Storage: possibility to host distinct data sources
- Security/Authorization: assignment of different access levels to different users as a security measure (e.g. who can manage the website, who can upload data, who can edit or delete uploaded data, who can view private data, etc.)
- Data Discovery: preview data prior to download through charts, tables, graphs or maps
- Usage Statistics: delivery of usage statistics through links with Google Analytics or Piwik

• Flexibility: how extensible the Open Data platform is beyond its core feature set

Finally, it is worth highlighting that all recommendations regarding the Open Data platforms described in this report should not overlooked the social, ethical and legal analysis established by the EMPATIA consortium¹⁵, as well as the risks associated with dataset management¹⁶. Any dataset that includes personal, potentially personally-identifiable information, and sensitive data, should undergo adequate security measures and protocols by the Data Controller in accordance to the provisions detailed in the privacy policies. Hence, further technical evaluations should be applied, when considering the integrations of the available features of these platforms into EMPATIA.

A summary of findings is presented in Table 2, which included analysis of the state of the art of CKAN, DKAN and SODA API.

Product (technology)	Vendor/sponsor	Delivery model	Data management	Support community
CKAN (Python)	Open Knowledge Foundation	Open source (cloud hosting available)	All-in-one or federated	Python developer community
DKAN (PHP/Drupal)	Nuams	Open source (cloud hosting available)	All-in-one or federated	Drupal developer community
Socrata	Socrata	SaaS	All-in-one or federated	Vendor

Table 2: Open Data platforms comparison matrix¹⁷

CKAN

¹⁵ Available at the Delivery 1.3, "Social, Ethical and Legal analysis

¹⁶ Described in EMPATIA's Data Management Plan

¹⁷ Adapted from World Bank (2014). Technology Options for Open Government Data Platforms

CKAN^{18 19 20} (i.e. Comprehensive Knowledge Archive Network) is an open-source web-based data portal platform supported by the Open Knowledge Foundation that provides integrative tools to efficiently manage and publish data from different records, often connecting with external Content Management Systems (CMS) to create front end interfaces.

According to CKAN's website²¹, given that CKAN is an open source software project, anyone can download and use it without paying license fees, contribute to its further development or freely modify/customize the code with no associated costs. CKAN services can be hosted in a centralized way on CES's dedicated server or on cloud-based infrastructures, but since it is an open source software, it requires IT people to implement, operate and maintain IT logistics²². Additionally, from all the existing open source licenses²³, CKAN is licensed under Affero GNU General Public License (GPL) v3.0^{24 25}.

When it comes to integrating CKAN with an external front end²⁶, CKAN offers a robust and customizable API that allows the side-by-side integration with CMS (e.g. Drupal, Django, etc.), thus elevating the capabilities to visualize, render and manage data. CKAN also advises that side by side integration is preferable over a façade integration (i.e. when CKAN and the CMS present different parts of the portal instead of one system being operated behind the other), as this approach results in less operational work to reproduce features between systems²⁷. This gives data managers extra customization capabilities when styling front-end web pages, making them more maintainable, themable and extendable.

As listed in its website²⁸, CKAN's system is built with the following technical specifications:

- Back end: Python
- Front end: Javascript
- Object-Relational Mapping (ORM): Pylons and SQLAlchemy
- Database engine: PostgreSQL

¹⁸ https://ckan.org/faq/

¹⁹ <u>https://github.com/ckan/ckan</u>

²⁰ http://docs.ckan.org/en/ckan-1.4.3/about.html

²¹ http://docs.ckan.org/en/ckan-1.4.3/about.html

²² https://opendata.stackexchange.com/questions/1517/ckan-vs-socrata

²³ http://opensource.org

²⁴ https://ckan.org/faq/

²⁵ http://www.fsf.org/licensing/licenses/agpl-3.0.html

²⁶ https://github.com/ckan/ckan/wiki/CKAN-and-CMS-Integration

²⁷ https://github.com/ckan/ckan/wiki/CKAN-and-CMS-Integration

²⁸ https://ckan.org/developers/about-ckan/

Search engine: SOLR

Data management

When using CKAN, the first step is to upload data into its management interface, which can have any format. A rich RESTful API²⁹ ensures that the stored dataset does not need to be processed by data managers, allowing them to instantly access, query, retrieve and use data right after it has been uploaded, besides proving full searching capabilities, dataset information, and usage statistics.

According to CKAN's website³⁰, its harvesting extension allows data managers to import data from external repositories, such as: simple HTML index pages; web accessible folders; existing web catalogues; geospatial CSW servers; ArcGIS; geoportal servers and Z39.50 databases; and other CKAN instances.

Example applied to EMPATIA

Importing and harvesting data catalogs from external repositories (e.g. data catalogs from national statistical institutes and municipality-owned citizen data) can aid city managers to contextualize data gathered through the EMPATIA platform as well as aiding targeted Participatory Budgeting process analyses. As illustration, accurate demographic comparison between total number of residents vs total number of participants of a given municipal Participatory Budgeting cycle allows to determine how inclusive the process was. This kind of information is crucial to determine structural and communication approaches in order to run more inclusive and representative PB processes.

Then, CKAN's Data Explorer module³¹ allows the displaying, querying, filtering, graphing and mapping of structured data, as illustrated in Figure 1.

²⁹ http://docs.ckan.org/en/ckan-1.7.4/api.html

³⁰ https://github.com/ckan/ckanext-harvest

³¹ https://github.com/rufuspollock/ckan-explorer

Grid C	araph Map									
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_id	county	Murder	Rape	Robbery	Aggrava	Burglary	Larceny	Motor V	Arson	Populati
1	Fairfield	14	172	946	1127	2969	10706	1323	52	931568
2	Hartford	33	186	1000	1280	3688	15151	1577	91	904776
3	Litchfield	0	25	24	120	439	2058	144	14	192309
4	Middlesex	2	22	49	144	395	1720	216	35	163682
5	New Hav	27	125	1352	1604	3576	17163	2506	33	869759
6	New Lon	6	62	108	446	1159	3375	252	29	273482
7	Tolland	1	20	22	54	315	884	74	7	143932
8	Windham	3	19	27	87	364	1014	123	10	115141
9	Fairfield	34	484	947	1276	3223	11598	1514	63	930450
10	Hartford	35	129	1152	1433	4323	16372	2025	140	903692
11	Litchfield	3	42	24	88	521	2290	133	7	192076
12	Middlesex	29	22	45	136	476	1898	200	42	163485
13	New Hav	33	140	1355	1850	4295	18372	2127	58	868716
14	New Lon	7	59	114	490	1056	3520	236	48	273153
15	Tolland	1	25	21	66	370	1028	101	7	143759
16	Windham	1	22	33	71	474	943	105	12	115002
17	Fairfield	32	229	1094	1307	3620	12118	1796	62	927954

Figure 1: CKAN's Data Explorer displays a filterable tableview of structured data

Data visualization

Depending on its format, data can be visualized in CKAN as a grid, as a 2-axis graph or as a geolocated map, as exemplified in Figure 2. Also, if the resource is an image or a web page, it will be displayed directly in the CKAN via built-in previews³².

ts Organisations Groups About Search Q / CSV / Edit DataStore ≡ Views ← All resources
/ CSV / Edit DataStore ≡ Views
DataStore
ne

³² <u>http://docs.ckan.org/en/latest/maintaining/data-viewer.html#id3</u>

Figure 2: CKAN's New View dropdown, which allows to create and edit views for a given dataset

CKAN extension for Chart View³³ allows data managers to create line charts, bar charts or pie charts. It uses Flot Charts³⁴, which is compatible with most browsers.

CKAN extension for Graph Views³⁵ allows for the creation of temporal graphs (i.e. how a given dataset changed over a given period of time) in different formats (e.g. lines, bars, columns, etc.), as illustrated in Figure 3.



Figure 3: Example of CKAN's Graph View dashboard

Example applied to EMPATIA

CKAN's temporal graphs could be useful in conveying information about the evolution of PB processes throughout the years (for instance, in terms of number of participating Council Members; amount of funds allocated to PB; total number of voters, budget delegates, neighborhood assembly participants; etc.), as exemplified in Figure 4:

³³ http://docs.ckan.org/en/latest/maintaining/data-viewer.html

³⁴ http://www.flotcharts.org/

³⁵ http://docs.ckan.org/en/latest/maintaining/data-viewer.html



Figure 4: The growth of PB from Cycles 1 through 3, presented in the A People's Budget Executive Summary for Cycle 3 of NYC PB³⁶

Also, it could be useful in drawing the variation of socio-demographics of voters along PB cycles, such as increased/decreased participation of low-income people, young people, women, people with different education levels, people who reported a barrier to voting in traditional elections, among others.

Geospatial features for data visualization

Furthermore, if the structure dataset contains geotagged information, CKAN's platform allows its visualization and exploration through an integrated Map Viewer module³⁷. This module allows the creation of interactive point maps (in case latitude and longitude fields are provided, as presented in Figure 5) or the visualization of choropleth maps through LeafletJS (using data in GeoJSON format), which is compatible with most browsers.

³⁶ https://cdp.urbanjustice.org/sites/default/files/CDP.WEB.doc_Report_PBNYC-cycle3-ES_20141030.pdf
³⁷ http://extensions.ckan.org/extension/mapviews/



Figure 5: Example of a point map built in CKAN's Map Viewer module

Example applied to EMPATIA

Choropleth maps aggregate the dataset by different zones (e.g. zip code as boundary), shading it to a color scale that normally gets darker with the higher the magnitude of measurement. In this sense, with regards to EMPATIA, this kind of map could be useful to spatially visualize socio-demographic trends across a given region, as illustrated in Figure 6:



Figure 6: Chicago's 49th Ward Educational Attainment (2013), presenting the percentage of population aged 25 and over with a Bachelor's Degree or Higher Level of educational attainment in a choropleth map³⁸

Other examples of Chicago's 49th Ward data being presented in choropleth maps (i.e. percent of Asian/African-American/Latino/White population per neighborhood; land use; median age; and household income) can also be found in the link provided in the footnote.

³⁸ http://www.pbchicago.org/uploads/1/3/5/3/13535542/49th_ward_maps.pdf

Additionally, maps can be created through CartoDB³⁹, an external mapping web application, as illustrated in Figure 7.



Figure 7: Example of a map built through CartoDB with data withdrawn from CKAN

Example applied to EMPATIA

Examples of the use of CartoDB to spatially display data related to PB processes is presented in Figure 8 and Figure 9.

³⁹ http://extensions.ckan.org/extension/cartodbmap/



⁴⁰ goo.gl/hv52bX

⁴¹ https://poojashetty.carto.com/viz/3c83b808-470b-11e5-b7c0-0e5e07bb5d8a/embed_map

Website analytics

As detailed in CKAN-2.7.0 Maintainer's Guide⁴², CKAN's Page View Tracking extension allows data managers to track visits to webpages, which is useful to:

- "Organize datasets by popularity"
- "Highlight popular datasets/resources"
- "Present view counts next to datasets/resources"
- "Present a list of the most popular datasets"
- "Export page-view data to a .csv file"

Additionally, both Google Analytics and Piwik can be integrated into CKAN's platform through different extensions.

The Google Analytics extension⁴³, for instance, allows CKAN to send tracked data to Google Analytics and to retrieve statistics from Google Analytics to be inserted into its pages, as illustrated in Figure 10. By doing so, CKAN Google Analytics Extension webpage⁴⁴ explains that is possible to:

- Perform basic Google Analytics page tracking (i.e. total number of page visits)
- Sort/List datasets by popularity (e.g. record bounce rate or new visits only)
- Highlight popular datasets/resources (i.e. those with more than 10 views will be highlighted with a popular badge)
- Present view counts/download stats next to datasets/resources
- Report API use

⁴² http://docs.ckan.org/en/ckan-2.7.0/maintaining/tracking.html#tracking

⁴³ <u>http://extensions.ckan.org/extension/ga-report/</u>

⁴⁴ <u>http://extensions.ckan.org/extension/googleanalytics/</u>



the Data Hub — The easy way to get, use and share data Add a dataset Search Groups About

Most viewed datasets

Note: this data does not include API calls

Dataset	Unique views (last 14 days)	Unique views (since recording started)
Library Genesis	568	8845
DBpedia	280	3594
Harvard Library Catalog	101	101
Freebase	74	1272
PubMed	60	543
BBC Music	55	959
Linked Movie DataBase	55	619
British National Bibliography (BNB) - Linked Open Data	52	589
2000 U.S. Census in RDF (rdfabout.com)	50	1096

Most downloaded resources

Resource	Downloads (last 14 days)	Downloads (since recording started)
All books in catalogue at 2011-04-12 in Library Genesis	15	290
Social graph in tsv (bittorrent torrent file in Twitter Social Graph 2009	11	97
Download page (N-Triples, bz2-compressed) in DBpedia-Live	8	69
CSV file extracted and cleaned from source	8	44

Figure 10: Example of CKAN's Google Analytics feature

In turn, Piwik's Tracking Extension webpage⁴⁵ describes that the Piwik extension (currently under development) adds javascript tracking code to the CKAN website using a remote Piwik web analytics instance, which sends tracking data to the Piwik instance. It is also mentioned that the main differences between Google Analytics and Piwik is that, while the former is a service accessed through user accounts, the latter is an open source softwares that can be deployed on remote servers. Regarding data privacy, it pulls up requests and user interactions within the website in order to create anonymized user traffic statistics with the purposes of enhancing the website's use⁴⁶.

Example applied to EMPATIA

CKAN's website analytics delivered by Google Analytics and/or Piwik provide an array of possibilities to analyse and visualise data, facilitating the monitoring of some aspects of PB

⁴⁵ https://github.com/george-sattler/ckanext-piwik

⁴⁶https://joinup.ec.europa.eu/sites/default/files/document/2017-

^{06/}dcat_ap_carrara_dekkers_dittwald_dutkowski_glikman_kirstein_loutas_peristeras_wyns_v3.6.pdf

processes through the EMPATIA platform. Although this feature is mainly available to PB managers through the back end dimension of the platform, it equips them with information to run PB process. For instance:

- Through "Campaign", "Content" and "Event" tracking, it is possible to determine with access metrics the effectiveness of specific advertising campaigns, banners and actions, directed from different webpages (including social media) and email.
- Although data on "Accurate Time Spent Measurement" is limit with regards to what the participant (or page bouncer) read from the EMPATIA platform, this feature can provide complementary analysis about usability and information on specific webpages of PB processes, including new and returning visitors to the page.
- The ability to pinpoint visitors locations, through the "Geolocation" feature, supports analysis of participants demographics, and support the planning of actions and campaigns to promote inclusion and representation.

DKAN

DKAN^{47 48} is a Drupal-based open-source open data management platform developed by Granicus. DKAN makes data cataloging, management and visualization flexible and simple through its dashboard, which converges content to one centralized place for data managers to draw clear connections and publish data to the public.

Essentially, DKAN is a Drupal-based alternative of CKAN, as result of efforts to make data more open and accessible⁴⁹. The main difference between these two tools is that, while CKAN focus on integrative features for publishing and harvesting of open datasets, often connecting with external CMS to create webpages, DKAN takes a divergent approach by integrating open data catalog features into an existing data management system⁵⁰. In this sense, data managers need to master just one system instead of two.

According to DKAN's Guide⁵¹ and Drupal's Licensing webpage⁵², DKAN is freely-accessible under the GNU General Public License (GLP) version 2 (or later) open source license, which covers related modules such as "recline, open data scheme map, visualization entity feeds flat processor and the taxonomy features"⁵³. Nonetheless, given that DKAN is feature compatible with CKAN, it also offers additional SaaS in the cloud under monthly fees^{54 55} (e.g. implementation support, theming, extension development, hosting and ongoing support).

Additionally, according to Drupal's Licensing webpage⁵⁶, Drupal is also able to interface with third party systems/libraries through bridge modules, as long as they are also under a GPL or GPL-compatible license (e.g. BSD/MIT-style "permissive" licenses or the Lesser General Public License - LGPL). If the third party system has a non-compatible library, however, interfacing is not possible as it would represent a violation of licensing.

⁵³ https://github.com/NuCivic/dkan

⁴⁷ https://media.readthedocs.org/pdf/dkan/stable/dkan.pdf

⁴⁸ http://getdkan.com/img/NuCivicGuidetoDKAN.pdf

⁴⁹ https://getdkan.org

⁵⁰ https://getdkan.org

⁵¹ https://dkan.gitbooks.io/guide/license.html

⁵² https://www.drupal.org/about/licensing#q1

⁵⁴ http://opensource.com/government/14/1/opensaas-and-government-innovation

⁵⁵ https://opendata.stackexchange.com/questions/1517/ckan-vs-socrata

⁵⁶ https://www.drupal.org/about/licensing#q1

As stated at GitHub's page on DKAN Open Data Portal⁵⁷, from the back end perspective, DKAN allows data managers to:

- Publish data through guided processes or import through API/harvesting from external catalogs
- Customized datasets by creating and managing private metadata fields
- Engage end-users, allowing them to comment, rate, share, embed and request a dataset
- Store data either within DKAN or through external websites
- Customize the visual aspects of the website with different features (e.g. color schemes, logos, etc.)
- Access visualization, graphing and mapping tools
- Access graphical user interface for administering content, workflows, roles and permissions
- Have INSPIRE/RDF support
- Access user analytics

Also, as stated at GitHub's page on DKAN Open Data Portal⁵⁸, from the front end perspective, DKAN allows data users to:

- Explore, search, add, describe, tag, group datasets through website front end or API
- Collaborate with user profiles, groups, social network integration, comments
- Use metadata and data APIs, data previews and visualizations
- Easily share data with others through INSPIRE/RDF support

Example applied to EMPATIA

An example that could provide fruitful insights to EMPATIA about the powerful front-end visual features of a a DKAN-based open data portal is the Open Puerto Rico website⁵⁹, which was designed to provide more transparency to the government of Puerto Rico and is presented in Figure 11.

⁵⁷ https://github.com/NuCivic/dkan

⁵⁸ https://github.com/NuCivic/dkan

⁵⁹ http://www.abrepr.org



Additionally, DKAN's website⁶⁰ lists the following technical specifications of its system:

- Platform: Drupal
- Primary language: PHP
- Database: MySQL, MariaDB, PostgreSQL, SQLServer or Oracle
- Web server: Apache or Nginx
- Operating system: Linux, Windows, OSX or Unix

Data management

By being Drupal-based, DKAN provides intuitive theming features for data managers to create powerful websites with responsive page templates, accessible design elements and built-in media management⁶¹.

DKAN allows data managers to connect with a large array of APIs and upload files with the following formats: csv, html, xls, json, xlsx, doc, docx, rdf, txt, jpg, png, gif, TIFF aerial image, pdf, odf, ods, odt, tsv, GeoJSON and xml⁶². After it is stored, DKAN makes the dataset (i.e. .xls,.xml, .csv, GeoJSON) queryable, searchable, filterable and available for visualization in several ways⁶³.

Data visualization

⁶⁰ https://getdkan.org

⁶¹ http://dkan.readthedocs.io/en/latest/components/theme.html

⁶² http://dkan.readthedocs.io/en/latest/components/visualizations/datapreviews.html

⁶³ http://dkan.readthedocs.io/en/latest/components/visualizations/datapreviews.html
DKAN displays structured data in a traditional spreadsheet format, as presented in Figure 12.

Grid	Graph Map	117 records « 1 – 100	*	Q Search data	Go x	Filter	s Fields
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106	1	Blackhawk Church	9620 Brader Way Madi	Meeting Room on	TRUE	43.06	-89.55
42	6	Wil-Mar Neighborhood Center	953 Jenifer St Madison	Yahara Room	TRUE	43.07	-89.36
111	9	The Jefferson	9401 Old Sauk Rd Mad	Activity Room	TRUE	43.07	-89.55
9	3	East Police District	809 Thompson Dr Madi	Community room	TRUE	43.10	-89.29
59	8	Sept - May: Holt Commons,	800 Langdon St Madiso		TRUE	43.07	-89.39
58	8	UW Memorial Union	800 Langdon St Madiso	Paul Bunyan Roo	TRUE	43.07	-89.39
107	9	Coventry Village	7707 Brookline Dr Mad	Community Room	TRUE	43.04	-89.51
105	1	Coventry Village	7707 Brookline Dr Mad	Community Room	TRUE	43.04	-89.51
109	9	High Point Church	7702 Old Sauk Rd Mad	Micah Center - Pa	TRUE	43.07	-89.51
67	13	Brittingham Apartments	755 Braxton Pl Madison	Library	TRUE	43.06	-89.39
88	19	Alicia Ashman Branch Library	733 High Point Rd Mad	Meeting Room	TRUE	43.07	-89.51
57	8	UW Memorial Library	728 State St Madison,	Room 116	TRUE	43.07	-89.39
56	8	Sept - May: Gordon Dining,	728 State St Madison,		TRUE	43.07	-89.39
117	19	Madison Ice Arena	725 Forward Drive Mad		TRUE	43.04	-89.48
104	1	Madison Ice Arena	725 Forward Dr Madiso	Conference Room	TRUE	43.04	-89.48
90	19	Madison Ice Arena	725 Forward Dr Madiso	Conference Room	TRUE	43.04	-89.48
65	13	Wingra School	718 Gilmore St Madiso	First Floor Comm	TRUE	43.05	-89.43
49	4	Madison Fresh Market	703 University Avenue	Event Center on s	TRUE	43.07	-89.39
15	15	LaFollette High School	700 Pflaum Rd Madison	Gym	TRUE	43.06	-89.31
14	15	LaFollette High School	700 Pflaum Rd Madison	Gym	TRUE	43.06	-89.31

Format _{xls}

0

Figure 12: Tabular data can be displayed in a spreadsheet format in DKAN⁶⁴

In terms of data visualization, DKAN's most compelling asset lies in its In-Place Editor (IPE), which provides a drag-and-drop interface for data managers to create customized layouts and place content within these layouts in a user-friendly and intuitive way, avoiding unnecessary coding repetition⁶⁵.

In this sense, one easy-to-use feature of DKAN's IPE is the React Dashboard which, according to DKAN's website⁶⁶, provides data managers with the following functions:

- Choropleth mapping
- Charting and graphing with D3 (via NVD3)
- Filtering to enable data interaction
- Custom layouts with Bootstrap responsive grid
- Metric and goal components to visually improve the presentation of statistics

This is only possible because DKAN, just like CKAN, incorporates the Recline.js library and choropleth mapping into the core functionality of its React Dashboard, allowing the visualization of structured data through graphing and mapping, besides allowing data users to share, download and embed data

⁶⁴ http://dkan.readthedocs.io/en/latest/components/visualizations/datapreviews.html

⁶⁵ http://dkan.readthedocs.io/en/latest/components/storytelling.html#using-ipe

⁶⁶ http://react-dashboard.readthedocs.io/en/latest/development/index.html

visualization in external webpages⁶⁷. Illustrations of CKAN's React Dash abovementioned

functionalities are given in Figure 13 and Figure 14.



Figure 13: DKAN's Chart Selection module, which allows data managers to create embeddable NVD3 charts⁶⁸

⁶⁷ http://react-dashboard.readthedocs.io/en/latest/

⁶⁸ http://react-dashboard.readthedocs.io/en/latest/features/nvd3.html



US National Foreclosure Statistics - By State - January 2012



Example applied to EMPATIA

These graphical representations could be useful to explore the representativeness of participation demographics in PB processes, besides taking a closer look on data explicitly generated from user's interactions on the web page (e.g. PB outreach, mobilization, number of votes, number of submitted ideas per category, etc.), as illustrated in Figure 15 and Figure 16.

⁶⁹ http://docs.ckan.org/en/latest/maintaining/data-viewer.html



Figure 15: Vallejo's Participatory Budgeting Report depicting the ethnicity representation among three different groups involved in PB processes⁷⁰



Figure 16: 2016 Boston's Participatory Budgeting Report depicting the total number of submitted ideas categorized by project type⁷¹

 ⁷⁰ http://www.ci.vallejo.ca.us/city_hall/departments____divisions/city_manager/participatory_budgeting//
 ⁷¹ https://www.bu.edu/ioc/files/2017/01/Youth-Lead-the-Change_Report.pdf

DKAN's IPE also allows data managers to create Data Stories, which directly connects the displayed data with multiple other visualization features (e.g. photos, videos, maps, charts, graphs, tags, slideshows, texts), adding a narrative to the referenced data^{72 73 74}. This storytelling capability, which is essentially a straightforward way to put text and visuals together, leverages the impact of data, since giving synthesis to datasets can highlight their unique traits and value that would potentially remain hidden otherwise. An example of a Data Story built in DKAN is given in Figure 17.

Where in the world are young people out of work?

Where in the world are young people out of work?

@ Vev (2 tot

Blog post originally posted on World Bank Data Blog, by Lelia Rafel

As International Youth Day approaches next week, Eve found myself wondering what are the primary issues affecting young people throughout the world. One topic that seems to be a common thread across regions and income groups is youth unemployment, which remains more than double the rate of unemployment for the general population.



Go to Dataset

It's well known that youth populations are on the rise in the developing world, particularly. What does this mean for the millions of young people who enter the workforce every your?

Youch unemployment is defined as incluiduals aged 15-24 who are without work, out are currencly available for work and have sought it in the recent past. Below, Lanelyze data from World Development Indicators. These data come originally from the International Labour Organization BLO, which produces its own estimates that are harmonized to account for incremistances in the data source, definition, and methodologies. ILO estimates may differ from official unemployment statistics produced by national statistical offices.



Asia maintains lowest levels of youth unemployment

Regional levels of youth unemplayment have barety changed in the past two decades. South Adal end East, Ada and Pacifi, have mini-faileed the lowest rates, hovering at about 10% for the last 20 years. Meanwhile, the Middle Fast and North Africa region has had the highest rate of youth unemplayment since the 1920s, and clocked in a figure of about 27% in 2012. The biggest increase in the youth unemplayment rate has been in the Europe and Ceritial Asia region, where after years of steady decline rates have rises to over 20% since the financial crisis in 2008.



⁷² https://dkan.readthedocs.io/en/7.x-1.13.3/components/storytelling/index.html

⁷³ https://dkan.readthedocs.io/en/latest/admin/data_and_content/adding_new_content.html

⁷⁴ https://media.readthedocs.org/pdf/dkan/latest/dkan.pdf

Figure 17: Example of DKAN's Data Story, showcasing the visualization of unemployment patterns with text, a map and a comparative time chart, combined with "Go to Dataset" links that allows data users to delve deeper into the underlying data behind the data story⁷⁵

Example applied to EMPATIA

At the lower end of data visualization tools, there are simple tools dedicated to building graphical representations of data without data analytics. Nonetheless, at the higher end of this spectrum, there are data visualization tools (e.g. DKAN's Data Story) that are capable of rendering analytics in a wide variety of visual formats (going beyond simple bar charts to include dashboards containing graphs and charts, key performance indicators, balanced scorecards, maps and more), besides allowing direct querying across multiple data sources and the ability to change visualizations in real-time.

In line with the abovementioned, DKAN's Data Story could be a great medium to uncover data patterns and show clusters and connections in a summarized and visually appealing way about PB processes.

Finally, DKAN allows the integration with several external data visualization tools⁷⁶, of which a few are presented:

- Tableau (software to create charts, dashboards, and analytics)
- CrystalReports (application to design and generate reports from various data sources
- D3 (JavaScript library for data visualization with HTML, SVG and CSS)

Example applied to EMPATIA

Regarding PB, Figure 18 illustrates Tableau's powerful capabilities to convey data in visually rich ways, presenting data from NYC Participatory Budgeting (2015)⁷⁷.

⁷⁵ http://dkan.carto.com/u/dkan-admin/viz/e93961d4-27d5-11e4-aa97-7054d21a95e5/embed_map

⁷⁶ http://getdkan.com/img/NuCivicGuidetoDKAN.pdf

⁷⁷ https://public.tableau.com/profile/anbnyc#!/vizhome/NYCParticipatoryBudgeting2015/Story1

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Hableau*	Cover 200,000 votes were cast for 348 projects, of which 114 won funds.	About 2/5 of winning projects were related to Schools. 121 school-related projects were proposed, and 45 won.	GALLERY On average, winning received 837 votes e while losing projects average of 447 votes What did it tal y won.	AUTHORS	S BLOG	Nos-	RCES Winning problem budgets on projects ter votes, but ji	ACTIVITY	SIGN IN Thanks, and



Geospatial features for data visualization

In order to geolocate data (i.e. add latitude/longitude coordinates to plain-text data with address information), the following key APIs can be used: Google, Yahoo, Yandex or Nominatim (driven by Open Street Map data, thus being the most open option)⁷⁸.

⁷⁸ https://media.readthedocs.org/pdf/dkan/latest/dkan.pdf

In case the dataset includes geotagged data, DKAN can map it through point, choropleth or heat maps through Recline.js (as depicted in Figure 19)⁷⁹.

However, beyond creating maps with geocoded data supported by Recline.js, DKAN is also able to create map-based data visualizations with file types that are not supported by Recline.js (e.g. WMS, ESRI/ArcGIS REST or GeoJSON files) through the use of Leaflet.js⁸⁰.



Figure

19: Example of a point map built in DKAN with geocoded data showcasing election polling stations in Madison $(US)^{81}$

It is relevant to note that in its latest release (i.e release 1.13), the choropleth visualization module was still in early development⁸².

DKAN also allows the integration with external data visualization tools to expand the possibilities to visualize data. According to DKAN's webpage⁸³ the integration of CartoDB for an external map-based data visualization service is possible from its 7.x-1.10 version onwards.

Website analytics

⁷⁹ https://media.readthedocs.org/pdf/dkan/latest/dkan.pdf

⁸⁰ https://media.readthedocs.org/pdf/dkan/latest/dkan.pdf

⁸¹ goo.gl/yBHdEK

⁸² http://dkan.readthedocs.io/en/latest/components/visualizations/visualization_entity/choropleth.html

⁸³ http://dkan.readthedocs.io/en/latest/components/visualizations/datapreviews.html

As listed in Drupal's website⁸⁴, a Google Analytics⁸⁵ module can be integrated to DKAN, allowing data managers to track the following web statistics (see Figure 20):

- Single/multi/cross domain tracking
- Selectively track/exclude certain users, roles and pages
- Monitor what type of links are tracked (e.g. downloads, outgoing and mailto)
- Monitor what files are downloaded from the web pages
- Custom dimensions and metrics support with tokens
- Custom code snippets
- Site Search support
- AdSense support
- Demographics and Interests support
- Anonymize visitors' IP address
- DoNotTrack support (i.e. non-cached content only)
- Drupal messages tracking
- Modal dialog tracking (Colorbox)
- Access denied (403) and Page not found (404) tracking
- Cache the Google Analytics code on the local server to improve page loading times
- Enhanced Link Attribution support
- User ID tracking across devices
- Changing URL fragments can be tracked as pageviews
- Debug mode with analytics_debug.js

⁸⁴ https://www.drupal.org/project/google_analytics

⁸⁵ It is unclear, at the time this report was written, if DKAN is also compatible with Piwik.

gle Analytics is	s a free (registration requir	ed) website tra	affic and marketing effectiveness service.	
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Figure 20: Google Analytics module represented in a website built with DKAN^{86}

⁸⁶ https://www.drupal.org/project/google_analytics

Socrata

Socrata⁸⁷ service delivery model is based on a commercial cloud-based SaaS Open Data catalog platform with advanced visualisation, management and publishing tools to make public government data. In this sense, Socrata is a closed proprietary license, meaning that its SaaS products are available for a monthly or annual fee. In this service delivery model, Socrata assumes responsibility for IT management, security and software updates.

Nonetheless, according to Socrata Open Source website⁸⁸, all Socrata datasets are API-enabled and Socrata provides a full open source version of its data API server to the public (i.e. Socrata Open Data API - SODA API). By doing so, it aims at assisting customers with data catalog interoperability (based on the W3C Data Catalog Vocabulary (DCAT)), data portability (based on standard data formats), and application portability (based on Open Data API standards and using standard protocols/paradigms e.g. REST, HTTP, SQL), thus avoiding lock-in at the API level.

Additionally, the Socrata Open Source website⁸⁹ explains that its open source code is available under the Apache License, which can be divided in modules to be managed separately in Github repositories⁹⁰ and put together using SBT.

From a back end perspective, Socrata^{91 92} provides data managers with programmatic access to datasets, enabling them to easily mine, analyze, query, update, filter, aggregate and publish data, besides tracking data analytics.

From a front end perspective⁹³, data managers are able to build customized open data homepages through Socrata's Data Lens module, empowering data users to easily access and visualize data in creative ways.

Example applied to EMPATIA

Socrata's Data Lens module uses a dynamic format to display data in a front end interface that is intuitive and visually appealing to users. Datasets within Socrata's back end catalog

⁸⁷ http://www.socrata.com/

⁸⁸ http://open-source.socrata.com/

⁸⁹ http://open-source.socrata.com/the-code/

⁹⁰ <u>http://github.com/socrata/</u>

⁹¹ https://dev.socrata.com

⁹² <u>https://github.com/socrata/soda-java</u>

⁹³ https://socrata.com/blog/introducing-data-lens/

are presented in the Data Lens module through various dashboards that interact with each other (e.g. if information is displayed as a bar graph, as a line graph and on a map, and if users click on the map, both graph dashboards become contextual, filtering the information according to the selected map area). In this sense, Socrata's Data Lens assist users to easily comprehend insights about the displayed data, which could be useful within PB processes. An example of Socrata's Data Lens powerful front-end dimension is presented in Figure 21.

🕲 City of Chicago	Sign Up Sign In
Crimes - 2001 to present This dataset reflects reported incidents of crime (with the exception of murders where data exists for each victim) that occurred in the City of Chicago from 2001	OFFICIAL DATA LENS SOURCE DATASET Crimes - 2001 To Present Download API
Showing the number of rows	by the Number of Rows 🗸
Number of rows by Date 4	Number of rows by Primary Type
Figure 21: Socrata's Data Lens built for the City	γ of Chicago ⁹⁴

⁹⁴ https://data.cityofchicago.org/view/5cd6-ry5g

Data management

According to Socrata's website⁹⁵, when using Socrata, the first step is to choose between six different importing options to upload data files into its User Interface, which are:

- Design from scratch
- Import data files (i.e. .csv, .xls, .xlsx, .tsv)
- Upload non-data files (i.e. any file type, except: .app, .asax, .bat, .cer, .com, .dll, .exe, .iso, .jar, .msi, .php, .php5, .py, .pl, .rb, .sh, .swf, .xap)
- Import geospatial data (i.e. .zip, .kml, .kmz, GeoJSON)
- Link to external data (i.e. URL)
- Connect with an ESRI map layer (i.e. public ArcGIS Server)

Nonetheless, external catalogs can also connect to the SODA 2.0 server and harvest datasets and their associated metadata through Socrata's DCAT API⁹⁶.

Following this step, Socrata's User Interface offers intuitive features for data managers to explore the full spreadsheet of values (as illustrated in Figure 22) and create data visualizations to see trends and answer questions regarding their dataset.

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4 :≡	2013		Brooklyn Delegation	5 Boros Basketball	272623043-	Applied	
5 :≣	2013		Queens Delegation	5 Boros Basketball	272623043-	Applied	
6 :≣	2013		Jackson	34th Precinct Community Council Inc	352346587-	Applied	
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Figure 22: Socrata's User Interface showcasing NYC OpenData dataset for NYC Council discretionary funding⁹⁷

Interface

⁹⁵ https://support.socrata.com/hc/en-us/articles/202950128-How-to-upload-a-dataset-via-the-Web- User-

⁹⁶ http://open-source.socrata.com/architecture/

As described in Socrata's Navigating a Dataset webpage⁹⁸, Socrata's features offer several functionalities for data managers to work with the dataset, which are briefly described in Table 3:

Table 3: Description of the functionalities of Socrata's features

Feature	Functionality
Edit	Edit the dataset (e.g. edit individual cells, append new rows or replace the dataset)
Manage	Transfer ownership of/delete/share the dataset; make the dataset public/private; show/hide columns; change the column order
More Views	See other views created from the same dataset (e.g. other filtered views/charts/maps)
Filter	Sort the dataset by columns; filter/group the dataset; set the default filter for that view
Visualize	Create a chart or map (in case geocoded data in presented)
Export	Access APi information; print/export the dataset (.csv, .xls, .xlsx, .tsv)
Discuss	If enabled, see/make comments about the dataset
Embed	Create Social Data Player embeds
About	View/edit the metadata information about the dataset; view dataset analytics
Social Media	Share the dataset through social media (e.g. RSS subscription, Facebook, Twitter, email)

Data visualization

⁹⁸ https://support.socrata.com/hc/en-us/articles/202949788-Navigating-a-dataset

⁹⁷ https://opendata.cityofnewyork.us

Configure Visualization

Socrata's embedded data visualization editor can be used to explore and visualize data in intuitive ways, which include depicting data through a range of charts (i.e. bar chart, column chart, pie chart, timeline chart, histogram) or maps (i.e. point map, heat map or choropleth/boundary map)⁹⁹. Socrata's webpage also lists additional features¹⁰⁰:

- Customization (e.g. different colors, axis titles, labels, flyouts and sorting)
- Filtering: filters can be added to the visualizations, which can be hidden from or editable by public users
- Multi-series charting: additional value columns can be added to the bar, column or timeline charts, in order to allow different measures on the same visualization, making it easy to compare between measures (e.g. *Figure 23 represents the Employment and Unemployment value columns in the same bar chart*)
- These visualizations can be saved by data managers as stand-alone assets in the data catalog, where it can be discovered and explored by end users

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Figure 23: Socrata's data visualization editor¹⁰¹

 ⁹⁹ https://support.socrata.com/hc/en-us/articles/202878483-Creating-Visualizations
 ¹⁰⁰ https://support.socrata.com/hc/en-us/sections/200469728-Data-Visualizations

 ¹⁰¹ https://support.socrata.com/hc/en-us/sections/200469728-Data-Visualizations

Additionally, Socrata contains a Perspectives page¹⁰², which is a data narration module similar in function to DKAN's Data Story. In this sense, it aims at assisting data managers to create and publish data-driven stories on a single platform. Once a data visualization is created, Socrata's Perspective have the ability to embed this visualization into a new story.

Beyond exploring data in its traditional visualization editor, Socrata can easily link open datasets to many other external tools, which expands the reach for data visualizations¹⁰³. Some of these tools are listed below:

- Google Charts (JavaScript charting library)
- Highcharts (JavaScript charting library)
- Plot.ly (JavaScript graphing library)
- Tableau Desktop (software to create charts, dashboards, and analytics)
- R (software for statistical computing and graphics)
- Excel Power BI (JavaScript library for embedding Power BI into apps)
- D3 (JavaScript library for data visualization with HTML, SVG and CSS)
- Excel Get & Transform (formerly known as Power Query) (query language to build queries that mashup data)
- OData (protocol that allows the analysis of Socrata data in Microsoft Excel)
- QGIS (Python Plugins Repository to facilitate GIS sharing from Socrata websites)

Figure 24 showcases the use of Plot.ly to build interactive graphs and charts with Socrata data:



¹⁰² https://support.socrata.com/hc/en-us/categories/202604608-Perspectives

¹⁰³ https://support.socrata.com/hc/en-us/categories/200161228-Publica-Open-Data-Cloud

Figure 24: Example of a graph built in Plo.ty with data withdrawn from Socrata, showcasing the City of Reno's call response times¹⁰⁴

Geospatial features for data visualization

Socrata also allows data managers to add geospatial context to their data and curate interactive local maps with detailed information in it, making open data more meaningful to users.

According to Socrata's website¹⁰⁵, data managers are able to customize maps within Socrata in three geospatial formats (i.e. point map, heat map and boundary/choropleth map), as illustrated in Figure 25. In order to do so, the available dataset must have embedded a successful geocoded location column. Maps can then be exported in a number of formats, including: .kml; .kmz; .zip (shapefiles: shp, .shx, .dbf, .prj); and .json (GeoJSON)¹⁰⁶.



Figure 25: Example of a choropleth map created through Socrata, which requires data managers to set up boundaries (e.g. neighborhoods or ZIP codes)

In case geocoded data in presented, Socrata can connect with numerous external tools to create interactive maps, furthering the capabilities to spatially visualize data¹⁰⁷. A few of them are presented:

- CartoDB (JavaScript mapping library)
- Google Maps (JavaScript mapping library)

¹⁰⁴ https://dev.socrata.com/blog/2016/07/01/analyze-data-with-one-click-via-cartodb-plot-ly.html

¹⁰⁵ https://support.socrata.com/hc/en-us/sections/200469718-Geospatial-Data

¹⁰⁶ https://support.socrata.com/hc/en-us/articles/215188318-Export-options-for-maps

¹⁰⁷ https://support.socrata.com/hc/en-us/sections/200469718-Geospatial-Data

- empatia
 - Heatmap (JavaScript mapping library to create heatmaps)

Website analytics

Socrata's website¹⁰⁸ explains that, through Socrata administration panel, site analytics are available to data managers with useful statistics regarding the performance of their website. This panel is divided in three parts: headlines, trends and details.

Within the headline section, information is available on page views, total datasets, total rows and embeds, as illustrated in Figure 26 and explained below, with information drawn from Socrata's Knowledge Base¹⁰⁹.

Site Analytics Mar 1, 2017 - Ma	ir 23, 2017	Headline		Export
Browser Page Views 29,749,039 + 27,644	Total Datasets 556	Total Rows 159,292,401	Embeds 361,793	+ 6,588

Figure 26: Headline section of Socrata's administration panel for website analytics

- Page Views depicts total count of HTTP server requests for the website since it was created, including browser and API traffic for the bolded black number and only web browser traffic for the green number (related to a chosen date range)
- Total Datasets depicts all published and unpublished datasets created by uploading data files (e.g. .csv, .xls, etc.) or geospatial files (e.g. .kml, .kmz, shapefiles, etc.)
- Total Rows depicts the total number of data records in all the datasets on the website (public or private)
- Embeds depicts the total number of times a dataset was viewed through a Social Data Player

With regards to the Trends section, metrics (i.e. page views, browsers, page types, disk usage, bytes out, views loaded, and rows loaded) can be graphically displayed over a chosen period of time, as represented in Figure 27.

¹⁰⁸ <u>https://support.socrata.com/hc/en-us/articles/202949968-Learn-about-data-portal-usage-from-Socrata-</u> Site-Analytics

¹⁰⁹ <u>https://support.socrata.com/hc/en-us/articles/202949968-Learn-about-data-portal-usage-from-Socrata-</u> Site-Analytics



Figure 27: Trends section of Socrata's administration panel for website analytics

The metrics that can be displayed in the chart are described below, with information drawn from Socrata's Knowledge Base¹¹⁰:

- Page Views: it tracks every time a given page (catalog/dataset page) in the website was loaded in a web browser. This tracking varies per page request (i.e. number of requests on a page, including bots/other automated tools) or per browser page views (number of times a page was loaded by a user's browser, not including bots or automated tools)
- Disk Usage: total number of bytes consumed by all datasets (public/private) that were loaded into the website
- Bytes Out: total number of bytes of outbound bandwidth consumed by the website (i.e. data transferred to users)
- Views Loaded: total number of times a dataset/filtered view was requested. It can be divided by access type, which include: website (views through the website), Social Data Player (views through embedded Social Data Players in other websites), API (accesses through the Socrata Open Data API)
- Rows Loaded: total number of data records that users retrieved from the website (also divided by access type (i.e. web, download, API clients)

Lastly, an illustration of the Details section in given in Figure 28.

¹¹⁰ <u>https://support.socrata.com/hc/en-us/articles/202949968-Learn-about-data-portal-usage-from-Socrata-</u>

Site-Analytics

Downloadable Files 16	Charts 110	Filters 2,533	+ 12	External Datasets 62	
Maps 872	Snapshots 1,323	+ 6	Details		
Top Datasets			Top Datasets Referre	rs	
Name		Ψ.	Name		Referrals -
Current Fleet Surplus/Auction List	t	2,183	https://greenestreet.maps.	arcgis.com	6,792
Sold Fleet Equipment		2,140	https://www.google.com		5,680
City of Seattle Wage Data		1,192	https://www.seattle.gov		5,591
Seattle Police Department 911 In	cident Response	940	http://www.seattle.gov		2,664
Seattle Police Department Police	Report Incident	822	https://www.bing.com		554
	Show More			Show More	
Top Search Terms			Top Embeds		
Name		Count -	Name		Embeds -
parks		679	https://www.seattle.gov		4,057
gis		363	http://www.seattle.gov		1,177
seattle census tracts		307	https://www.google.com		438
wage		153	http://www.seattlepi.com		137
salary		107	http://a11y_page_service.s	siteimprove.com	131

Figure 28: Details section of Socrata's administration panel for website analytics

As can be seen, the boxes presented in the Details section highlight the total number of: charts visualizations (public/private, deleted), created filtered views (public/private, deleted), created maps (public/private, deleted), created snapshots (past versions of a dataset), ("non-data file") downloadable files and links to external datasets.

With relation to the top lists, they showcase the most popular selected items during a given period of time, including: Top Datasets (number of views), Top Dataset Referrers (number of times that users came to the website through domains linked to it), Top Search Terms (number of times that search terms were seen), Top Embeds (number of viewed Social Data Players), Top Downloads (number of downloads) and Top Applications (community-developed applications that are accessing the datasets, tracked by their app tokens).

Final Recommendations

As previously described in this report, the EMPATIA platform can be deployed as a service (i.e. EMPATIAaaS) or as a local installation, and any suggested solution should take into consideration these two features. Despite already having available data visualization and publishing tools in its platform, based on the ones originally developed for the role playing game EMPAVILLE, EMPATIA could improve these features by integrating alternative, and extensively tested, solutions. This report focused on presenting some of these alternative solutions, by describing the advantages of existing tools available within 3 Open Data platforms.

By consolidating fragmented data catalogs from different sources into a single Open Data server, data becomes standardized, discoverable and accessible to anyone, enabling the public to make informed decisions on participatory processes in secure, consistent and accurate ways.

As already mentioned, the EMPATIA platform promotes the integration and interoperability with external Open Data platforms, enabling the export of data through public APIs that comply with REST and JSON technologies. Nonetheless, such integration can be done through distinct scenarios, which are detailed below:

Scenario 1: Custom-made Open Data platform

Within this scenario, the EMPATIA platform would be connected to a custom-made Open Data tools designed from scratch specifically for the purposes of the project. In this sense, all data catalogs derived from multiple EMPATIA partners would be hosted within a single centralized Open Data server with compatible underlying technical specifications as those presented in the EMPATIA platform. Data transfers between the two platforms would be done manually or through API requests.

Conceptually, though, this scenario is not suitable for the purposes of the EMPATIA plroject, given how counterproductive it is to design an Open Data platform from scratch when there is already a plethora of available Open Data platforms equipped with rich features that suits virtually all needs deriving from EMPATIA.

Scenario 2: Side-by-side integration with an Open Data platform

Within this model, side-by-side integration would be implemented to integrate the EMPATIA platform with an Open Data platform.

In this sense, heterogeneous data catalogs from multiple EMPATIA partners – that are hosted separately using either internally hosted or cloud-hosted infrastructure – would be compiled and catalogued into one centralized Open Data platform. In this perspective it would be sufficient to make available an unique installation of the open data platform that could be eventually hosted together with the main site of EMPATIA. Thus, having a unique repository of open data generated using the EMPATIA platform. Nonetheless, even in this scenario it remains possible, for other cases, to install a separate instance of open data manager.

As previously mentioned, such side-by-side approach is advised over façade/vertical integration with CKAN. At first glance, integrating CKAN and the EMPATIA platform seems like a complex task given

that, in one hand, CKAN is written in Python and requires a PostgreSQL database, whereas the EMPATIA platform is written in PHP and requires a MySQL and Redis databases.

Nonetheless, although the two platforms are written in distinct languages and are run in different subdomains, the flexible integration and interoperability of these platforms are possible through powerful API requests, which allow them to operate seamlessly side-by-side as if they were one single system.

Data transfer could be done i) manually or ii) via automated ways. In the first case it is sufficient to ensure exportability of data collected in EMPATIA in a standard formats such as .cvs, introducing procedural protocols to be followed by future managers of processes. CKAN's Remote Harvesting Extension¹¹¹ is able to harvest data from multiple data sources with different formats and APIs, providing they make their metadata available in a standard format. In this way, CKAN has full flexibility to directly access the core of EMPATIA's database, validating each file via the API, thus making data population almost fully automated.

More specifically, according to CKAN's Remote Harvesting Extension webpage¹¹², its harvester module acts as a single point of entry for all metadata that gets harvested, which are transformed into the CKAN JSON schema and pushed into the CKAN repository.

Scenario 3: Façade/vertical integration with an Open Data platform

Within this scenario, a façade/vertical integration would be required in order to integrate the EMPATIA platform with an Open Data platform. In this sense, one system operates behind the other, which could result in strenuous operational work to reproduce features between systems in case they are not written in the same language¹¹³. In the other hand, however, in case both systems are compatible, this model could prove to be very fruitful.

As illustrated, if the EMPATIA platform was based on Drupal just like DKAN, both systems could be integrated as one using a specific client library/Drupal module¹¹⁴. In this way, DKAN would directly host and standardize the heterogeneous data catalogs from multiple EMPATIA partners, via manual entry or through a specific client library/Drupal module.

¹¹¹ https://github.com/ckan/ckanext-harvest

¹¹² https://github.com/ckan/ckanext-harvest

¹¹³ https://github.com/ckan/ckan/wiki/CKAN-and-CMS-Integration

¹¹⁴ https://github.com/ckan/ckan/wiki/CKAN-and-CMS-Integration

Conclusions

With regards to Open Data platforms, there are strengths and weaknesses in each analyzed solution. In light of this, the final recommendation presented in this report is solely associated with the bestfitted platform for EMPATIA's needs.

Indeed, at the current stage of development of the EMPATIA project, the most feasible solution would be the side-by-side integration between CKAN and the EMPATIA platform (Scenario 2). This is due to CKAN's wide catalogue of pre-built functionalities, besides CKAN's large community of developers that constantly create new extensions and plugins to remix and extend the software. Because of that, the need to create custom material is heavily reduced, thus reducing efforts in the long-term to maintain, update and operate the EMPATIA platform.

The EMPATIA platform could also benefit from CKAN's powerful user interface for searching and browsing, rich metadata support, harvesting systems to help ingest data from existing government online repositories, and machine interface.

Moreover, CKAN has already been widely deployed by several municipalities and governments within and beyond Europe to build government data portal websites. Examples include Lisbon City Council¹¹⁵, the City of York Council¹¹⁶, Amsterdam City Council¹¹⁷, Berlin City Council¹¹⁸, Buenos Aires City Council¹¹⁹, Brazilian Government¹²⁰, UK Government¹²¹, Australian Government¹²², among others that can be found in CKAN's website¹²³. This suggests that CKAN has become the standard way to perform integrations. This could represent an advantageous asset to EMPATIA consortium, given that city managers would be, theoretically, already familiarized with CKAN's technical specifications, thus diminishing the need to provide them with further training.

In the future DKAN could represent a strong alternative solution for EMPATIA consortium. As discussed in the Stack Exchange forum¹²⁴, this is because DKAN is natively written in PHP and Drupal,

¹¹⁵ http://dados.cm-lisboa.pt

¹¹⁶ https://data.yorkopendata.org/dataset

¹¹⁷ http://www.amsterdamopendata.nl

¹¹⁸ http://daten.berlin.de

¹¹⁹ https://data.buenosaires.gob.ar

¹²⁰ http://dados.gov.br

¹²¹ https://data.gov.uk

¹²² http://data.gov.au/

¹²³ https://ckan.org/about/instances/

¹²⁴ https://opendata.stackexchange.com/questions/1517/ckan-vs-socrata/1534

meaning that there is just a single LAMP stack of software to work with instead of the integration of two distinct platforms (e.g. integration between CKAN and Drupal).

Sharing the view of The World Bank, as stated in a report on Open Data platforms ¹²⁵, we believe that the advantages of investing in a Drupal-based EMPATIA platform would be that Drupal has its own modular architecture with numerous available modules, which can be customized and are backed up by a large developer community.

Focusing the attention on Socrata, although it presents a wide-array of creative features for data management and visualization, it does not represent an interesting option for the EMPATIA plroject given that it is a cloud-based SaaS Open Data platform for data cataloging and manipulation that only provides open source API¹²⁶.

An alternative pathway to be taken with respect to Socrata, however, could be using it as an extension of CKAN rather than choosing one Open Data platform over the other. This is a specific approach used by some government (e.g. White House and some US Federal agencies) aiming at filling Open Government goal gaps that would not be accomplished with just a single Open Data platform, as noticed in the discussions presented in the in the Stack Exchange forum¹²⁷.

In conclusion, in a first attempt to demonstrate and validate the advantages of the integration between EMPATIA platform and CKAN, data derived from EMPATIA's use case scenarios could be used for the proposed integrated approach within the lifetime of the project, where the consortium is mandate to publish, in a open format, data collected through pilots (i.e. pilots in Condeixa and Lisbon - Portugal, Wuppertal - Germany, Milan - Italy and Říčany - Czech Republic), together with other datasets as described in the EMPATIA's Data Management Plan. To do so, CES could be the liaison for upstreaming data coming from each pilot, retaining primary responsibility for managing the majority of CKAN's portal, which includes buildout and maintenance of data upload, download, search and visualizations, as well as the monitoring in compliance with the ethical principles of privacy protection established in EMPATIA. For the future maintenance of the project's datasets, and of the upcoming datasets generated by other cases of use of EMPATIA other than the pilots, other options could be considered, such as, transferring the responsibilities of this centralized database to one of EMPATIA's dissemination partner. One possible option could be Participedia, which is a worldwide renowned collaboratively portal that "crowdsources, catalogues and compares

¹²⁵ http://opendatatoolkit.worldbank.org/en/technology.html

¹²⁶ http://opendatatoolkit.worldbank.org/en/technology.html

¹²⁷ https://opendata.stackexchange.com/questions/1517/ckan-vs-socrata/1534

participatory political processes around the world"¹²⁸. This option could be beneficial to the diffusion of knowledge within the growing network of practitioners and cities working with PB.

¹²⁸ https://www.participedia.net/en/about



ANNEX G: "A quick guide for decision makers"



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 687920.

EMPATIA Quick Guide for Decision Makers When and how to use the EMPATIA platform

(Task 1.2, 2017, October 26)



What is this quick guide for?

If you are interested in using the EMPATIA online platform, this quick guide is for you!

This guide is neither a technical manual nor a scientific discussion of the EMPATIA platform. The purpose of this document is rather to support the process of decision making that everyone thinking about using the EMPATIA platform will need to go through. The quick guide is supposed to give an overview of the main use cases and features of EMPATIA in order to help decide whether the platform suits the purposes of your participation process (Part I). Moreover, it aims to support the decision making process of those that have decided to use the platform, and are now confronted with a large number of decisions regarding the use of different features and configurations. Part II therefore addresses some key questions that emerged during the EMPATIA pilot projects, with a collection of pros and cons.

The quick guide will help answer to the following questions:

Part I: EMPATIA use cases

- For which purposes and in which contexts is it useful to use the EMPATIA platform?
- Which use cases does the EMPATIA platform cover?

Part II: EMPATIA features and configurations

- What are **core features** and what technical configurations are available?
- What are pros and cons of key technical configurations?

Part I: EMPATIA use cases

This part introduces the two predominant use cases of EMPATIA, and shows for what purposes and in which contexts the EMPATIA platform is useful.

When to use EMPATIA?

EMPATIA is an open source platform that can be used flexibly for a large number of participation processes. There are two main use cases of EMPATIA.

EMPATIA is for you if you...



Using EMPATIA for **specific participation processes**

If you are initiating a specific participation process such as a Participatory Budgeting or an online consultation, you can use all or some of the features of EMPATIA. Every EMPATIA platform comes with a set of management features (back office, definition of permissions and roles etc.). Moreover, authentication features allow to specify how users register and verify their identity on the platform. You can choose individually which of the participation, community, voting, and information features you want to use. You could, for example, only use EMPATIA for idea gathering, then you do not need any of the voting features. Or you want to use EMPATIA only to help make a selection, then you focus on the voting features only. The features available are described in Part II of this document.

The following diagram gives an overview of the structure and features of EMPATIA when used for single participation processes:



The examples on the next page show some use cases of EMPATIA for single participation processes. In the examples, EMPATIA is used to support Participatory Budgeting projects. However, EMPATIA is not limited to PB, it can also support online consultations in the area of city planning or infrastructure, to give an example.

Examples of EMPATIA for specific participation processes

Example 1: Wuppertal

The German city of Wuppertal (350 000 inhabitants) used the EMPATIA platform to **support all phases of their Participatory Budgeting** process, from ideas collection to the final voting.

The platform was used as a show case of the financial department, with lots of information about the municipal budget on the same platform as the possibility to participate in the Participatory Budgeting. Almost all features of the EMPATIA platform were used in this project.

https://www.buergerbudget.wuppertal.de

Example 2: Říčany

The Czech city of Říčany (15 000 inhabitants) used the EMPATIA platform to **support the idea-gathering process of their first Participatory Budgeting**. They focused on the use of the participation features to supplement an already existing voting tool.

Example 3: Milano

The Italian city of Milano (1 349 912 inhabitants) used the EMPATIA platform notably to support the **second cycle of their Participatory Budgeting**, providing information about the implementation of ideas from previous PB.

https://www.bilanciopartecipativomilano.it/



nepage / Progetti 2015-2016			
rogetti 2015-201	6		
ui trovi i progetti votati pe ogetto o navigando la ma	r il bilancio partecipativo 2015- ppa. Ogni progetto può essere	2016. Scopri l'avanzamento la suddiviso in più interventi.	vori leggendo le schede
MUNICIPIO 1	MUNICIPIO 1	MUNICIPIO 2	MUNICIPIO 2
AULA DA SOGNO	PIÙ VERDE IN ZONA 1	CONDIVIDI.MI2	NUOVI SPAZI SPORTIVI AL PARCO TROTTER
nsonorizzazione acustica e iccessibilità visiva	Impianti ludico sportivi Aree verdi e Arredo urbano	Chiesco France Rame Cate dell'acqua Orti condriesi in via Rho Sciondo della Mattesana Parco di Villa Fino Pristo cidabi in via Broda Scuola Pasio e Larissa Pini	Ex piscina del Parco Troller
IUNICIPIO 3	MUNICIPIO 3	MUNICIPIO 4	MUNICIPIO 5
VIVERE IL PARCO	OGGI S(T)IAMO	VADO IN GIRO	DISEGNO E

Using EMPATIA as a multi participation process platform

If you need a platform that can host several participation processes under one roof, you can choose the modules you need for each individual participation. It gives you the possibility to conduct an unlimited number of online consultations and online dialogues under the roof of one single platform. In this model, the management and authentication features are selected for the platform as a whole, but you can then create and configure an unlimited number of participation processes with their individual participation features, community features, voting features, and information features. Of course, like in the single participation process platform, you can choose freely which of the features you need for each participation process.

The following diagram gives an overview of the structure and features of EMPATIA when used as a multi participation process platform:



Example of EMPATIA as a multi participation process platform

Example: Lisbon

The Portuguese city of Lisbon uses the EMPATIA platform to integrate different participation tools and offers under one roof. "Lisboa Participa" is the new unified portal for participation of the capital city. Besides the integration of existing participation tools like "Lisboa Aberta", "Fix my street" and the PB process, the participation features inherent in the EMPATIA platform are used for new thematic consultations and a continuous idea collection.

www.lisboaparticipa.pt



Part II: EMPATIA features and configurations

This part gives an overview of the key features and configurations that are available with the EMPATIA platform. Moreover, it gives some advice about the use of different configurations in different contexts.
EMPATIA key features

EMPATIA is a highly flexible platform that allows to choose and combine different features. Of course, custom features can be added to all standard EMPATIA features.

Participation

Participation features are features regarding user interactions. The features allow users to:

- Submit ideas / proposals / topics
- Comment on content (e.g. ideas)
- Ask questions (and receive answers online)
- Write blog articles
- Display user content on a map (e.g. "FixMyStreet")
- Complete questionnaires or answer quiz questions

Community

Community features help participants to connect with each other, and the platform manager to connect with the users. The features allow users to:

- Create user profiles, see other users profiles, and get in touch with other users
- Connect with other users with the help of an alliance system' to merge two similar ideas into one
- Be notified by e-mail or SMS upon changes ("follow" button)
- Receive a newsletter
- Contact the platform manager and receive mails from the manager

Voting

Voting features support online voting mechanisms. The features allow users to:

- Vote for unlimited numbers of ideas (e.g. "likes")
- Vote for a limited number of ideas (e.g. five votes per person)
- Give positive and negative votes ("thumbs up" and "thumbs down")
- Vote in person via voting kiosks at events

Information

Information features show information in different formats. The features allow platform managers to:

- Publish Frequently Asked Questions (FAQ)
- Publish articles (news or blog articles)
- Publish events
- Add information to user content (e.g. user ideas)
- Provide information about the status of ideas (2nd cycle)
- Use text, pictures, and video in all contents

Authentication

Authentication features are features related to the registration and verification of users. They allow platform managers to define different permission levels and decide what information is requested from users and how they can verify their identity. The features allow to ask users to:

- Create a user account with compulsory and/or voluntary information such as name and demographics (age, gender, district etc.)
- · Verify the account via e-mail and/or SMS
- · Verify the account via ID number

Management

Management features allow the project manager to monitor and guide the participation and work with the platform in the back office. The features allow platform managers to:

- Keep track of statistics (vote, user and platform analytics)
- Moderate comments (on the basis of user flags or independently of it)
- Export user content and statistics (as xls and PDF / open data)
- Configure the back office dashboard
- Create and administer content via the Content Management System
- Manage user and groups permissions

Which features and configurations are right for you?

Setting up the EMPATIA platform involves a lot of choices. You need to choose which features you want to use. Since each feature comes with a set of possible configurations, you need to make even more choices. For example, if you choose to use the idea submission feature and allow users to create topics on the platform, you will be confronted with the choice how the form should look like. Should users be able to upload a picture along with their idea? Or pin the location of the idea on a map? Should they be able to edit their text later?

Each choice usually has its pros and cons and is highly dependent on the context in which you want to use EMPATIA. What do we mean by that? Two types of context play a major role:

Configuration choices need to be evaluated in the face of *the goals and type of participatory process*.

It depends, for example, on whether you organise a consultative or a co-decisional process. While in the first citizens are ,consultants' to political bodies, in the second real decisions are made by citizens. This has consequences on the kind of features and configurations you want to use.

 Configuration choices need to be evaluated in the face of the respective *local (political) culture*.

For example, while it is a standard procedure to ask for fiscal numbers in order to participate in Portugal or Italy, this is rather a 'cultural no go' in Germany.

In the following, we have collected pros and cons for a set of key features and configurations that are proven to be evaluated differently in different contexts in the experience of the EMPATIA partners, and that are often a matter of political decision-making. The pros and cons have been collected from all EMPATIA partners. Please note that these are not scientifically proven pros and cons but rather subjective impressions of the different partners. The purpose of presenting them in this document is to help you make choices for your participatory process, taking into consideration different perspectives on your decisions as to what may be suitable configurations for your specific context.

When reading the next pages, please note that the respective numbers of pros and cons are no indication for a general preference since the pros and cons always have to be evaluated in the local context, and one single con can outweigh all pros, or vice versa.

Moderation of comments

Should comments be published immediately by users?

Comments are part of the participation features. There are many configuration options regarding this feature, for example the decision whether you want to allow answers to comments, whether you want to allow users to write infinite number or limited number of comments per day, and whether you want to pre-structure comments into lists of pros and cons. We will not discuss all of these configurations but focus on one configuration choice that is often subject of notably intense discussion from the experience of EMPATIA partners, namely the question whether comments by users should be published automatically. The alternative would be to publish them only after they have been reviewed by a moderator.

With EMPATIA you can choose the following ,typical' options:

- **Comments published immediately by users** (Comments are published as they come in without prior check by moderators)
- **Comments published by moderators** (*Moderators in the back-office check comments and publish them manually*)



Information requested at registration Should demographic details be required when registering?

As part of the authentication features, an important configuration concerns the decision which information is requested by users upon registration, and whether the information should be compulsory. As in most EMPATIA features, the flexibility of the platform brings with it a large number of possibilities of how the registration can work. You can freely decide, for example, which kind of demographic details you want to ask for (e.g. age, gender, education, district, address). We want to focus here on the question of whether the completion of demographic details should be compulsory. The alternative would be to not ask for demographic details at all (or to make the fields optional in the user profiles).

With EMPATIA you can choose the following ,typical' options:

- Full demographic details required at registration (For registration on the platform users have to submit demographic details.)
- No demographic details required at registration (Users can register on the platform with their e-mail address for verification only.)

Asking for demographic details			
Pros	Cons		
 It may facilitate a more ,personalised' participation, with potentially less inappropriate comments because users feel less anonymous. Citizens may find the participation process more serious. It gives managers important data for the evaluation of who participated, and allows a correlation between voting outcomes and demographics. It allows more control to the managers to ensure that participants are in line with the objectives and target group. Being able to proof a diversity of participants may enhance the legitimacy of the process. It also allows to know which type of users are participating and adjust communication towards specific population groups. 	 It may provide a barrier to participation because registration takes longer. Citizens may not be willing to give their personal details, for example due to data privacy reasons. The goals of the participation may not suit the kind of data asked for ("data thrift"). The purpose and benefit of the collection of data should therefore always be evaluated before collecting the data. In consultative processes, identity verification may be less important than in co-decisional processes. 		

User verification

Should user verification be required for participation?

A feature within the management features is the definition of user permissions which allows to define which actions users can perform as guests on the platform, and for which actions they need to verify their identity by registering on the platform, and by which means (e-mail, SMS or ID card). There are many options regarding user permissions, but we want to focus on a question that was discussed intensely in the course of the EMPATIA project: Should user verification be required for participation? While this simplified question may suggest there is only a "yes" or "no" option, this is, of course, not the case. There are lots of middle ways, you can define individually for each user action what level of authentication users need to have.

With EMPATIA you can choose the following ,typical' options:

- **Participation requires user registration / verification** (Users can only submit ideas, comment, like/dislike and/or vote if they registered and verified their identity)
- **Participation does not require registration / verification** (Users can submit ideas, comment, vote, like/dislikes without registering on the platform)
- **Specific actions require verification / registration** (For example, *users can submit ideas on the platform without registering; for voting, they need a verification)*

Requiring verification / registration for participation			
	Pros	Cons	
•	It may make the participation less prone to misuse or manipulation (e.g. double voting or insulting comments). Spam can be reduced or avoided with the help of registration mechanisms. Contexts in which requiring registration is especially useful are situations where the participation topic is prone to inappropriate comments or conflicts, registeration may decrease the risk of flame wars. Moreover, In co-decisional processes in which decisions are taken by users through voting, compulsary registration makes manipulation less likely and therefore may increase the credibility of the process.	 It may be a barrier to participation and decrease the number of participants. If people only want to leave a short comment, they may not be willing to create an account. While for voting, verification of users may be extremely important, it may be less so for other types of participation. Therefore, always ask yourself why registration is important. Regarding the submission of ideas, you may also choose to follow the philosophy "it doesn't matter where a good idea comes from" and make registration voluntary. 	

Modes of voting

What modes of voting are suitable for which contexts?

Voting features are an important part of the EMPATIA platform. We will list below which configurations are particularly suitable for which context.

With EMPATIA you can choose the following options:

- Unlimited number of votes ('likes') (Users have an unlimited number of likes per idea/comment that they can give (e.g. "thumbs up button")
- **Predefined number of votes** (Users have a specific number of votes that they can use; only positive votes are possible within this number)
- As an addition to the two configurations above: Adding down-likes / down-votes

Pros and cons of		
Unlimited number of votes / likes	 Simple, unlimited "likes" are easy and fast and well-known to Internet users due to social networks' "thumbs up" symbols. "Likes" are mostly suitable in contexts where the goal is to have an easy ranking or indication of preferences. It may also reduce the fragmentation of preferences among ideas. Finally, it may reduce tactical voting (see Link). 	
Predefined number of votes (limited voting)	 Limiting the number of votes may help users to select their priorities. It may also encourage them to make their selection carefully and not just ,like' any idea because the title sounds good. The "weight" of the vote is strengthened. With limited voting, the number of votes is usually crucial. If users are given too few votes, there is the risk that they will only use it to vote for their own or their friends' ideas. 	
Adding down-likes / down-votes	 Down-votes (like "thumbs down") provide a way to express disagreement. They may be important indicators for project managers that some ideas may only be supported by a certain group in society. The possibility of down-votes may also increase the legitimacy of the results since "the expression of protest would have been possible". On the other hand, negative voting may also have discouraging effects on users whose proposals are "voted down" (when this is visible). Negative voting is also more complex, especially regarding the communication of ranking / voting results (since the negative votes need to be substracted from the positive ones) Lastly, down-votes may also increase the risk of lobbying against potentially winning projects. 	

Visibility of votes

Should the individual number of votes be published immediately?

Another question discussed amongst EMPATIA partners was whether the individual number of votes for each idea / proposal should be published immediately or only after the voting has ended. Different perspectives were collected on this question.

With EMPATIA you can choose the following options:

- Immediate display of individual votes for each proposal (Current actual number of supporters / votes is displayed live and updated as per incoming votes)
- Display of individual votes only after the end of the voting phase

Immediate display of votes				
Pros	Cons			
 It gives an immediate feedback to voters. Moreover, it provides a high level of transparency for citizens: The process may thus be less prone to mistrust regarding correct voting results. The immediate display of votes also has a "game factor": It can be fun and interesting to see the rising numbers. Therefore, it may also have a positive effect on the mobilisation of participants: It may attract users to vote. The immediate display of votes is suitable notably in contexts of "simple liking", less so in contexts that are similar to elections. 	 The immediate display of votes can have an undesirable lobbying effect since ideas with higher votes are likely to attract even more votes (bandwagoning effects). It may also make the process more prone to manipulation because citizens see the status of their proposal and how many more votes they would need to win. It does not allow to keep the results for the final surprise ("And the winner is…"). In contexts of co-decisional PB, where the final vote can be compared to a real electoral vote, secrecy is a crucial criterion. 			

Involving citizens in platform management

When is it useful to involve citizens in the platform management?

With EMPATIA, it is possible to define different roles in the back office of the platform. It is thus possible to involve citizens or third parties in the management of the platform, for example in the moderation of comments, or the writing of news articles. This question has also been subject to discussion during EMPATIA pilots, so we share our list of pros and cons.

With EMPATIA you can choose the following options:

- Support to platform management by third parties / citizens
- Municipality / project initiator is sole manager of the platform

Involving citizens in platform management				
Pros	Cons			
 It may help the workload of municipal staff (e.g. to deal with moderation of ideas / comments). The involvement of citizens in the management of the platform may thus also enhance the sustainability of the process. It may give useful feedback on the management process and the functioning of the platform. Citizens / third parties may feel empowered and take ownership of the process. 	 The municipality or project initiator will have less control over the management of the process when external partners are involved. It might also represent problems with the privacy of data; oftentimes external parties are not allowed to access data (such as the personal data of users). There is a risk of information leaks of important data that may change the outcome of the process (e.g. voting numbers). When citizens become involved in the management, it must be clear that they cannot be both participants and managers. They thus need to decide which role they want to have, otherwise they may not be ,neutral enough' to manage the process. 			

On a site note: Why e-participation at all?

The core of EMPATIA are its participation features. Of course, all decisions regarding configurations need to be contextualised in the light of the overall participation process. The decision whether to collect ideas online, on site or via several channels, will always depend on your goals and resources. Mostly, the more channels you offer, the more participants you will reach, but the different channels need to be integrated with each other. With EMPATIA, ideas collected from on site channels (events, telephone, street campaign) can be inserted online so that the platform is the main channel on which everything comes together. In order for you to decide whether an idea collection online may be interesting for you, we have collected our EMPATIA experiences with the supplementation of face-to-face with e-partipation. Here are some key pros and cons:

Supplementing face-to-face participation with e-participation

	Pros		Cons
 Offering online us of partic participa time or l In the ph participa transpar see imm been su This also other us Informat presente "depths" different Citizens carefully may allo 	a channel of participation sually increases the number ipants, since everyone can ite without being restricted by ocation. hase of ideas collection, e- ition increases the rency because everyone can bediately which ideas have bmitted. o can give inspirations to ers for new ideas. ion can be very well ed online, and different of information provided for target groups. may take their time to formulate their idea. You wy them to add pictures, and	•	The "digital divide" is still a reality, so you should make sure that the online channel is not the only means of participation, at least as long as there are people in your target group that may not have access to Internet or do not feel comfortable with it. Compared to face-to-face events where ideas are developed in groups, ideas collected online without discussion about it may be less focused on the common good and more self-centered. Idea collection online may increase noise in proposals because there might be many similar proposals. (One work- around with EMPATIA is the "alliance system", aiming to reduce the number of duplicates) It usually implies more workload than
to edit th	neir text later.		just collecting ideas face-to-face, especially regarding the evaluation or review of the proposals.

Thanks for your interest in EMPATIA! We wish you much success with your participation project!

In case of questions, please contact empatia@empatia-project.eu.