empatia

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Evaluation and Pilots Impact Assessment (final)

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Executive Summary

This document reports on the final technical, behavioural and socio-political evaluation of EMPATIA.

First, is presented the methodology to perform the technical evaluation and the impact assessment in pilots and other applications where the EMPATIA Platform was employed.

Next, is presented the EMPATIA Platform technical evaluation results. The results of each application of the platform is analysed and the respective conclusions presented. The defined KPIs are detailed analysed and explained. Also, a detailed performance evaluation of the first prototype and the final prototypes is included. The technical evaluation concludes with an EMPATIA Platform deployment cost analysis. The EMPATIA Platform evaluation also includes a behavioural assessment, to indicate if this platform could attract usage, and a process evaluation, to indicate if this platform involves processes that are desired by the users in relation to PB and its engagement through ICT.

Finally, the social and political impact evaluation is presented. The data collected, via the system usage and via the deployed surveys, is analysed to evaluate the socio-political impact of the participatory processes promoted by the EMPATIA platform. From focus groups, participant observations and informal interviews allowed the construction of a qualitative profile of each pilot. Then, based on the gathered data it was analysed the inclusion profile of each pilot and compared across pilots. Lastly, via the surveys data, it was analysed the impact of participation on participants' trust, efficacy and antipolitics sentiment.

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Acronyms

Acronyms	Description
API	Application Programming Interface
AWS	Amazon Web Services
CB	Community Building
CM	Content Management
CRUD	Create Read Update Delete
CSV	Comma Separated Values
EU	European Union
JSON	JavaScript Object Notation
JWT	JSON Web Token
IT	Information Technology
KPI	Key Performance Indicator
MP	Multichannel Participation
N/A	Not Available
PB	Participatory Budget
Q	Questionnaire
REST	Representational State Transfer
SMS	Short Message Service
WUI	Web User Interface
SaaS	Software as a Service
EMPATIAaaS	EMPATIA as a Service
P1	EMPATIA Platform First Prototype
OAI	Open API Initiative
VM	Virtual Machine
WLAN	Wireless Local Area Network

1 Introduction

This document reports the final activities conducted in Work Package 4 focusing on the evaluation and pilots' results assessment.

The deliverable details the evaluation and impact assessment methodology, considering the Key Performance Indicators defined in Deliverable D4.1 [12]. The methodology specified in this deliverable focuses the technical evaluation, the behavioural evaluation and the social and political impact.

The technical evaluation herein described, highlights the difference between the two major versions of the EMPATIA Platform: P1 – the first release of the EMPATIA Platform and P2 – the final release of the EMPATIA Platform. Results demonstrate the enhanced performance of the final platform version, in terms of the increased number of users that are supported simultaneously and in terms of the number of functionalities that are supported (recall Deliverable D2.4 [9] for details regarding the supported functionalities in each version).

The behavioural and process evaluation focused the evaluation of the EMPATIA platform in the pilots. In particular, questions related with the platform usage have been addressed in the scope of such evaluations.

The social and political evaluation analysed the background local conditions of each project pilot, the inclusiveness and the impact reached.

2 Evaluation and impact assessment methodology

This section presents the methodology to perform the technical evaluation and the impact assessment in pilots and other applications where the EMPATIA Platform was employed.

2.1 Technical evaluation

This section describes how the EMPATIA Platform was evaluated from the technical perspective based on the validation events (pilots and other applications) and specific technical evaluations that were performed.

2.1.1 Measurements and technical KPIs

The validation of the EMPATIA Platform include the official pilots, and the other applications, as documented in Deliverable D2.4 [9] and in Deliverable D3.2 [10]. The evaluation and impact assessment methodology in these events include feedback processing and measurement of technical KPIs, as documented in Deliverable D4.1[12].

As described in Deliverable D4.1[12], the validation events are fundamental for the technical evaluation of the platform, but throughout the project such events have changed, as described next. Initially, the pilots were Lisbon, Wuppertal and Ricany, but in the second year of the project a fourth pilot was included, Milan. Also, it was identified as of upmost importance to the project to have other applications of the EMPATIA Platform to validate specific features (not validated in pilots) or to test specific features before the official pilots. Details about the pilots and other applications implementations are documented in the Deliverable D2.4 [9] and in D3.2 [10].

The required and exclusive features that were associated with the pilots and with the other applications have been documented extensively in Deliverable D2.4 [9], which includes the features that were used in each pilot and application. Table 1 summarizes the methodology to evaluate the technical features in pilots and applications.

Table 1 – Methodology to evaluate technical features in pilots and applications

Name of Pilot / application	Type	KPIs
Lisbon (Lisboa Participa)	pilot	1. Number of used features
Wuppertal		2. Used feature
Ricany		3. Unique Visits
Milan		4. Page Views
Condeixa	application	5. Average visit duration
CoGlobal		6. Overall Users
Banco Mundial México		7. Overall Topics
Lagoa		8. Overall Votes
Participatory Budgeting Project (PBP)		9. Overall number of emails
Bipart		10. Overall SMS received
OIDP		11. Overall SMS sent
OPP Coimbra		
ANAMM		
Cascais		
OPJP		

In all the validations events several monitoring tools were used to measure the performance efficiency: users access logging, EMPATIA Platform internal logging and servers monitoring. Due to the evolution of the project several different tools were used, and for most of the validation events the data is split in

more than one system. To measure and provide the identified KPIs it was required to integrate the data gathered in multiple systems and calculate the respective KPI.

Examples of this evolution in the events monitoring include:

- User access: initially all validation events (pilots and other applications) monitored user access using the Google Analytics tool [13], but based on WP1 research results it was considered important to migrate all events to the Piwik tool [17] (mostly due to ethical and privacy issues). Despite this, some of the other applications requested to keep the Google Analytics tool. The usage of multiple monitoring tools required the manual processing of the data and the manual calculation of the respective KPIs.

- EMPATIA Platform internal logging: initially the EMPATIA Platform used the Graylog2 tool [20] to receive, store and process all EMPATIA logging. Despite the great results achieved, the integration of Graylog2 analytics in the EMPATIA Platform was limited and to be able to address urgent requests from the pilots it was replaced by internal logging (faster and tailored development of the EMPATIA Platform analytics). Also, throughout the project different auditing requirements were identified and new probes were added to the platform, resulting in a final version that includes enriched information. Therefore, data was spread in multiple platforms and with multiple levels of details throughout the events implementation, requiring the manual processing of the data and the manual calculation of the respective KPIs.

- Server monitoring: this monitoring was performed by the Zabbix tools (server components [14] and Zabbix agents [15]) throughout all the validation events. Despite this, with the constant evolution of the EMPATIA Platform and the constant refocus of the development and support to pilots and other applications there was the need to have multiple deployments of the EMPATIA Platform to accommodate different versions of the platform. This implied that the servers supporting each event changed throughout the time, requiring the manual processing of the data and the manual calculation of the respective KPIs.

To have precise results and without the inconsistencies of the manual calculation of KPIs, it was identified the need to have a validation event, specifically envisioning an independent performance evaluation, as described in section 2.1.2. This independent performance evaluation took the results from the validation events (e.g. the users most relevant platform interaction pattern) and allowed to identify the main bottlenecks.

Other non-performance efficiency measurements were recorded in less structured ways, many times limited to the technical and administrative capabilities of pilot teams as documented in Deliverable D3.2 [10]. For example, in the Lisbon and Milan pilots a dedicated Google Sheets was used to record usability, reliability and security issues, while in Wuppertal a Trello Board was used. Not being possible to use an integrated issue tracker and agile software development tool increased the technical development management and the recording and tracing of the different type of issues to provide complete measurement KPIs. Despite this, a manual processing of the available data and the manual calculation of the respective KPIs was possible.

The EMPATIA Platform has been configured with different logging and monitoring capabilities to gather values for the technical KPIs, as summarized in Table 2.

Table 2 – Monitoring and logging platforms

Platform	Description	KPIs groups	Usage steps
Google Analytics (GA) [13]	Google analytics supports the collections of KPIs that are related with the use of the platform. Google analytics has also the advantage of an easier integration in the diverse validation events.	• Time behaviour • Maturity • Availability • Recoverability	A user account must be created in Google Analytics. To use the Google analytics, the main page of the web platform of the validation event is configured with a specific JavaScript code.
Zabbix [14]	Zabbix allows the collection of metrics that are related with the deployment environment of the platform (servers, databases).	• Time behaviour • Resource utilization • Availability • Recoverability • Adaptability	The monitoring is performed through dedicated agents [15], like the Zabbix agent that can be deployed in the EMPATIA machines.
Logging	Logging allows detailed information regarding the status of the platform.	• Time behaviour • Resource utilization • Availability • Recoverability • Adaptability	Logging is configured in the platform, as described in the Deliverable D2.4 [9].
Graylog2 [20]	Graylog aggregates several logging metrics in dashboards that can be customized	• Time behaviour • Resource utilization • Availability • Recoverability • Adaptability	The monitoring is performed through clients that send metrics to the exposed REST APIs of the Graylog server.

Table 3 presents evaluation methods for the technical KPIs.

Table 3 – Evaluation methods of technical KPIs

Evaluation mechanism	Description	KPIs groups
Boolean	KPIs that are related with the support of certain functionalities (YES / NO)	• Interoperability • Accountability
Numerical	KPIs that are measured in terms of identified functionalities	• Interoperability • Fault Tolerance • Maturity • Availability • Confidentiality • Integrity • Non-repudiation • Modularity • Adaptability • Installability

The technical assessment methodology includes measurements of the Technical KPIs [12] as presented in Table 4.

Table 4 – Technical KPIs selected for EMPATIA Platform

Sub characteristics	KPIs	Measurement mechanism(s)	Units
Time behaviour	Average Latency	GA, logging	s

Sub characteristics	KPIs	Measurement mechanism(s)	Units
	Throughput	GA, logging	Kilobytes /s
Resource utilization	Mean % CPU Utilisation	Zabbix	%
	Mean Memory Usage		%
	Max. Memory Used		Megabytes
	Max. Processing Power Used		%
Interoperability	Ability to expose services with APIs	Boolean	
	Ability to consume services through APIs	Boolean	
	% Utilisation of Open Standards for Data Exchange	Boolean, Numerical	
Accessibility	WCAG 2.0 Conformance Level	Numerical	WCAG 2.0 levels, measure using Evaluera A-tester Report [16]: • A • AA • AAA
Maturity	Max. Concurrent Users Supported	Numerical	
	Load Size		n.º users / s
	Simultaneous Requests		
	Requests per Second		n.º requests / s
Availability	% Monthly Availability	Numerical, logging	%
	Error Rate		
Fault tolerance	Number of Software problems identified without affecting the platform	Numerical, logging	
	Number of Hardware problems identified without affecting the platform	Numerical, logging	
Recoverability	Mean time to recover from software problems	Numerical, logging	
	Mean time to recover from hardware problems	Numerical, logging	
Confidentiality	Incidents of ownership changes and accessing prohibited information	Numerical	
Integrity	Incidents of authentication mechanism breaches	Numerical	
Non-repudiation	Log reports for activities	Numerical, logging	
Accountability	Usernames included in each log entry	Boolean	
Modularity	% Modularity (excluding backbone infrastructure)	Numerical	%
Reusability	% of Reusable Assets	Numerical	%
Modifiability	% of Update Effectiveness	Numerical	%
Adaptability	Mean No. of Errors per Hardware Change	Numerical, logging	
	Mean No. of Errors per Software Change	Numerical, logging	
Installability	Mean Installation Duration	Numerical	
	% of Installation Errors	Numerical	%
	Mean No. of Errors per Installation	Numerical	

2.1.2 Performance evaluation

In Deliverable D4.1[12] it was defined as the main methodology for the platform evaluation the monitoring of the validation events (pilots) in order to provide the identified KPIs. Due to the inherit complexity of this task in real world processes and the constant need to adapt and support pilots and

other applications requirements it was identified as important for the project and for the EMPATIA Platform evaluation and validation to have an independent performance evaluation. This performance evaluation allows the testing of different configurations and options in test environments, including the possibility to identify the limits (and bottlenecks) without impacting real users in real processes.

This subsection describes the technical evaluation methodology employed to evaluate the performance of the EMPATIA Platform, detailing the evaluation scenarios, parameters and metrics. The platform evaluation has been performed considering the two versions of the platform:

- P1 – first version of the platform

- P2 – second version of the platform

The goal is to evaluate different size of user participation processes: neighbourhood, municipality, country. With the achieved results it is possible to evaluate the performance of the EMPATIA Platform; identify the best technical deployment configuration option; and estimate the resources and costs required to manage one participation process.

This independent performance evaluation took the results from the validation events (e.g. the users most relevant platform interaction pattern) to define the evaluation methodology.

For this evaluation it is considered the highest participation phases of the common participation processes, like the final voting days, and is maximized the number of simultaneous participation users (in a 10-minute window) compared to measured processes. For simplicity it is used as a refence a traditional vote phase of a PB process that has a usual user access flow: home page; login; list of proposals for vote; visualization of proposals details; and vote. It is also taken into consideration authenticated and not authenticated users due to the very different complexity of the platform internal process (e.g. for authenticated users it is required to verify existing votes in the list and details of proposals).

Taking these pre-conditions into consideration, it was defined as relevant to evaluate processes with the following conditions:

- Small community: a process that can organize up to 1.000 citizens, and in a peak participation is able to have up to 10 citizens participating in 10 minutes.

- Municipality district: a process that can organize up to 2.500 citizens, and in a peak participation is able to have up to 25 citizens participating in 10 minutes.

- Small Municipality: a process that can organize up to 10.000 citizens, and in a peak participation is able to have up to 100 citizens participating in 10 minutes.

- Municipality: a process that can organize up to 20.000 citizens, and in a peak participation is able to have up to 200 citizens participating in 10 minutes.

- National: a process that can organize up to 100.000 citizens, and in a peak participation is able to have up to 1.000 citizens participating in 10 minutes.

The peak participation is calculated with the assumption that 30% of citizens participate in the last day of the process, and from these 10% participate in a peak hour period. This estimate is based on the EMPATIA pilots and other applications and the recorded tendencies, where the peak participation was always much lower than this assumption. The registered peak participation was 75 simultaneous users

in a process with 35.000 engaged citizens (and more than 95% of the accesses were for content pages, the simplest and less demanding pages available in the platform).

Additionally, it is also assumed that the profile of the users is all the same type, which is not true in a real environment. For example, it is not normal to have all users to perform a vote page access in simultaneous, when traditionally, some users will be going through content pages, some will not be authenticated, etc. For this reason, we consider these peak participations much higher than the real peak of a real participation event for the respective total of citizens.

2.1.2.1 Scenarios

To evaluate the EMPATIA Platform six different cloud configuration options were defined (summarized in Table 5). These different options will support the identification of the best configuration option (server(s) and database(s)) for the different participation processes (from a small community to national level). Additionally, these evaluation scenarios allow the identification of possible bottlenecks or limits in the platform architecture or in the development choices.

As described in Deliverable D2.4 [9], the EMPATIA Platform can be deployed in two main configurations: all components in one server; or each component in each server. Intermediate deployment configurations can be done, but they are not considered in this evaluation. For redundancy and scalability, both deployment configurations support a cluster like approach where through a load balancing proxy it is possible to have multiple servers performing the same work.

Additionally, the EMPATIA Platform, uses two different databases: relational persistent database; non-relational non-persistent database. The recommended relational persistent database is MySQL and is used to store all EMPATIA data. The recommended non-relational non-persistent database is the no-SQL REDIS (key/value) database that is used to manage users' sessions and caching purposes. Both databases should be deployed in different servers from the EMPATIA Platform, and support cluster deployments for redundancy and performance. To support the cluster configuration of the databases a load balancing proxy is used.

Considering these EMPATIA Platform configuration options, three different Server evaluation options were defined:

- **SA** – "single all-in-one", one server with all the EMPATIA components deployed;

- **CA** – "cluster all-in-one", cluster of SA server instances;

- **SS** – "single splitted", one server per each EMPATIA component.

The databases configuration options are:

- **SDB** – single instance with all the databases;

- **CDB** – cluster of database nodes.

Finally, six evaluation scenarios were defined as summarized in Table 5.

Table 5 – Evaluation scenarios

Scenarios	Platform	# Web Servers	# Databases	# Proxies	# Total servers
SA-SDB	P1	1	1	0	2
SA-CDB	P1, P2	1	3	1	5
CA-SDB	P1	3	1	1	5

CA-CDB	P1	3	3	2	8
SS-SDB	P1	10	1	0	11
SS-CDB	P1	10	3	1	14

Figure 1 illustrates the deployment details of CA-CDB scenario, highlighting the load balancer nodes for the nodes with the database(s) and with the EMPATIA components. The client nodes simulate real users performing diverse requests, such nodes have specific scripts running that perform the requests to the WUI component. The number of the client nodes varies according to the evaluation parameters, as detailed in the next section. The other five scenarios are a combination of simplifications of this scenario. It should be noticed that not all the scenarios have been evaluated in the P2 version of the platform, since some scenarios do not provide a real benefit in terms of performance and deployment/maintenance costs. As such only the SA-CSB scenario has been considered in the final technical validation.
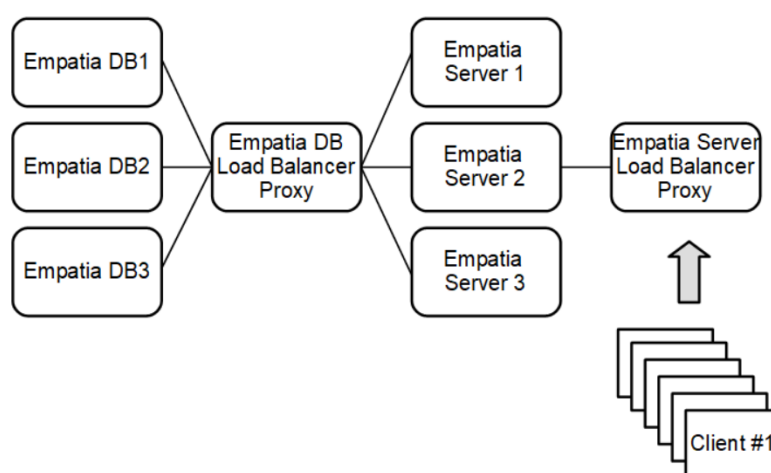
Figure 1 – Deployment details of CA-CDB scenario

2.1.2.2 Parameters

As documented in the Deliverable D2.3 [3] and in Deliverable D2.4 [9], the EMPATIA Platform is highly customizable to accommodate the specificities of each municipality or participatory processes. For the different size participation processes (from a small community to national level) it was considered a process with 30.000 registered users, a vote event with 1.000 projects for vote, and 60.000 votes already casted (two votes per registered user). These values correspond to a municipality or a national wide process size and allow the evaluation of all different size participation processes with a highly populated database.

Despite the flexibility of the platform in supporting different communities, in the conducted evaluation, users are configured to belong to the same community, as such a single PAD/CB is considered. Also, a single site scenario is used.

The number of simultaneous users accessing the platform in a 10-minute period follows the different size participation processes (from a small community to national level): 50, 100, 500 and 1.000 simultaneous users.

From the EMPATIA Platform validation events (pilots and other applications) it was identified the most accessed pages of all processes: home page; projects list; project details; and vote. Other pages accesses

are less frequent and are less complex, technically speaking. Users accesses are performed in two modes: as anonymous (ANO) and authenticated (AUTH).

Table 6 presents and overview of the different tested pages.

Table 6 – Evaluated Pages

Page	Description	Modes
Home Page	Main Page of the EMPATIA platform	Anonymous, Authenticated
List of Ideas	Page with list of ideas	Anonymous, Authenticated
Details of Ideas	Page with details of idea	Anonymous, Authenticated
Vote	Page to vote in specific idea	Authenticated

Each test runs in a time frame of 10 minutes, with 3 repetitions for statistical significance. Due to the high number of evaluation scenarios and combination of pages and user modes considered it was observed that the 3 runs provide constant and significant results, without major deviations. For each test and repetition the system must be restarted, and the databases cleaned.

The performance metrics (see next section) include metrics that assess the user satisfaction regarding the performance of a page. Such performance is determined based on certain threshold values that are considered according to Table 7.

Table 7 – Evaluation parameters thresholds

Threshold	Description	Values
apdex_satisfied_threshold	APDEX satisfaction threshold	Default: 500 ms Used: 2.000 ms, as per [18] and [19]
apdex_tolerated_threshold	APDEX tolerance threshold	Default: 1.500 ms Used:10.000 ms, as per [18] and [19]

2.1.2.3 Metrics

To measure the performance of the diverse EMPATIA components, the Apache JMeter version 3.2 [8], an open-source Java application, was employed. JMeter is a tool able to simulate a heavy load on a server by replicating the execution of requests over a wide variety of protocols (e.g. HTTP, HTTPS, SOAP/REST). Specific JMeter test scripts were developed to perform all evaluation scenarios (following all parameters defined).

The performance metrics measured in the evaluation are summarized in Table 8.

Table 8 – Performance metrics

Metric	Unit	Description
Connection time	ms	Time to establish the connection with the WUI components, this includes TCP and SSL handshake.
Latency	ms	Time between the first request and the reception of the first response.
Server Processing Time (SPT)	ms	Time taken by a server to reply to a request. SPT = Latency – Connection_time.
Errors	%	Percentage of requests with codes associated with error (e.g. 40X, 50X).
Elapsed Time	ms	Time between the first request and the reception of the last response.

Response Code		HTTP codes of response messages sent by the EMPATIA components.
Size of messages	bytes	Size of messages and replies in bytes.
Latency over time (per run)	ms	Variation of latency over the time of the run.
Throughput over time (per run)	Bytes/sec	Achieved throughput over the time of the run
APDEX - Application Performance Index (per run)	Range [0,1]	APDEX [9] is an index based on configurable values for tolerated and satisfied thresholds

In section 3.1.3 it is presented two evaluations of the EMPATIA Platform, the first evaluation uses an extended version of the first prototype (version from M20), and the second evaluation uses the final version of the prototype (version from M26).

2.2 Behavioural evaluation

The behavioural indicators are the non-technical KPIs selected to evaluate the PB platform's performance from a user perspective. The sub-indicators under the behavioural indicator category are proposed based on the findings of the literature review. The concepts from the 'Unified Theory of Acceptance and Use of Technology (UTAUT), Information System Success Model (ISSM) and 'perceptions regarding information privacy' theory was used to facilitate the investigations (i.e. survey) on the reasons underpinning EMPATIA platform acceptance among the users. The survey questions were distributed online to the participants (i.e. EMPATIA users) in four pilot sites (i.e. Wuppertal (Germany), Ricany (Prague), Lisbon (Portugal), and Milan (Italy) after the field trial. The questionnaire is available in Appendix A.

2.3 Socio-Political Evaluation

The EMPATIA project had two main sets of objectives:

1) Develop a prototype digital platform (EMPATIA Platform) flexible and adaptable to support a variety of participatory processes and combining different channels of interaction.

2) Promote real life multichannel participatory processes that leveraged such platform or some component of such platform to promote deeper inclusion, increased citizens' efficacy to participate in public policy making and the renewal of trust in local institutions

In order to achieve such objectives EMPATIA co-designed both the platform and the participatory process with the local partner, the representatives and staff members of each city adopting the participatory process. Therefore, both the design of the technology itself and the design of each participatory process in each city evolved through a constant dialogue within the consortium.

In this section we will describe the assessment of the objectives that were achieved and were missed both with respect the technology itself as a standalone product, and with respect the participatory processes we implemented.

It is important to note that the participatory processes promoted by the EMPATIA project are complex systems that combine numerous elements many of which were not under the direct control of the EMPATIA consortium. For example, the knowledge and political objectives of the political representatives and city staff that sponsored the project in each pilot site affects the type of modules and

features that each city decided to leverage. The EMPATIA platform by its nature was specifically designed to be modular and to allow the city officials to design their preferred participatory process cherry picking complex or simple features depending on their own specific objectives. Additionally, the EMPATIA platform was designed to be easily integrated with pre-existing technologies again with the objective of allowing city official and staff member to leverage only the components that were more meaningful for them. This implies that different macro-modules of the EMPATIA platform were adopted in different pilots. More precisely:

Table 9 – Map of integrated software

	Wuppertal	Milan	Lisbon	Říčany
Integrated login	Adopted	Used local platform (OpenDCM)	Adopted	Not present
Ideation	Adopted	Used local platform (OpenDCM)	Adopted	Adopted
Voting	Adopted	Used local platform (OpenDCM)	Adopted	Used local platform (D21)
Monitoring	Adopted	Adopted	Adopted	Not present

Due to the extreme customizability of the EMPATIA platform there are also differences in the specific features adopted within each macro module. For example, the ideation system implemented in Říčany was extremely simple, not much more than a static website, while in Lisbon the continuous Ideation Platform LisboaIdeia was significantly more complex. This flexibility emerges even more when we look at the impressive variety of deployment in the additional pilots.

When we look at the capacity to integrate online and offline participatory processes we observe again a significant variety of results:

Table 10 – Engagement Media Map

	Wuppertal	Milan	Lisbon	Říčany
Ideation	Hybrid: 1 large in person event	Hybrid: around 30 events	Online only	Face to Face (then ideas uploaded by city officials via EMPATIA)
Voting	Hybrid: possibility to vote via paper and via phone	Hybrid: possibility to vote via paper in markets and libraries	Online only	Online only
Monitoring	Online only	Online only	Online only	Online only

The flexibility of the EMPATIA platform and its capacity to not constrain the local implementers in designing their own participatory processes implementing as many face-to-face and online participatory spaces they desired is clearly an objective that was achieved by EMPATIA.

The extreme variety and intensity of deployments show that EMPATIA at the moment is the most flexible existing tools on the market. However this flexibility also come with a cost that is exactly expressed by the patchwork adoption of the various modules of EMPATIA and the frustration that the consortium expressed when most pilots decided to adopt only few modules of EMPATIA, preferring trusted local technologies that had been tested for years in each city (OpenDCM in Milan, and D21 in

Říčany), and when many of the advanced features we had developed for each module were not adopted due to various political or staff veto points.

For example, our monitoring module is capable of advanced interaction with the participants. It allows participants to conduct participatory monitoring, upload their own pictures and live comment. It was also designed to support advanced deliberative features based on argument visualization. But the city of Milan decided not to implement such features using our interactive module as a non-interactive broadcasting tool. Similarly, Lisbon adopted a continuous ideation platform that was consultative with no budget attached to it and that ran parallel to a high profile participatory budgeting with a significant budget. Our team explained the risks of this approach and attempted to discourage the city to adopt such strategy, but ultimately it was a municipality decision.

Lastly our kiosks that would allow speedier face to face voting and would not require paper voting were not adopted in any of the main pilots, and instead were adopted in Cascais with great success. In the Milan pilot the municipality initially decided not to have in-person votes, but due to the protest of elder citizens implemented in the last-minute paper vote. During the design phase we had strongly suggested to have such voting channel available, but Milan rejected it due to its cost in terms of manpower. Only under the political pressure and critique of many citizens the possibility of face to face voting opened up. At that point it was too late to predispose kiosks voting.

Thus, it is important to understand that the flexibility of the EMPATIA platform cut both ways, on one hand it frees the local implementers to design whatever they want, overcoming the technological constraints that existing participatory platforms have, on the other hand this flexibility also allows to create problematic processes that the currently existing fixed process platforms do not allow. Thus, EMPATIA can be used to do greatly innovative processes, but can also be used to do very simple things.

Additionally, when looking at the impact of participatory processes on inclusion and participants' attitudes the literature identifies six primary local factors that significantly affect such impact (Avritzer 2004, Fung 2007, Wampler 2007, Smith 2009, Spada & Allegretti 2014, Parkinson & Mansbridge 2012, Baiocchi & Ganuza 2016, Warren 2017): political support; bureaucratic support; resources available to the city; past history of participation; other competing participatory processes; and level of civil society support

Best practices emerge more often in cities in which the participatory process is supported both by the institutional side (politicians and bureaucrats) and by civil society. On average cities that have a greater amount of resources implement more and more resilient participatory processes. And the experience of ongoing or past participatory processes, both negative and positive, significantly affects participants' propensity to participate and the way they participate. Cities that have a history of tokenistic participation and a history to implement window dressing participatory processes that raise expectation of participants without generating any impact, or without communicating effectively the impact they have generated, often have significant difficulty re-engaging participants.

These factors together with structural factors such as size of the city, available resources and ability to spend them quickly are some of the crucial elements that affect participatory processes and have been analysed by a vast literature. We will return in section 4.2 on this graph grounding these factors in the specific case of our pilots and metrics we aim to study.
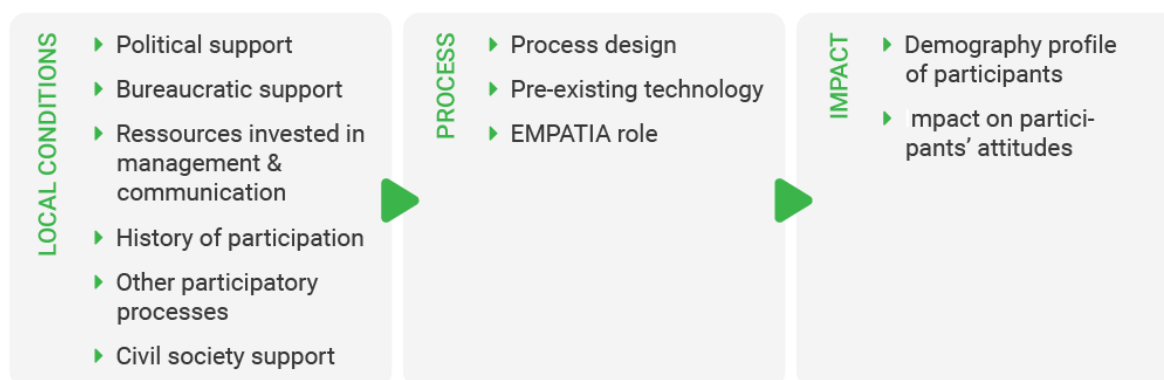
Figure 2 - Factors affecting the pilot impact - general

Evaluating the impact of such local condition is not easy, quantitative measures do not offer a good metric for these complex factors. Therefor in order to track the variety of local condition and better evaluate the overall quality of each process we implemented qualitative focus groups and interviews with key staff members, politicians and participants in each of the four pilots' sites. The details of this analysis cannot be easily summarized. What emerges from the focus group is the complexity of each pilot site, the different objectives of politicians, staff members and participants.

2.3.1 Socio-political impact: narrowing down the KPIs

When analysing the impact of the participatory processes implemented by EMPATIA we can focus on a large number of KPIS.

In general, we can divide impact in two large categories: 1) soft impact on stakeholders' attitudes, perception and behaviours, and 2) hard impact on ideas generated, budgetary changes, and down the line public projects and policies implemented.

The EMPATIA consortium has chosen to focus the socio-political impact evaluation on soft impact on citizens-participants. More specifically we focus on two related set of indicators.

The first, "Inclusiveness," investigates the profile of the participants to analyse the capacity of the EMPATIA pilots to engage a diverse set of citizens that goes beyond so called "usual suspects" (Schlozman, Verba & Brady 2010).

The second set of indicators, "Political Alienation," instead focuses on exploring the impact of the platform on categories of political alienation as relating to "incapability" and "discontentment" of participants (Olsen 1969). For this second set of KPIs we borrow questions from European surveys such as Eurobarometer, the European Social Science Survey and the British Electoral Study. Using standardized questionnaires allows us to compare the impact of the platform on participants' attitudes, with the respective baseline representative samples of the population in the same region and allows us to continue an ongoing international investigation conducted by Participedia, one of our research partners. In particular, our questionnaire has direct comparability with the questionnaire used to evaluate the Citizens' Assembly Pilots implemented in 2015 in the UK (Flinders et al. 2016, Spada et al. 2016).

There are four primary reasons that have induced us to focus the impact evaluation on these indicators:

2.3.1.1 The length of the project

The EMPATIA project could not evaluate the public policy impact of its pilots because it will not realize within the timeline of the project. The public policy impact of public projects introduced in a city budget in 2017-2018 will realize itself in the coming years. The cutting-edge research on policy impact of participatory budgeting, for example, employs panel data that spans more than twenty years and analyses policy impact on intervals of four years (See Touchton and Wampler 2013). Note that EMPATIA in collaboration with IODP and members of the SEAB, including Wampler, has collected data on a global scale and in Brazil to contribute to the policy impact research agenda. This data will be made available on EMPATIA website and will contribute to this research agenda.

2.3.1.2 The impossibility of creating a benchmark to evaluate ideas

John Roemer has demonstrated how the Arrow impossibility theorem applies to a variety of other aggregation problems, including the qualitative evaluation of comparable items or performances (Roemer 2001). Therefore, it is impossible to create an evaluation framework for project ideas that is not arbitrary without violating some of the very basic and desirable assumptions described by Arrow (1951). The basic intuition is that the quality of a project is a multidimensional variable that depends on too many parameters to allow a non-arbitrary transformation of this complexity in a unidimensional ranking. The same intuition explains why the sports with the most controversies in the Olympics are sports in which a panel of expert gives a vote to a complex performance, such as Ice Skating. If we had an epistemically sound metric of quality of public projects, part of the appeal of participatory processes themselves would be reduced. We could simply collect ideas and evaluate them and implement the best one. (Un)fortunately at the moment such metric does not exist, and we need to employ majority voting. Therefore, EMPATIA discarded various methodologies that involve expert reviews of project ideas to create a ranking of ideas and attempt to show that participatory processes generate better projects. Qualitative description on all project has been collected and is available for future research if sounder methodologies of evaluation emerge.

2.3.1.3 The partner cities' interest and concerns

The city we partnered with stated that one of their primary objectives was creating a new relationship with citizens, promoting trust and reducing antipolitics and political discontent. The recent and mounting wave of populist movement across Europe and the rising distrust of citizens in democracy and institutions is one of the primary reasons to adopt new participatory governance approaches. At the same time, they also identified the key objective of promoting citizens' better understanding of the difficulties of managing the city budget.

2.3.1.4 Academics' concerns

The digital participatory processes that are spreading across Europe and have the most visibility is promoting a quantitative approach to engagement. Cities like Paris, Madrid, Barcelona and Lisbon compete primarily on the fact that their digital participatory process manages to engage the largest number of participants. The issue of diversity of participants is not at the forefront of the agenda of practitioners. However, most academics believe that the benefits of the wisdom of the crowd realize only if the participants are diverse (see Page 2007). Demographic data on the participants in these processes was not even collected before EMPATIA.

Therefore, in collaboration with the SEAB and Participedia we constructed an impact evaluation framework specifically designed to explore the potential of different participatory process in engage a diverse set of citizens, and promote citizens' efficacy, trust in local institutions and reduce discontent.

To our knowledge the impact evaluation framework implemented by EMPATIA has never been deployed to the scale that EMPATIA achieved. We have comparable data across four large scale real life participatory processes and such data is scalable and comparable to other ongoing and past participatory processes. It is difficult to evaluate the impact on practitioners and academia of this piece of work, but we are already seeing a renovate interest in inclusion and diversity. Paris will deploy its first survey on participants' demographics in the coming months.

In the next section we will briefly describe in more detail each of the two families of KPIs we have chosen, the process used to gather the data and the data we collected. The data collection effort in Milan is still ongoing and the amount of data we collected is such that we are only scratching the surface in this document of the potential research that can be done leveraging EMPATIA data.

2.3.2 Inclusiveness: who participates?

The concept of inclusiveness in participatory innovations, such as the pilots implemented by the EMPATIA Project, refers to the diversity of participants and the extent to which groups traditionally excluded from a process may be effectively included (Roberson 2006). In this respect, optimistic views support a mobilization hypothesis, which states that the introduction of online modes of participation will increase the participation of citizens previously marginalized in participatory processes (Norris 2001). While there is significant reason to believe that online channels of engagement will significantly boost inclusiveness, the empirical literature finds mixed results (Vassil and Weber 2011; Pammett and Goodman 2013).

In fact, at odds with the mobilization thesis, much of the digital divide literature suggests that unequal access to the Internet will disproportionately increase the representation of economically advantaged groups who are already politically active (Schlozman, Verba, and Brady 2010; Brandtzæg, Heim, and Karahasanović 2011; Alvarez and Nagler 2000). Often referred to as the "reinforcement thesis," such studies posit that people with the resources and motivation to participate, who are usually the better-off, will be further empowered by the introduction of online modes of participation (Norris 2001; Davis 1998).

The study of Spada, Mellon, Peixoto, & Sjoberg conducted in one of the largest digital participatory budgeting processes in the world, the state-level process in Rio Grande do Sul in Brazil, engaging 300,000 participants every year, highlighted how the online channel attracted a new set of "internet-only voters," ostensibly increasing the diversity of the process. Nevertheless, such voters were on average younger, male, of higher income and educational attainment, than other voters that declared themselves to also be participating face to face.

Building upon the existing literature on inclusion of participatory processes and digital divide we have selected a parsimonious set of KPIs that will allow to evaluate the inclusiveness of the participatory processes promoted by EMPATIA and the idea that many practitioners and field experts support that hybrid participation, combining online and face to face form of participation, achieves better inclusion.

More formally, our analysis tests the following hypothesis:

- **Hypothesis H1:** The presence of "multiple channels of engagement" and in particular the combination of in person and online channels of engagement affects the socio-economic profile of participants promoting inclusion with respect: Gender; Age; Education.

- **Hypothesis H2:** Hybrid participatory processes that include more in person participation are more inclusive in terms of age, gender and education than processes that have less in person participation.

2.3.3 Data collection method and overview of the data

To investigate inclusion in the various phases of each participatory process promoted by EMPATIA we collected data on demographics and participants' behaviour leveraging three instruments:

1) Login survey

2) Record of user interactions with the platform

3) Secondary data we collected from existing open data repository

4) Research survey on inclusion in the Lisbon participatory system

The survey at login provided a demographic profile of each participant that interacted with data on participants' behaviour in the platform allows us to explore if there are specific demographics groups that perform more or less certain activities in each platform. For example, as we will see in section four, women participate differently from men to the ideation and voting phase. While in the voting phase women and men participate equally, during the ideation phase women participate less. This feature is consistent across all pilots. Lastly, we have employed the secondary data from Eurostat as a benchmark to make sure that the reader can take into account demographics differences across pilot sites.

In Lisbon we also collected data on inclusion via a specific additional mechanism. As described in deliverable 3.2 in Lisbon EMPATIA not only implemented a participatory process – LisBOAIdeia a continuous ideation platform designed by the city – but also create an integrated portal that combined all the pre-existing digital participatory processes offered by the city. To explore the demographic profile of the users of this portal we deployed a non-mandatory survey in the mailing list the city of Lisbon uses to engage citizens and promote all the participatory processes.

In the next subsections we will enter more in detail of each data collection method

2.3.3.1 Login survey

In all pilots we promoted a dual registration process that allowed casual users to browse the platform with a "light registration" that required a minimal amount of information (username & email) but required a more advanced registration to obtain more advanced privileges, such as proposing an idea or voting for an idea. This more advanced registration requires the user to provide a demographic profile and additional data required to identify the participants as by request of each local authority (e.g.; mobile number, fiscal number, ID card or proof of residency).

Leveraging these two-step approach, we collected data on gender, age and education. The consortium decided collectively the amount of data to be collected excluding data on income, citizenship and other more advanced demographics. The consortium felt that age, gender and education where typical questions that users are familiar with when registering for social network sites and would not have reduced engagement, while more unusual and less familiar questions might have.

In Říčany the data was collected in a different way. Říčany was an early pilot and the D21 platform is an anonymous survey platform. Říčany did not collect education information and did not collect an ID for the proponent of ideas that could be used to interact demographic data with behavioural data.

While each pilot asked the data in slightly different format, the consortium predetermined that all the data should be compatible with the following macro-classification that allows for international comparisons that overcome country specific differences.

Table 11 – Overview of Demographics Data

Variable	Data format
Gender	Female Male Other
Age	<18[1] 18-29 30-49 50-64 >65
Education	No formal Education Primary School (ISCED1 and 2) Secondary School (ISCED 3 and 4) Tertiary (ISCED 5 and superior)

2.3.3.2 Record of user interactions with the platform

In each pilot we collected a record of all the interaction between users and the platform. The Report D3.2 - Pilots Final Report includes a detailed description of the participatory processes delivered in the pilots of EMPATIA and the way through which participants interacted with the platform.

While pilots differ significantly, all pilots included minimum three kind of actions that could be done by the participants:

i.   The registration process.

ii. The submission of proposals.

iii. The submission of votes and preferences.

Note that the first action is required to perform all the other actions, while the user is free to submit or not an idea, and to submit or not a vote or a preference. Thus, we can divide the participants on the basis of their platform activity in three distinct categories:

i.   Participants: it refers to all the registered users to the platform that followed through the whole registration and authentication process established for each pilot.

ii. Proposers: it refers to the registered users that have submitted at least one proposal.

iii. Active: it refers to all the registered users that have been either casted a vote or submitted a proposal.

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[1] In all pilots the participation has been opened to citizens above 16yo, for this reason this age range should be considered as 16 – 18 years old.

Other parameters that could be used in the analysis of the inclusion are the overall number of proposals received and the overall number of votes casted. The following table compares the four EMPATIA pilot. Note that the Říčany pilot was completely anonymous and thus does not allow to interact the data between the ideation phase and the voting phase making it impossible to segment the participants by their level of activity.

Table 12 – Pilots - Participants and Interactions

Interactions	Lisbon	Milan	Říčany	Wuppertal
Participants	1855	10995	1022	3324
Active	812	7574	1022	2404
Proposers	117	242	0	134
proposals_collected	172	242	0	241
support_positive	1447	17758	0	2286
support_negative	99	0	0	0
votes_positive	0	0	4652	5326
votes_negative	0	0	906	0

2.3.3.3 Data Collected from Secondary Sources

At the beginning of the EMPATIA project we built a demographic profile for each pilot site with the objective of creating a benchmark to situate the demographic data that the EMPATIA pilots were going to collect. In order to identify the relevant parameters for the population we referred to secondary sources and dataset available publicly in the open data portals of each city or to statistics provided by Eurostat or by the relative national statistic institutes for each case. The specific data sources are available in the open dataset on the EMPATIA website.

2.3.3.4 Missing Data

Despite the standardization of registration procedures proposed by the consortium to local partners involved in pilot's delivery, there are significant differences between the quality and completeness of the data. This is due to the different means of data collection used in each case, modified according to contextual specificities of methodology and technologies used. As a consequence, the number of incomplete registration and missing data can vary significantly between the four cases analysed. The following table report the exact figures regarding the overall number of user registered and those that actually completed their registration.

Table 13 – Missing Data

	Lisbon		Milan		Říčany		Wuppertal	
Complete	572	30.84%	10995	100.00%	565	55.28%	3286	98.86%
Incomplete	1283	69.16%	0	0.00%	457	44.72%	38	1.14%
Total	1855	100.00%	10995	100.00%	1022	100.00%	3324	100.00%

In Particular:

- In Lisbon we collected data at the registration of the participants through the site www.lisboaparticipa.pt, based on EMPATIA code, and managed directly by the partners INLOCO

and ONE. In the case of Lisbon, the registration procedure has been changing along the pilot, and in an initial stage it was allowed also to unidentified participants to submit proposals and preferences. Therefore, the number of missing value for this case is high, and only 30% of participants completed their profile. In order to complement this lack of data, additional demographic information have been requested to users in the final questionnaires distributed throughout the network of LisboaParticipa.

- In Milan data have been collected at the registration of the participants, through the site www.bilanciopartecipativo.it, based on the service OpenDcn, managed by the partner UNIMI, and integrated to the services based on EMPATIA code, regarding the monitoring component of the local PB process. In the case of Milan, demographic data were requested since the "light" stage of registration and as a consequence there are no missing value.

- In Říčany sociodemographic data have been collected at the registration of participants through the site http://www.ridimŘíčany.cz/ that have been used to collect the votes in the related pilot. For unilateral decision of D21, the partner in charge for this pilot, data on education was not collected.

To investigate inclusion, we leverage the login system of the platform used in the pilots of Milan Wuppertal, and Lisbon, while we use demographic surveys for the pilot in Říčany due to the characteristics of the D21 platform employed in such city that does not collect demographic information at login. The following table summarizes the amount of demographics data available in each city pilot:

Overall the table shows not surprisingly how including socio-demographics variables in the login system that are mandatory is a superior approach to the other two designs (non-mandatory questions at login and survey approach) for the objective of reducing missing values. As we will see in section 4.3 Wuppertal that adopted the mandatory demographics questions in the login system has the best inclusion results of these pilots and therefore on the basis of our data it is not clear that including such questions in the login system as mandatory has a significant negative impact on inclusion. That said our evidence with respect the latter research question is purely anecdotal. EMPATIA research design was not meant to study the impact of mandatory vs non-mandatory login questions on inclusion nor on quantity of participants. It is possible that removing such requirement could have promoted an even larger participation and a more diverse participation in Milan and Wuppertal. That said Wuppertal is a city that is quite smaller than Lisbon in terms of size (350000 citizens vs 500000 citizens) and thus our anecdotal evidence suggest that the quantity & diversity of participants is more affected by other elements of the participatory process than introducing mandatory socio-demographics questions at login. Therefore, we preliminary conclude that the benefit of including such questions is superior to the cost. Without knowing who participates it is not even possible to start the conversation about who is not participating and attempt to promote better inclusion in these processes.

2.3.4 The rising tide of political discontentment: can democratic innovations be the solution?

Contemporary politics is afflicted by a rising tide of political discontentment. Evidence across many advanced democracies points to development of an anti-politics orientation among citizens (Pharr and Putnam 2000; Torcal and Montero 2006; Stoker 2006; Hay 2007; Norris 2011; Flinders 2012; Allen and Birch 2015; Jennings and Stoker 2016; Clarke et al. 2016). Expressions of anti-politics are found in negative sentiments towards politicians, (formal) politics and political institutions. These attitudes range from negative assessments of the motivation, the quality and the behaviour of elected representatives to distrust or scepticism about the integrity and quality of the political process and government – in its

ability to solve problems, its deference to vested interests, and its short-termism (see Jennings et al. 2016). Disengagement from politics is also diagnosed from trends of declining voter turnout and party memberships (Norris 2011), and in the hollowing out of democracy more generally via the rise of a professionalised political class disconnected from wider society (Mair 2013). The common theme across such accounts is the emergence of a gap between citizens, on the one hand, and politicians, political processes and political institutions on the other. Many citizens feel that politics does not represent them, that it favours the rich and powerful in society, and that there is little scope for ordinary people to influence decision-making.

How to respond to the degree of political alienation currently afflicting democratic politics is therefore a significant challenge for both students and practitioners. Many have claimed that participatory budgeting and continuous ideation platforms are particularly suited among the variety of democratic innovations and mini-public to restore trust in local institutions, reduce anti-politics sentiment and promote the internal and external efficacy of participants (Abers 2001, Baiocchi 2005, Avritzer 2009, Pinnington, Lerner, & Schugurensky, 2009, Wampler 2010, Talpin 2012, Rocke 2014, Gilmann 2016). However, there are many variants of these processes and the current state of the art does not analyse the impact of different institutional designs and channels of engagement on trust, anti-politics and efficacy. In order to fill this important gap in the social science literature and to also optimize the legitimacy enhancing characteristics of different deployments of the EMPATIA Platform, we have built a specific research design that investigates the impact of each pilot on a variety of widely used metrics of trust, efficacy and anti-politics.

2.3.5 Categories of Political Alienation: Efficacy and Discontent

Debate over the health of western democracies is not new. There has been periodic re-telling of tales of democratic crisis. Indeed, the current generation of research on anti-politics has strong echoes of earlier wave of studies on political alienation and distrust (e.g. Litt 1963; Olsen 1969; Finifter 1970; Citrin 1974; Easton 1975), especially focused on 1960s America where "…protest, violence, disillusionment, estrangement, disloyalty and rebellion became major themes in American politics" (Citrin et al. 1975, p. 2).

While this project is not concerned with the question of whether political alienation has deteriorated further in the intervening period, the puzzles it seeks to resolve entail some of the same challenges. Just as political alienation came "to function as a catch-all term signifying almost any form of 'unhappiness' about politics or dissatisfaction with some aspect of society" (Citrin et al. 1975, pp. 2-3), 'anti-politics' has come to serve as shorthand for a range of expressions of political disaffection, disengagement, cynicism and negativity. Yet in order to assess the impact of new forms of deliberation on political discontent, it is essential to start with the question: how can political alienation be conceptualized and measured? This matter because democratic innovations typically seek to transform both the capacity and outlook of participants.

Olsen's (1969) classic distinction between categories of political alienation as relating to "incapability" and "discontentment" is useful because it highlights that democratic innovations might alter the terms of contemporary politics either through empowering citizens in terms of their feelings of being able to participate effectively within the political system, on the one hand, or by addressing expressions of negativity or cynicism towards that system on the other. The first category of political alienation, as relating to efficacy, can be disaggregated to distinguish between (i) citizens' self-assessments of their own political judgments (internal efficacy), versus (ii) citizens' perceptions of their own influence over

political decisions taken by others (external efficacy). It is possible, for example, that some citizens might feel confident in their own capability to comprehend and engage in political debate, but still feel they have little scope for influencing political actors.

Democratic innovations such as participatory budgeting and continuous ideation platforms are specifically designed to enhance the political competence of citizens, while participation might leave individuals feeling empowered in terms of their political influence (depending on design of the democratic innovation). The second type of alienation, discontentment, refers to a broader negative affectation towards the object(s) of the political system, such as the processes and motivations of actors in the institutions. The examples for political discontent are a belief that a certain government policy is bias, and distrust in political authorities. Some deliberative scholars suggest this sort of democratic discontent might be remedied by political engagement, by restoring trust in the integrity of decision-making processes and authorities. Others have argued that the effectiveness of deliberative-style cures is likely to be limited to 'dissatisfied democrats' (more affluent, educated and engaged citizens), whereas 'stealth democrats' (citizens of lower socio-economic status who are less interested in politics) tend to favour direct democracy (Hibbing and Theiss-Morse 2002; Webb 2013). The ways in which democratic innovations are deemed to impact on political alienation thus may depend upon the particular construct that is being measured.

2.3.6 Democratic innovations and anti-politics

There is extensive evidence of the capacity of citizens to participate in democratic innovations. It is widely accepted that citizens are willing and able to come to reasoned and considered judgements on complex political and constitutional issues (Smith 2009). Where we lack evidence that is more systematic is the impact of such deliberative forums on the broader attitudes of participants towards extant political practices. As such, we draw on the EMPATIA case studies to help build the evidence base on whether different designs of democratic innovations counter anti-political sentiments, be they related to internal or external efficacy or to broader expressions of discontent. In particular, the multi-channel nature of the EMPATIA platform allows us to investigate if the face-to-face and online channel affect differently the participants' attitudes.

We expect that feelings of efficacy will likely be enhanced due to the opportunities of political learning and discussion that are offered by the participatory budgeting format. While James Fishkin has offered evidence of the impact of deliberative polls on participants' internal efficacy, the evidence from other deliberative experiments (Grönlund et al. 2010; Morrell 2005; Nabatchi 2010) is less sanguine. Research on external efficacy again points in different directions, with Fishkin (2009) and Nabatchi (2010) offering positive results for deliberative polls and 21st Century Town Meetings respectively, but Grönlund et al. (2010) suggesting a negative relationship. The even smaller body of work on system-level trust and confidence tends to suggest a positive effect (Davis 1999; Grönlund et al. 2010). Our expectation is that political negativity and cynicism should be reduced through re-connecting citizens with politics, as well as through the exposure of participants to political actors during deliberations. Lastly, there is a growing consensus that online participation has weaker effect on individual attitudes than participating face to face. Thus, our expectation is that the effect of the online channels of engagement should be, ceteris paribus, weaker than the face-to-face ones (Baek, Wojcieszak & Delli Carpini, 2011). More formally, our analyses test the following hypotheses:

- **Hypotheses H1:** Participation in the pilot increases internal efficacy

- **Hypotheses H2:** Participation in the pilot increases external efficacy

- **Hypotheses H3:** Participation in the pilot decreases political discontentment

These hypotheses have been tested by deploying four pilots that employ four different designs with different degrees of intensity of in person and online participation. Therefore, we will also be able to explore the following additional hypothesis:

- **Hypotheses H4:** Hybrid participatory processes that include more in person participation have greater impact on efficacy and political discontentment than processes that have less in person participation.

2.3.7 Deviations from the original plan

One of the objectives of EMPATIA impact evaluation was to compare face to face channels of engagement and online participatory spaces. In order to do so we had designed two sets of surveys one for in person spaces and one for online spaces. However, along the course of the project we abandoned this approach due to the logistical difficulties. Milan for example implemented more than 50 in person events and we simply did not have the budget to collect paper surveys in each. The process of continuous ideation implemented in Lisbon did not include a single in person event apart the initial launch with the press. Therefore, we can order the intensity of in person participation with Milan that displays the highest, then Wuppertal, then Říčany and last Lisbon. This design variety allows us to explore the impact of variation within the hybrid design on our KPIs. Obviously, such variations are also explained by local conditions thus the results should be considered preliminary.

Note also that some of the original questions we included in the questionnaires were vetoed at the local level due to the length of the surveys, in particular the extended battery on channel elasticity was cut and numerous questions regarding usability were perceived as non-appropriate for participatory processes targeting the general public by local implementers and more useful for eGovernment software used by bureaucrats. Thus, such questions were asked during the focus groups instead of being included in the participants' surveys.

In Lisbon we were originally supposed to implement Participatory Budgeting, but due to the requirement of starting it during the first six months of the process we could not provide such service, that finally was provided by another tool (Libertium). Instead in Lisbon we attempted to promote the integration of all participatory systems in a single portal. The city also asked the creation of a continuous ideation platform that would have ran parallel to participatory budgeting. Therefore, Lisbon offered us the opportunity to test some hypothesis generated by our theory of designing multichannel democratic innovations that was the base of the EMPATIA project (Spada & Allegretti 2014). Our theory had hypothesized that on one hand the implementation of parallel channels of engagement that were not clearly distinguished could generate conflict among channels, on the other instead that cross-selling, i.e. the opportunity of advertising to participants in one process the existence of the other could have increased participation. Thus, due to the uncertain nature of participatory action research we lost the possibility of testing the engagement capabilities of face to face processes vs online ones, but in Lisbon we gained the possibility of testing the following additional hypotheses:

- **Hypotheses H4:** the implementation of parallel participatory designs that are not clearly distinguished generates negative interactions between channels of engagement (Spada & Allegretti 2014).

- **Hypotheses H5:** the integration of multiple participatory processes in a single portal allows to induce participants in one process to participate in the other cross-selling (Spada & Allegretti 2014)

2.3.8 PRE/POST design & data collection results

During the EMPATIA pilots, we have conducted surveys of participants at two points in the process, during the voting phase, and two to three months after the results of the process are announced.

The key element of this design is that we will ask three questions twice to the participants, before and after the process, so that we can track the impact of participation on the change in answers. The following table shows the results of the survey collected so far. The Milan pilot is still ongoing, and we will collect the post survey in mid May 2018.

The pre-surveys were deployed during the ideation phase and the voting phase of each participatory process before the results were announced. While the post-surveys were deployed one or two months after the announcement of the results of the votes. The objective of this design is to analyse the potential change in self-reported attitudes of participants.

The process in Lisbon included an additional survey. This additional survey had the objective of better understanding the nuances of the participatory system we had implemented in Lisbon.

When we look at the answer rate, not surprisingly we observed that the highest answer rate in the pre-survey is achieved by the D21 platform. The D21 platform is a survey platform that leverages a community of users that are interested in replying to surveys and have been replying to recurrent surveys in Říčany during the previous years. The participatory budgeting process itself was one of these surveys. On top of this fact Říčany did not collect a unique identifying variable as in the other pilots, and therefore the data is generated by two surveys on two separate self-selected samples and we have no way to know if the participants in the first wave were the same of the participants in the second wave.

Table 14 – Overview of the survey data

		Lisbon Continuous Ideation	Milan PB	Riçany PB	Wuppertal PB
Pre-survey (deployed during the voting phase targeting all participants)	Respondents	264	3322	487	482
	Participants	1855	10995	1022	3324
	Answer rate	14,2%	30,2%	47,6%	14,5%
	Mechanism	EMPATIA	Survey Monkey	D21 (no id)	Survey Monkey
Post- process survey (deployed two months after the end of the process and targeting only pre-survey respondents)	Respondents	92	Will be deployed in May 2018	311	154
	Participants	264		1022	375
	Answer rate	36,6%		30,4%	41,0%
	Mechanism	Survey Monkey		D21 (no id)	Survey Monkey
Participatory system survey (Implemented only in Lisbon)	Respondents	1805			
	Participants	~20000			
	Answer rate	9%			
	Mechanism	Survey Monkey			

When we look at the other pilots' pre-surveys we observe some additional differences. Lisbon used the survey tool designed by EMPATIA, while Milan and Wuppertal used a commercially available tool. The main difference among these tools is that EMPATIA tool did not allow at the time the creation of a personalized email with a personalized survey and required the user to perform a new login. This feature was not available at the time and it is a crucial feature to maximize answer rate. For that reason, we switched to Survey Monkey.

Not surprisingly, the answer rate in the post survey is above 30% in all pilots. That said without adding a monetary incentive, the loss in answers between pre and post is significant. Therefore, this table reinforces the crucial importance of including monetary incentives when deploying pre-post designs and the importance of using a survey tool that does not require the user to perform a login.

In Lisbon we prepared an additional survey to explore the participatory system and in particular to reach out to participants that were not engaged in our pilot but participated in one of the other participatory channels. The city of Lisbon sent the survey to a mailing of 20000 participants, we have no way to double check such number. What we can observe is the lowest answer rate of all our surveys, 9%. It is possible that this engagement mailing list contains a number of inactive emails. On average, well designed surveys generate an answer rate around 20%, thus our estimation is that the number of active email is closer to 10000.

2.3.9 Summary of the data collection instruments

The following table summarizes the data collection instruments used to evaluate the socio-political impact of EMPATIA pilots.

Table 15 – Summary of data collection instruments

Dimension	Description	Objectives	Included in the login system	Included in the PRE-survey	Included in the POST survey
Inclusiveness I: participants demographics	Gender, age, education,	Explore the profile of the participants	YES	NO (only in Říčany)	NO
Inclusiveness II: participants interest in politics	Interest in politics & interest in city budget	Explore the profile of the participants	NO	YES	NO
Political Alienation I: Efficacy	Internal & external efficacy	Explore the impact of participating in the process on efficacy indicators	NO	YES	YES
Political Alienation II: Anti-politics	Systemic and local measures of trust and anti-politics	Explore the impact of participating in the process on trust and anti-politics indicators	NO	YES	YES

Note that the surveys were also the delivery system of some of the process evaluation questions described in the next section, and that in each pilot the local implementers added additional questions both to the pre-survey and the post-survey. The core questions that were repeated both in the pre and post survey are the following:

Table 16 – Core questions I: political alienation & discontentment

How much do you agree or disagree with each of the following statements? PLEASE CROSS ONE BOX IN EACH ROW	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Don't know
People like me don't have any say in what the national government does. [external efficacy – national]						
I have a good understanding of the important political issues facing our country. [internal efficacy – national]						
People like me don't have any say in what the city government does. [external efficacy – local]						
I am well enough informed to make recommendations on how the city is governed. [internal efficacy – local]						
The solutions for the city problems are simple, but politicians refuse to implement them. [antipolitics]						

Table 17 – Core questions II: trust

How much trust do you have in: PLEASE CROSS (X) ONE BOX THAT APPLY	A great deal of attention					No attention		Don't know
	1	2	3	4	5	6	7	
Members of Parliament in general?								
Members of the Regional parliament?								
Members of the city council?								
Members of the technical staff of the city that prepares the budget?								

Table 18 – Core questions III: satisfaction in democracy

On the whole, how satisfied or dissatisfied are you with the way that democracy works in your? PLEASE CROSS (X) ONE BOX THAT APPLY	
Very dissatisfied	
A little dissatisfied	
Fairly satisfied	
Very satisfied	

2.4 Process Evaluation

The previous sub-sections have outlined the evaluation and impact assessment methodology for Technical, Behavioural, Socio-Economic and Politics performance indicators for EMPATIA. This subsection will explain the methodology adopted to evaluate and assess the PB process adapted by the

EMPATIA platform. As detailed in the previous report (D4.1), process assessment is required to examine if, ICT through EMPATIA, has had a positive or negative impact on the users when it comes to the PB process (i.e. whether EMPATIA involves processes that are desired by the users in relation to its use).

2.4.1 Focus Group as the Assessment method

The data for this assessment was gathered through focus groups that was conducted in four pilot sites, i.e. Germany (Wuppertal), Prague (Ricany), Portugal (Lisbon) and Italy (Milan). Each of the sites conducted one focus group after the ideation and voting phase. Nonetheless, two focus groups were conducted in Wuppertal, Germany – i.e. (i) pre-ideation and voting phase; and (ii) post ideation and voting phase.

An approval to run the assessment was obtained from the College of Business, Arts and Social Sciences Research Ethics Committee, Brunel University prior to the evaluation (please refer to Appendix B).

Each focus group involved between ten to fifteen participants (i.e. PB and EMPATIA users), who were made up of citizens and municipality staff, one facilitator (from EMPATIA partners), and minimum one transcriber.

All of the focus groups were conducted in the local language. As such the reports were first transcribed in the local language, before later being translated into the English language and submitted to WP4 partners for evaluation.

2.4.2 The Focus Group Protocol

The focus group protocol as attached Appendix C was used as the guiding framework in implementing the process assessment. The protocol outlines four important aspects, i.e. (i) the materials needed for the focus group; (ii) the process of introducing the focus group and getting consent from the participants; (iii) Explanation of the assessment process; (iv) The assessment process.

2.4.3 Focus group materials

The organiser had ensured that all the relevant materials (i.e. forms, stationery, and refreshments) needed in the focus group were prepared prior to the assessment process.

The forms – i.e. the Participant Information Sheet and Consent Form were attached in Appendix D. Meanwhile, the basic stationery used for this process includes pin boards, marker pen / pen, pins, paper / post-it notes.

Five topics that were derived from the Wuppertal first focus group and three main questions were prepared as headers and pinned at the board to form a matrix (see Table 19) that aided the discussions.

Table 19 – Topics Used in the Focus Group Discussion to Evaluate PB and EMPATIA

Topics Questions	PR/ mobilization	information on budget and process	Online participation	Physical participation	Organization/ others
What went well?					
What could be better?					
Suggestions?					

2.4.4 Introducing the focus group and getting the participants' consents

The focus group process was started by the facilitator's opening address, based on the script that was outlined in the protocol. Among others, the facilitator introduced him/herself and the EMPATIA team, before highlighting the EMPATIA's and the focus group's objectives. Next, the Participant Information Sheets were given to the participants to formally inform them about such assessment and their rights in the process, followed by the distribution of the Consent Forms to be filled by the participants and recollected for records.

2.4.5 Explanation of the assessment process

In this step, the facilitator invited those who had participated in the previous focus group to share their experience and thoughts about the process. This was followed by a brief introduction about the relevancy of focus group as a strategy for collecting data in such research. Then, the moderator encouraged the participants to establish the ground rules for the focus group, which includes the agreement on participations, ideations and confidentiality of information.

2.4.6 The assessment process

The assessment process that was adopted is depicted in Figure 3.

The participants were reminded that the discussion will be recorded, followed by turning on the recorder

↓

The participants were asked to introduce themselves.

↓

The participants were asked to quietly reflect the topics and questions pinned at the pin board (the matrix) against their experience, and write down their thoughts on the post-it notes. (20 minutes)

↓

The facilitator led the discussions on the reflections and clarified the doubts about the topics and questions, ater sticking all the notes written by the participants on the board. (70 minutes)

↓

The facilitator led the discussions on the prioritization of the participants' feedbacks. The participants were asked to stick the coloured stickers provided to them to indicate what were most important, important and least important to them. (20 minutes)

↓

The facilitator acknowledged the participants for their participations and ended the focus group asessment

Figure 3 – The assessment process

3 EMPATIA Platform evaluation

This section presents the technical evaluation results, considering the evaluation methodology specified in section 2.

3.1 Technical evaluation

This section presents the EMPATIA Platform evaluation and the respective analysis. First, the results of the EMPATIA pilots and other applications evaluation are presented. Next, the evaluation KPIs are presented and explained. Finally, the results of the performance evaluation of the first prototype and the final prototypes, including a performance evaluation comparison and an EMPATIA Platform deployment cost analysis.

3.1.1 Validation events

This section presents the statistics regarding the EMPATIA Platform usage in the diverse events. The overall usage statistics of the EMPATIA Platform are summarized in Table 20.

Table 20 – EMPATIA Platform usage overall statistics

Evaluation Metric	Value
Entities	22
Users	43.137
Topics	2.424
Votes	40.552
Emails	64.629
SMS Received	10.449
SMS Sent	18.539

Table 21 depicts statistics of the EMPATIA Platform usage in diverse pilots, these statistics have been collected using the Matomo/Piwik tool [17] and Google Analytics [13]. The statistics report the total number of visits, the number of page views and the average duration of visits.

Table 21 – KPIs in validation events

Pilot	Evaluation Period	# functionalities	Unique Visits	Page Views	Average visit duration
Lisboa Participa	March/2017 – January/2018	48	26,253	102,616	6m 29s
Wuppertal	March/2017 – January/2018	49	22,962	120,191	6m 54s
Ricany	March/2017 – January/2018	15	1,364	4,241	2m 56s
Milan (2ºCycle)	March/2017 – January/2018	17	4,085	15,900	3m 43s
Condeixa	October/2016 – January/2017	36	1,814	5,435	3m 16s
CoGlobal	No data available Process managed by external entity				

Banco Mundial México	No data available Process managed by external entity				
CM Lagoa	March/2017 – January/2018	29	487	1,835	3m 49s
PBP	No data available Process still in development and testing phase				
Bipart (Cormano, Monza, Pavia)	March/2017 – November/2017	53	8,123 52,571 27,859	46,071 343,619 158,817	5m 40 5m 49 6m 02
OIDP	March/2017 – January/2018	3	783	2,085	2m 38s
OPP Coimbra	No data available No monitoring tool was configured				
ANAMM	No data available No monitoring tool was configured				
Cascais	No data available Process still in development and testing phase				
OPJP	March/2017 – January/2018	53	34,418	262,074	10m 56s
Totals	**-**	**-**	**180,719 visitors**	**1,047,143 views**	**5m 17s average**

As identified, in the short period of the measurements presented, and the limited other applications monitored, there was a total of **more than 180k unique visitors, 1M page views and 5 minutes average visit time**.

The following subsections detail the functionalities used in each pilot and/or application.

3.1.1.1 Pilots

This subsection details the functionalities used in the official pilots of EMPATIA. In Deliverable D2.4 [9] is presented an overview of the support and issues recorded per pilot and other applications (used to support the compatibility, usability, reliability, security, maintainability and portability KPIs).

Lisbon

The used functionalities are summarized in the table below.

Table 22 – Used functionalities of Lisbon pilot

Used functionalities	
1. EMPATIA basic authentication	25. Topics XLS and PDF export
2. OAuth2 (facebook, google+)	26. CB translation management
3. Single Sign On	27. CB questionnaires management
4. Login levels	28. Vote - Likes
5. User profile (profile, messages, participants)	29. Multi Vote
6. Privacy and Terms	30. Anonymous Vote
7. Users XLS and PDF export	31. Consultation Wizard
8. CMS	32. Email management notifications
9. Content Management for static pages	33. Platform notification
10. Content Management for News	34. Associate notification to specific topic
11. Home Page popup	35. Real-time notifications
12. Splash screen	36. CB email template management
13. Public topics list sorting options	37. Vote analytics
14. CB topics status	38. User analytics
15. CB configuration/modification dates	39. Dynamic Dashboard
16. CB voting period management	40. Access analytics

17. CB user levels & permissions	41. Backend user levels & permissions
18. CB's	42. Backend groups management & permissions
19. Custom CB	43. Backend dynamic menus
20. Ideas	44. Custom error pages
21. Public Consultations	45. Questionnaires
22. Thematic Consultations	46. Short links
23. Thematic consultation specific notifications	47. Social media
24. Comments	48. Export user with votes and topics information

Wuppertal

The used functionalities are summarized in the table below.

Table 23 – Used functionalities of Wuppertal pilot

Used functionalities	
1. EMPATIA basic authentication	26. Vote – Support
2. Login levels	27. Vote - Fllow
3. In-person registration	28. Multi Vote
4. User profile (profile, messages, participants)	29. In-Person Vote
5. Privacy and Terms	30. Paper blind vote (ID card & vote card)
6. Users XLS and PDF export	31. Anonymous Vote
7. Registration Stepper	32. Email management notifications
8. CMS	33. SMS management notifications
9. Content Management for static pages	34. Platform notification
10. Content Management for News	35. Real-time notifications
11. FAQ	36. Email newsletter
12. Articles	37. CB email template management
13. Q&A	38. Vote analytics
14. Splash screen	39. User analytics
15. Public topics list sorting options	40. Dynamic Dashboard
16. CB topics status	41. Access analytics
17. CB user levels & permissions	42. Backend user levels & permissions
18. CB's	43. Backend groups management & permissions
19. Custom CB	44. Backend dynamic menus
20. Comments	45. Custom error pages
21. CB configuration copy	46. Questionnaires
22. CB & posts flags	47. Quick questionnaires
23. CB translation management	48. Social media
24. Create topic on behalf of	49. Export user with votes and topics information
25. Vote – Likes	

Ricany

The used functionalities are summarized in following table.

Table 24 – Used functionalities of Ricany pilot

Used functionalities	
1. EMPATIA basic authentication	9. Topics XLS and PDF export
2. Users XLS and PDF export	10. Dynamic dashboard
3. CMS	11. Access analytics
4. Content Management for News	12. Backend user levels & permissions
5. CB topics status	13. Backend groups management & permissions
6. Create topics without registered users	14. Backend dynamic menus
7. CB's	15. Custom error pages
8. Proposals	

Milan

The used functionalities are summarized in the following table.

Table 25 – Used functionalities of Milan pilot

Used functionalities	
1. EMPATIA basic authentication	10. CB user levels & permissions
2. Users XLS and PDF export	11. CB's
3. Registration Stepper	12. Participatory Projects
4. CMS	13. Topics XLS and PDF export
5. Content Management for static pages	14. 2nd Cycle
6. Content Management for News	15. Dynamic Dashboard
7. Splash screen	16. Access analytics
8. Public topics list sorting options	17. Custom error pages
9. CB topics status	

3.1.1.2 Other Applications

Condeixa

The used functionalities are summarized in the following table.

Table 26 – Used functionalities of Condeixa application

Used functionalities	
1. EMPATIA basic authentication	20. In-person Vote
2. Login Levels	21. 2nd Cycle
3. In-Person registration	22. Anonymous vote
4. User profile (profle, management, participation)	23. Email management
5. Privacy and Terms	24. Platform notifications
6. Users XLS and PDF export	25. Real-time notifications
7. CMS	26. CB email template management
8. Content Management for static pages	27. Vote analytics
9. Content Management for News	28. User analytics
10. Splash screen	29. Dynamic Dashboard
11. Public topics list sorting options	30. Access analytics
12. CB topics status	31. Backend user levels & permissions
13. CB user levels & permissions	32. Backend groups management & permissions
14. CB's	33. Backend dynamic menus
15. Proposals	34. Custom error pages
16. Comments	35. Questionnaires
17. Topics XLS and PDF export	36. Export user with votes and topics information
18. CB translations management	
19. Multi vote	

CoGlobal

The used functionalities are summarized in the following table.

Table 27 – Used functionalities of CoGlobal application

Used functionalities	
1. EMPATIA basic authentication	18. Anonymous vote
2. User profile (profle, management, participation)	19. Email management
3. Privacy and Terms	20. Platform notifications
4. Users XLS and PDF export	21. Real-time notifications
5. CMS	22. Vote analytics
6. Content Management for News	23. User analytics
7. Splash screen	24. Dynamic Dashboard
8. Public topics list sorting options	25. Access analytics
9. CB topics status	26. Backend user levels & permissions
10. CB user levels & permissions	27. Backend groups management & permissions
11. CB's	28. Backend dynamic menus
12. Proposals	29. Custom error pages
13. Comments	30. Export user with votes and topics information

Used functionalities	
14. Topics XLS and PDF export 15. CB translations management 16. Vote likes 17. Multi vote	

Banco Mundial México

The used functionalities are summarized in the following table.

Table 28 – Used functionalities of Banco Mundial México application

Used functionalities	
1. EMPATIA basic authentication	2. CMs

CM Lagoa

The used functionalities are summarized in the following table.

Table 29 – Used functionalities of CM Lagoa application

Used functionalities	
1. EMPATIA basic authentication 2. Login levels 3. Privacy and Terms 4. Users XLS and PDF export 5. CMS 6. Content Management for static pages 7. Content Management for News 8. Splash screen 9. Public topics list sorting options 10. CB topics status 11. CB user levels & permissions 12. CB's 13. Proposals 14. Comments 15. Topics XLS and PDF export 16. CB translations management	17. Multi vote 18. In-person vote 19. Anonymous vote 20. Email management 21. Vote analytics 22. User analytics 23. Dynamic Dashboard 24. Access analytics 25. Backend user levels & permissions 26. Backend groups management & permissions 27. Backend dynamic menus 28. Custom error pages 29. Export user with votes and topics information

PBP

The used functionalities are summarized in the following table.

Table 30 – Used functionalities of PBP applications

Used functionalities	
1. EMPATIA basic authentication	2. CMs

BiPart

The used functionalities are summarized in the following table.

Table 31 – Used functionalities of BiPart applications

Used functionalities	

1. EMPATIA basic authentication	28. Create topic "on behalf of"
2. Login levels	29. Vote likes
3. In-person registration	30. Vote support
4. User profile (profile, messages, participation)	31. Vote follow
5. Privacy and Terms	32. Multi vote
6. Users XLS and PDF export	33. In-person vote
7. Registration stepper	34. Paper blind vote
8. Recover account with SMS code	35. Anonymous vote
9. CMS	36. Voting receipt
10. Content Management for static pages	37. Email management
11. Content Management for News	38. SMS management
12. Splash screen	39. Platform notifications
13. Public topics list sorting options	40. Email newsletter
14. CB topics status	41. SMS newsletter
15. CB user levels & permissions	42. CB email template management
16. Topics with multiple owners	43. Send message to topic owners
17. CB's	44. Vote analytics
18. Custom CB	45. User analytics
19. Ideas	46. Dynamic Dashboard
20. Proposals	47. Access analytics
21. Comments	48. Backend user levels & permissions
22. CB configuration copy	49. Backend groups management & permissions
23. CB & posts flages	50. Backend dynamic menus
24. Topics XLS and PDF export	51. Custom error pages
25. Alliances	52. Social medias
26. Topic drat (status publish)	53. Export user with votes and topics information
27. CB translations management	

OIDP

The used functionalities are summarized in the following table.

Table 32 – Used functionalities of OIDP applications

Used functionalities	
1. Content Management for static pages 2. Questionnaires	3. Social medias

OPP

The used functionalities are summarized in the following table.

Table 33 – Used functionalities of OPP applications

Used functionalities	
1. EMPATIA basic authentication	2. CMS

ANAMM

The used functionalities are summarized in the following table.

Table 34 – Used functionalities of ANAMM application

Used functionalities	
1. EMPATIA basic authentication	2. Questionnaires

Cascais

The used functionalities are summarized in the following table.

Table 35 – Used functionalities of Cascais application

Used functionalities	
1. EMPATIA basic authentication	23. Comments
2. Single Sign On	24. Topics XLS and PDF export
3. Login levels	25. CB translations management
4. In-person registration	26. Vote likes
5. User profile (profile, messages, participation)	27. Multi vote
6. Privacy and Terms	28. Negative vote
7. Users XLS and PDF export	29. Anonymous vote
8. Registration stepper	30. Consultation wizard
9. Recover account with SMS code	31. Email management
10. CMS	32. Platform notifications
11. Content Management for static pages	33. Real-time notifications
12. Content Management for News	34. CB email template management
13. Splash screen	35. Vote analytics
14. Public topics list sorting options	36. User analytics
15. CB topics status	37. Dynamic Dashboard
16. CB voting period management	38. Access analytics
17. CB user levels & permissions	39. Backend user levels & permissions
18. CB's	40. Backend groups management & permissions
19. Ideas	41. Backend dynamic menus
20. Public consultations	42. Custom error pages
21. Thematic consultations	43. Kiosks
22. Thematic consultations specific notifications	44. Export user with votes and topics information

OPJP

The used functionalities are summarized in the following table.

Table 36 – Used functionalities of OPJP application

Used functionalities	
1. EMPATIA basic authentication	28. Create topic "on behalf of"
2. Login levels	29. Vote likes
3. In-person registration	30. Vote support
4. User profile (profile, messages, participation)	31. Vote follow
5. Privacy and Terms	32. Multi vote
6. Users XLS and PDF export	33. In-person vote
7. Registration stepper	34. Paper blind vote
8. Recover account with SMS code	35. Anonymous vote
9. CMS	36. Voting receipt
10. Content Management for static pages	37. Email management
11. Content Management for News	38. SMS management
12. Splash screen	39. Platform notifications
13. Public topics list sorting options	40. Email newsletter
14. CB topics status	41. SMS newsletter
15. CB user levels & permissions	42. CB email template management
16. Topics multiple owners	43. Send message to topic owners
17. CB's	44. Vote analytics
18. Custom CB	45. User analytics
19. Ideas	46. Dynamic Dashboard
20. Proposals	47. Access analytics
21. Comments	48. Backend user levels & permissions
22. CB configuration copy	49. Backend groups management & permissions
23. CB & posts flages	50. Backend dynamic menus
24. Topics XLS and PDF export	51. Custom error pages
25. Alliances	52. Social medias
26. Topic drat (status publish)	53. Export user with votes and topics information
27. CB translations management	

3.1.2 Technical assessment

This section reports on the technical assessment performed on the validation events (pilots and other applications), considering the KPIs defined in deliverable D4.1. Table 37 presents the KPIs and the next subsections detail how these KPIs were measured.

Table 37 – Technical KPIs for EMPATIA Platform

Sub characteristics	KPIs	Values
Time behaviour	Average Latency	3,93s
	Throughput	0,13s
Resource utilization	Mean % CPU Utilisation	12%
	Mean Memory Usage	-
	Max. Memory Used	-
	Max. Processing Power Used	50%*
Interoperability	Ability to expose services with APIs	Yes
	Ability to consume services through APIs	Yes
	% Utilisation of Open Standards for Data Exchange	100
Accessibility	WCAG 2.0 Conformance Level	Lisbon: AAA Wuppertal: AAA Ricany: AAA Milan: AAA
Maturity	Max. Concurrent Users Supported	59
	Load Size	0,28 per minute
	Simultaneous Requests	12,28
	Requests per Second	0,32
Availability	% Monthly Availability	100%
	Error Rate	0
	Number of Hardware problems identified without affecting the platform	0
Recoverability	Mean time to recover from software problems	2 days
	Mean time to recover from hardware problems	0
Confidentiality	Incidents of ownership changes and accessing prohibited information	0
Integrity	Incidents of authentication mechanism breaches	0
Non-repudiation	Log reports for activities	0,046
Accountability	Usernames included in each log entry	Yes
Modularity	% Modularity (excluding backbone infrastructure)	100%
Reusability	% of Reusable Assets	100%
Modifiability	% of Update Effectiveness	-
Adaptability	Mean No. of Errors per Hardware Change	-
	Mean No. of Errors per Software Change	-
Installability	Mean Installation Duration	10 minutes
	% of Installation Errors	0
	Mean No. of Errors per Installation	0

Next, we present some details regarding some of the measured KPIs.

3.1.2.1 Time behaviour

In the time behaviour KPI two measurements are analysed: latency, average time it takes to load the pages of the process (includes all HTTP requests in a page); throughput, average time it takes to download a page (the values presented are per HTTP request, where one page can have multiple HTTP requests). Table 38 presents the measured time behaviour average values, and Figure 4 and Figure 5 presents examples of the analytics provided by the Google Analytics (Ricany) and Piwik (Lisboa Participa) tools.

Table 38 – Time behaviour measurements

Pilot	Average Latency (s)	Average Throughput (s)
Lisboa Participa	3,02	0,18
Wuppertal	2,76	0,14
Ricany	4,67	0,27
Milan (2ºCycle)	1,20	0,08
Condeixa	4,83	0,03
CM Lagoa	3,89	0,04
Bipart (Cormano, Monza, Pavia)	5,76 5,17 5,13	0,20 0,17 0,13
OIDP	1,55	0,04
OPJP	5,21	0,20
Totals	**3,93**	**0,13**

By analysing the average values measured it is possible to identify that despite the very low throughput (page download time), the latency is very high. This analysis is similar to the feedback received from the validation events and from the technical analysis of the platform. In a deeper analysis of the monitored data it is possible to identify that the public topics list page, the public topic details, and home page are the areas with higher latency (about 10s, 6s and 7s respectively), while other areas have lower latency like the login, registration, pages (from 1s to 3s average).
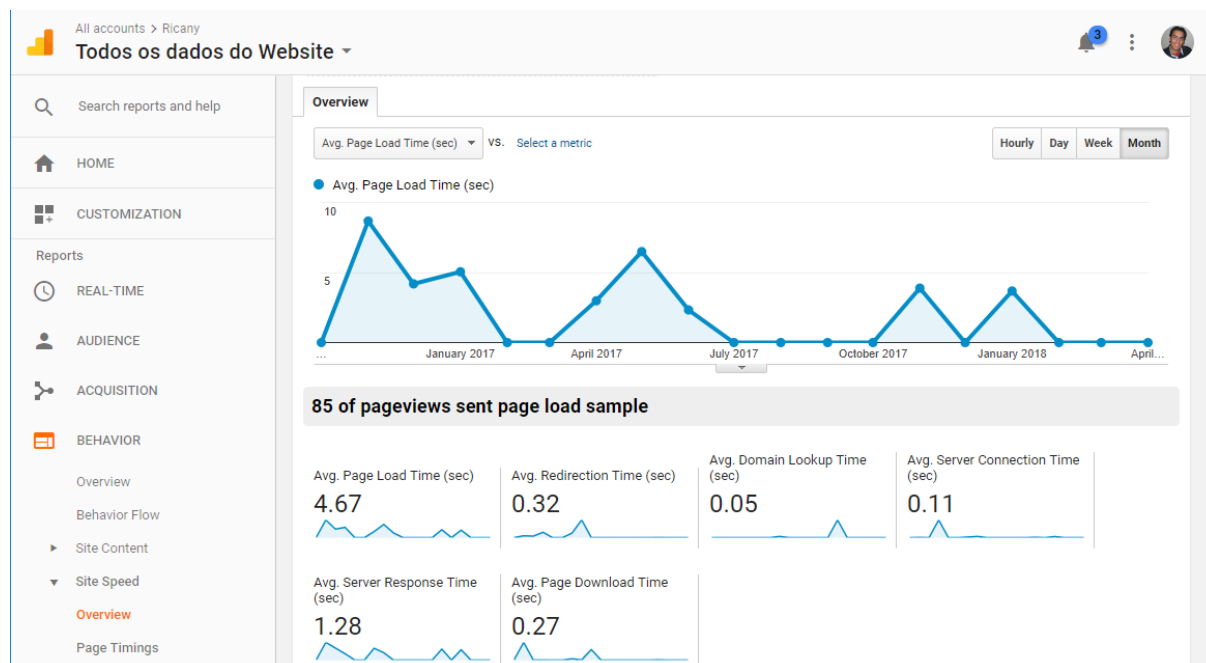
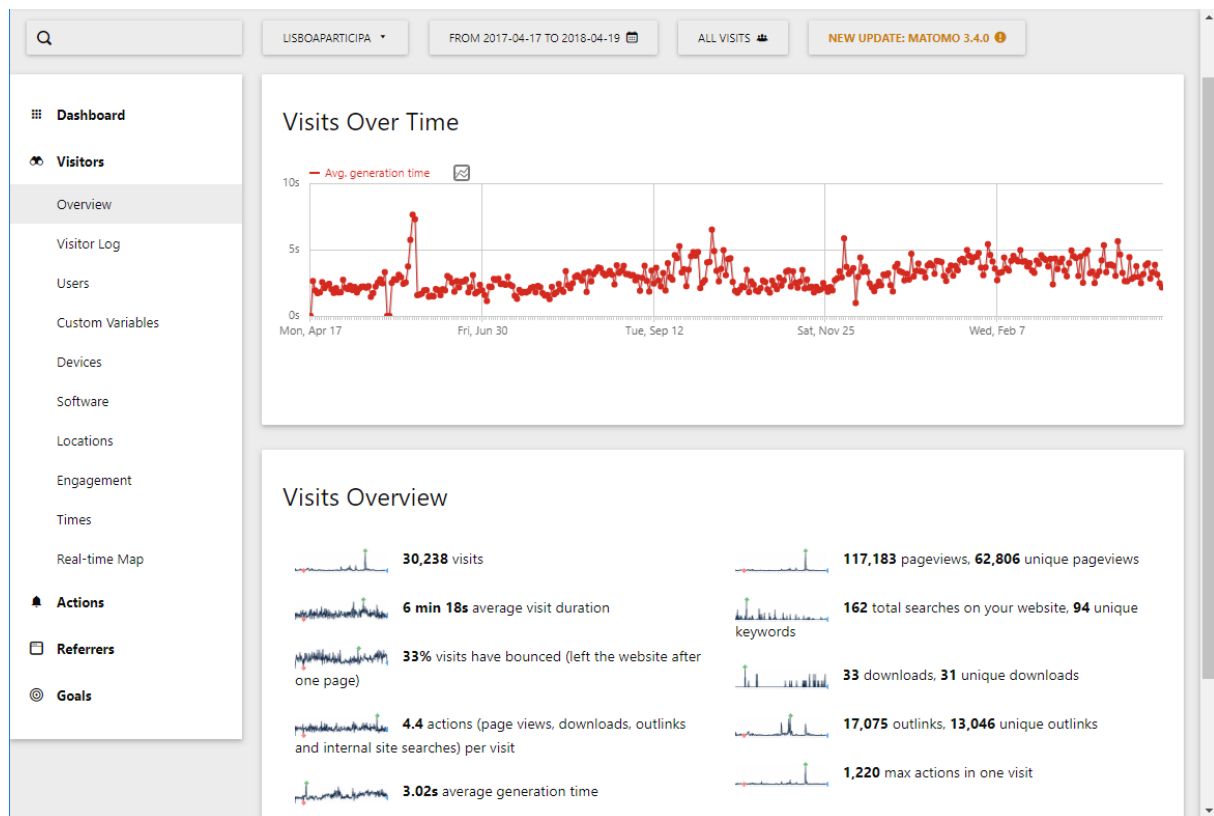**Figure 4 – Google Analytics example**

Figure 5 – Piwik analytics example

Based on the monitored information and the feedback from pilots it was identified as a priority to WP2 to improve the topic list performance (sometimes up to 20s). Based on this, in August 2017 an intermediate version of the platform was released that improved greatly the latency of the topics list and topic details (reduced the topics list to an average of 7s).

3.1.2.2   Resource utilization

The resource utilization measurements were performed by the Zabbix tool. For a more complete analysis of these KPIs a performance evaluation methodology is described in section 2.1.2 and the performance evaluation results presented in section 3.1.3.

Next, we present some graphs and analysis of the measurements gathered (CPU and memory) in one of the EMPATIA pilots' deployment that used the scenario single all-in-one (all components in the same webserver), supported by two servers, one for the webserver and another for the database (MySQL and REDIS). Previous deployments used the scenario single splitted (each component in a different server) but for the load measured were considered not efficient from the resource allocation perspective vs performance (confirmed by the performance evaluation results).

Figure 6 presents the CPU idle time (opposite of CPU usage) for the main production EMPATIA servers (one webserver and one database server, scenario SA-SDB).
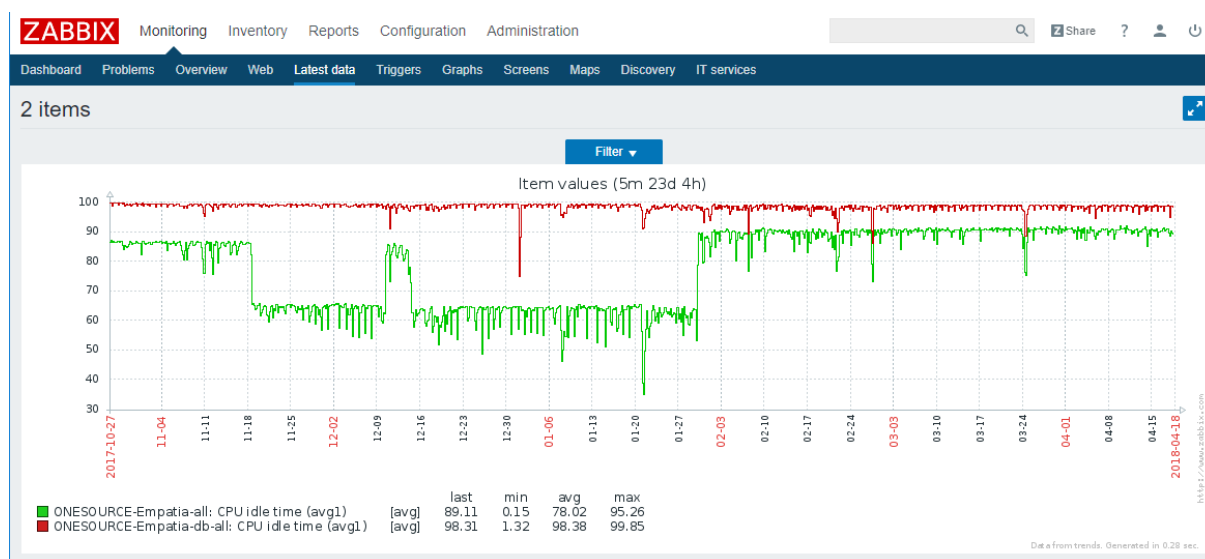
Figure 6 – CPU utilization graph

By analysing the CPU usage, it is possible to identify that the web servers have a higher CPU usage than the database servers. The is a result of the processing required by the web servers to process and integrate data from multiple components (traditionally done by the database when platforms are not split in components). For the presented period, the average CPU idle time is 88%, which corresponds to an average 12% CPU usage, with a max CPU usage of 100% (0,15% CPU idle). As it is depicted in the graph it is not normal CPU usage higher than 50%, and after analysing the time with 100% CPU usage it was possible to identify that all high CPU usage periods are due maintenance operations like backups and manual scripts executions. For this reason, it is considered that during this period the maximum CPU usage was 50%.

Figure 7 presents the free memory for the main production EMPATIA servers (one webserver and one database server). The webserver is configured with 8GB and the database server with 4GB.

Figure 7 – Memory utilization graph

The free memory in the webserver has several fluctuations, but for the database server the value is almost fixed. After analysing in detail these results it is possible to verify that the MySQL database is configured to use all the available memory and manage it internally. The webserver, despite the fluctuations is also configured to use more memory than it is required to properly provide the required service. From these measurements it is not possible to properly ascertain the correct memory usage by the EMPATIA Platform.

Figure 8 depicts the free swap space for the main production EMPATIA servers (one webserver and one database server). The webserver is configured with 4GB and the database server with 2GB.
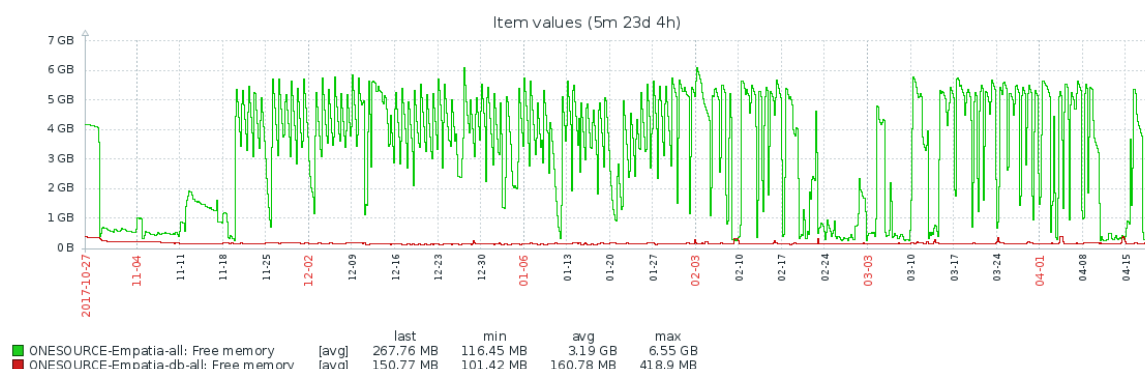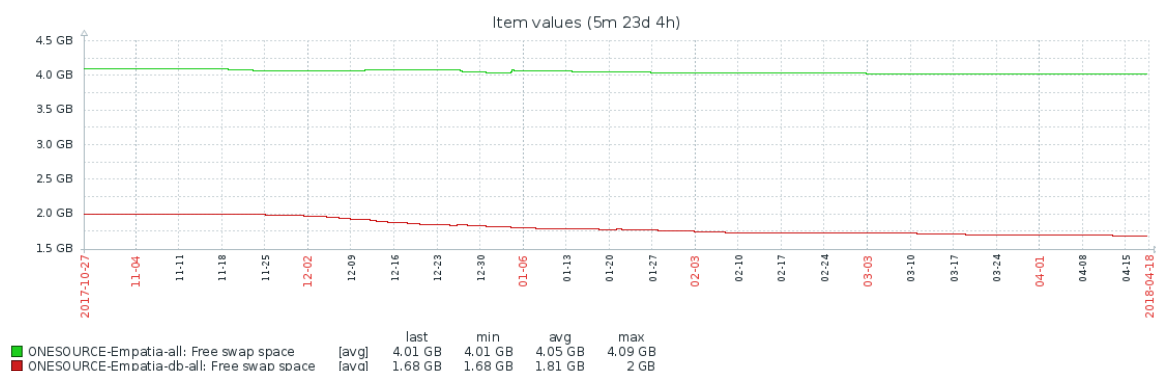

Figure 8 – Swap utilization graph

By analysing the swap utilization, it is possible to verify that none of the servers uses swap (min values are similar to the maximum). Also, despite the servers being running without interruption (no downtime) the memory consumption is not affected, and a minor increase in the swap is recorded throughout the time in the database server (but not relevant to be considered a result of the EMPATIA Platform, but from the operating system.

3.1.2.3 Interoperability

In the interoperability KPIs three measurements are analysed: ability to expose services with APIs; ability to consume services through APIs; and the utilisation rate of Open Standards for Data Exchange. As depicted in WP2 deliverables (mainly Deliverable D2.1 [1], Deliverable D2.2[3] and Deliverable D2.4 [9]) the EMPATIA Platform is composed of several components that interact through public APIs.

All EMPATIA Platform APIs are based on REST/JSON technologies and follow the open standard OpenAPI [21].

Additionally, the EMPATIA Platform employs several external APIs that range from OAuth authentication (e.g. Lisbon pilot Facebook authentication) to external open data sources (e.g. Lisbon pilot CKAN open data).

3.1.2.4 Accessibility

The EMPATIA pilots web interfaces were WCAG 2.0 validated throughout the different phases. In most versions of the interfaces the conformance level was AAA with minor comments (mostly known issues that do not affect the accessibility and are expected in the standard as normal non-compliance). Figure 9 and Figure 10 depicts two examples of the WCAG 2.0 AAA conformance level for the home page of the Lisbon and Wuppertal pilots.
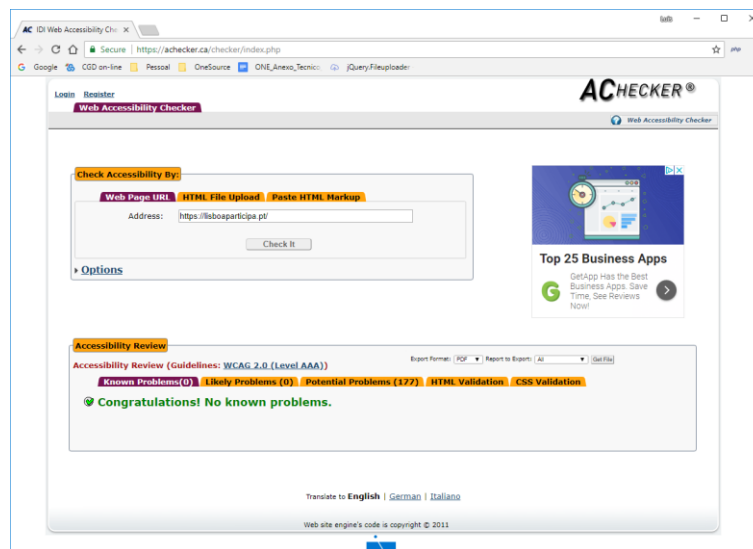
Figure 9 – Lisbon pilot home page WCAG 2.0 AAA validation
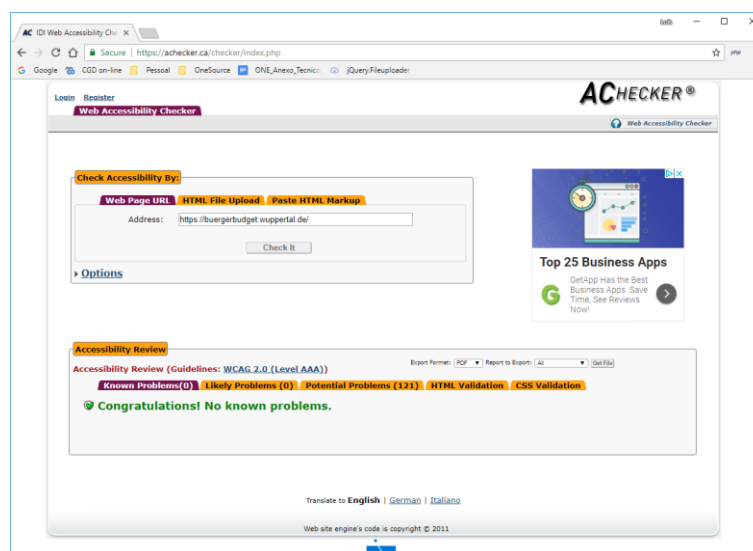
Figure 10 – Wuppertal pilot home page WCAG 2.0 AAA validation

Thus, it is considered that all pilots achieved WCAG 2.0 AAA conformance level, which is the highest conformance level.

3.1.2.5 Maturity

In the maturity KPIs four measurements are analysed: maximum concurrent users supported; load size; simultaneous requests; and requests per second. As identified in section 3.1.2.2, the production deployments of the EMPATIA Platform never reached the limits of the platform and the supporting hardware. For a more complete analysis of these KPIs a performance evaluation methodology is described in section 2.1.2 and the performance evaluation results presented in section 3.1.3.

For these KPIs it was selected for analysis the OPJP other application because it was the process with more participation in a shortest period (more than 24k users and 141k page views in 2 months) and that had more simultaneous usage of the platform (more than 4 times of any other process).

Figure 11 and Figure 14 show the Google Analytics per hour user access and page views for November and December of 2017, where it is possible to identify 251 as the maximum per hour user access. During this period the load size was 0,28 per minute (24,479 users in 2 months).
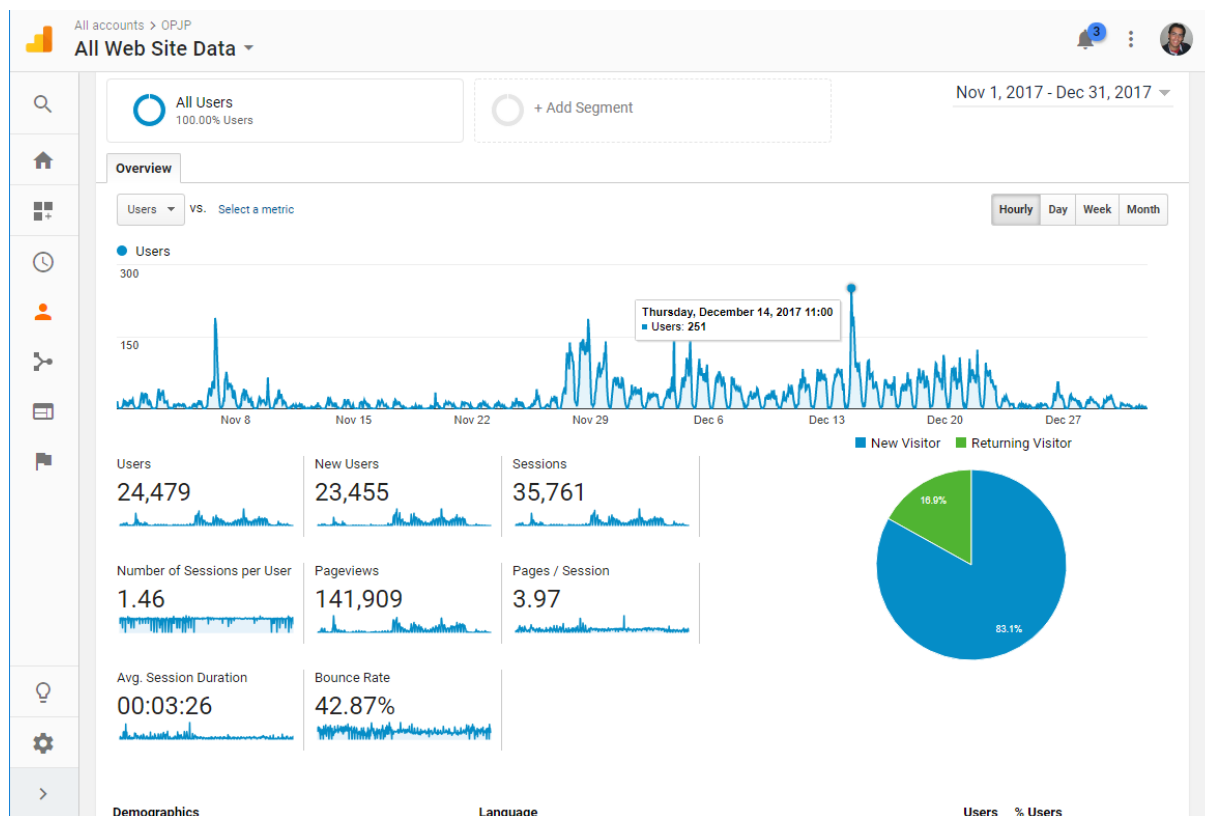
Figure 11 – Google Analytics per hour users access

Using the EMPATIA Platform internal auditing information it is possible to identify the concurrent users for the peak hour period recorded by Google Analytics, 14th of December from 11:00 to 12:00.

Figure 12 presents the concurrent users recorded in two different time windows: per minute and per 5 minutes. Having in mind that the average user session duration has an average of 4 minutes and 34 seconds average of user session duration, as recorded by Google Analytics. Since the user session duration exceeds one minute it is considered that the maximum concurrent users recorded is 59 on the day of 2017-12-14 in the period between 11:05 and 11:10.
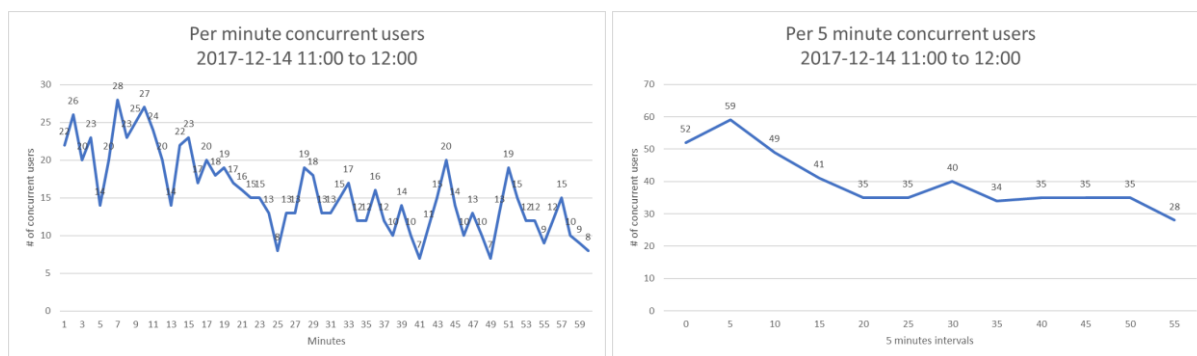
Figure 12 – Concurrent users graphs (per minute and per 5 minutes)
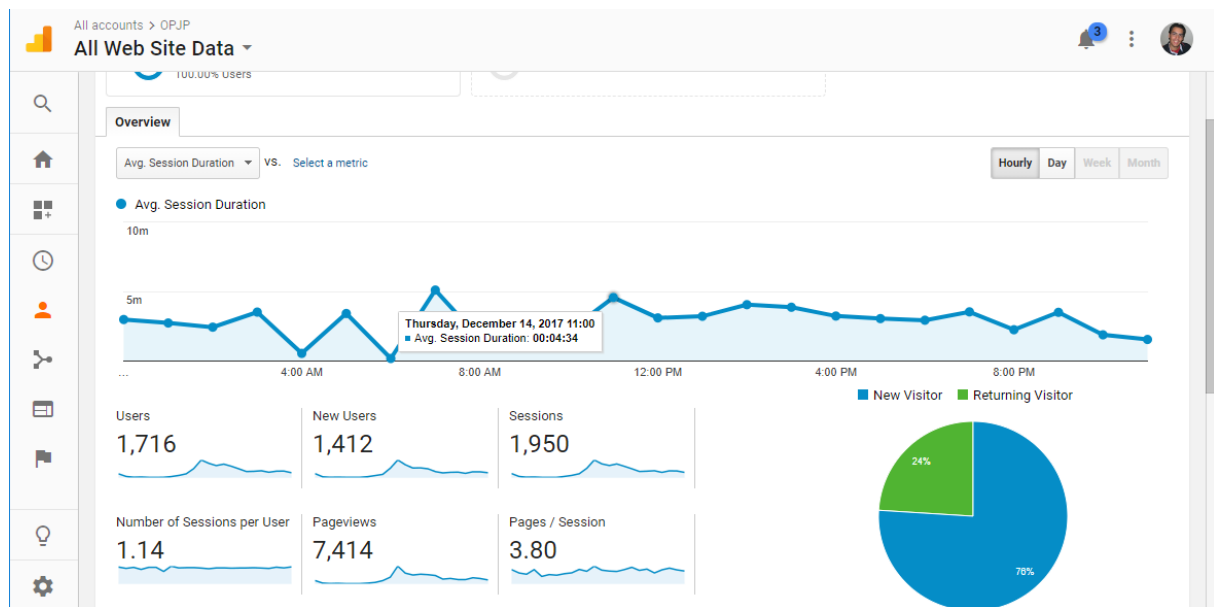
Figure 13 – Per hour average session duration
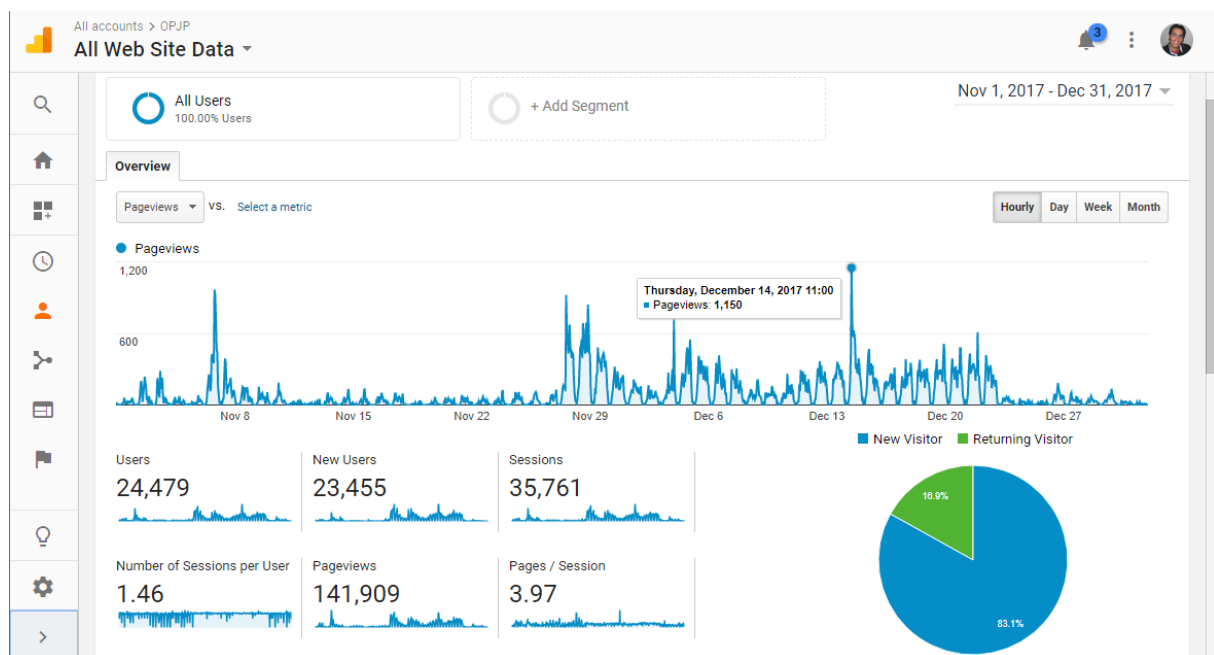
Figure 14 – Google Analytics per hour page views

For the same period Google Analytics also reports the peak page views, a total of 1.150 page views in one hour, which represents an average of 0,32 requests per second.

If we consider that the average latency per request is 3,93s (c.f. 3.1.2.1), and the 0,32 requests per second, this represents an average of 12,28 simultaneous requests in the recorded peak hour.

3.1.2.6 Availability

Figure 15 depicts the monitoring data collected by Zabbix, evidencing that no downtime was recorded for the EMPATIA Platform deployment option used by most of the pilots and other applications

throughout the project (webserver and database). This is due to the inexistence of hardware and operating system failures, all maintenance activities have been performed without shutting down the servers, and several redundancy mechanisms were in place to support some level of failure (e.g. UPS and redundant power supplies for energy, RAID for disks, multiple independent Internet connections). As such, the monthly availability is 100% and the error rate is 0%.
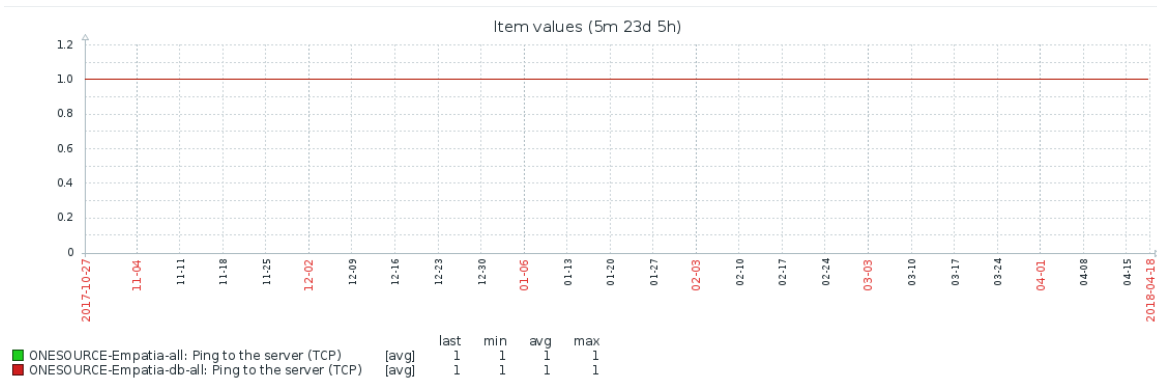
Figure 15 – Availability graph

3.1.2.7 Fault tolerance

By analysing the recorded support requests from the EMPATIA pilots (mainly Lisbon, Wuppertal and Milan) it was possible to identify the level of priority assigned to the issues/tasks described in Table 39. In this table three priorities/type of the reported issues are identified: urgent, important and other. Most of the urgent issues reported were due to bugs or features that were fundamental to the proper execution of the pilot. The important issues correspond to bugs and features that were identified/required by the pilot but did not affect the immediate execution of the pilot (for instance, did not impede voting). All other issues were categorized in the other category, that include bugs, features and sometimes management activities.

Because different teams reported and classified the issues/tasks there is a big disparity between the three pilots. For example, in Lisbon pilot the municipality PB team reported directly their issues and identified their own priority level, while in Wuppertal Zebralog team managed directly the pilot with the municipality and then reported the issues after a first analysis (a similar process was done in Milan pilot). Also, in many cases the issues were reported by alternative communication channels (e.g. phone and email) and not always recorded (especially in the Lisbon pilot). Due to this, we consider in this reporting of issues a looser perspective of categorization than the more technical oriented issues reported in Deliverable D2.4 [9].

Table 39 – Support issues priority

Pilot	Urgent	Important	Other
Lisbon	58	22	33
Wuppertal	157	13	379
Milan	58	22	8
Totals	**273**	**57**	**420**

Thus, the number of software problems identified without affecting the platform are considered the issues reported as *Important* and *Other*, 477 issues. As described in the previous section, there was no

hardware failure detected, so the number of hardware problems identified without affecting the platform is 0.

3.1.2.8 Recoverability

As reported in Deliverable D2.4 [9] the mean time to recover from software problems was 2 days (less than 2 days from Lisbon and Wuppertal, and less than 3 days for Milan). Since no hardware problems were identified, as reported in section 3.1.2.6 the mean time to recover from hardware problems is 0.

3.1.2.9 Confidentiality

In all pilots and other applications of the EMPATIA Platform there was no report of incident of ownership changes and accessing prohibited information.

3.1.2.10 Integrity

In all pilots and other applications of the EMPATIA Platform there was no report of incidents of authentication mechanism breaches.

3.1.2.11 Non-repudiation

The EMPATIA Platform includes three different logging systems: auditing, access and users accounting. The auditing logging logs all the activities of all activities of the platform in all components without any implicit categorization. The access logging records specific public functions (e.g. login, registration, errors, topics access) and is organized in 10 action types. The users accounting logging records all public users access to record the simultaneous users in the platform organized by entity. Also, this logging does not include any categorization.

258 features have been identified as documented in the Deliverable D2.4 [9], the log reports for activities (No. of Logs Report Categories / No. of all system operations) is 0,046.

3.1.2.12 Accountability

The EMPATIA Platform includes several logging, monitoring and analytics features that include a specific auditing logging of all actions performed on the platform, and all include a user identifier (that then can be mapped to a specific user), the IP address, session and some additional information.

Thus, it is considered that the KPI usernames included in each log entry is achieved.

3.1.2.13 Modularity

Based on the architecture defined in Deliverables D2.1 [1], D2.3 [3], and updated in D2.4 [9], the EMPATIA Platform is composed of 8 components, where all can operate independently (despite the limited interest). Thus, the Modularity ratio is 100%.

3.1.2.14 Reusability

Also, based on the architecture defined in Deliverables D2.1 [1], D2.3 [3], and updated in D2.4 [9], the EMPATIA Platform is composed of 8 components, where all can be reused as they are. Thus, the Reusable Assets ratio is 100%.

3.1.2.15 Modifiability

Due to the particularities of WP3 pilots and other applications it was not possible to record all updates performed in the production servers. Thus, there is no available information to provide the % of Update Effectiveness. As a general comment, it is the perception that many updates were unnoticed, but it is also known that several updates were rushed to production and created several issues. In several occasions software updates were sent to put in production without going through the complete testing process (e.g. unity testing and deployment in the testing environment) and testing procedures.

3.1.2.16 Adaptability

As identified in the previous section, there is no available information to provide the Mean No. of Errors per Software Change. Also, as reported earlier, since there was no hardware issue, there is no Mean No. of Errors per Hardware Change.

3.1.2.17 Installability

During the EMPATIA project, the EMPATIA Platform was installed and configured by OneSource in all the pilots and other applications. For the purpose of dissemination and support the open source community several EMPATIA Platform deployment alternatives were made available, as documented in Deliverable D2.4 [9]. These alternative deployment options are: open source repositories/manual installation; docker; virtual machine; installation scripts and EMPAVILLE Raspberry Pi.

The docker, virtual machine and EMPAVILLE Raspberry Pi deployments are pre-built machines/containers that have a tested and running EMPATIA Platform, ready to use deployment. We can then assume that there is no installation duration, nor errors.

The manual installation of the EMPATIA Platform using the open source repositories is an advanced and technical procedures that should be performed only by experts in technology and in the EMPATIA Platform. We have not considered this option since it is not a recommended approach to perform a deployment.

Finally, the installation scripts, are the best option to use when the docker, virtual machine and EMPAVILLE Raspberry Pi are not the solution to use. Many of the EMPATIA Platform deployments, for the several pilots and other applications servers, were performed using these installation scripts (or customized versions of it). Also, these scripts were used by EMPATIA partners to test the EMPATIA Platform.

Following the installation script instructions provided it was not recorded any installation error, and the average duration of the installation is 10 minutes (depends on the Internet connection quality) and does not require any user interaction. All errors reported in using this deployment option were due to not following the provided instructions or lack of technical skills to understand the minimal technical concepts required for the EMPATIA Platform installation using this method.

3.1.3 Performance evaluation

Two evaluations of the EMPATIA Platform have been performed, the first evaluation uses an extended version of the first prototype (version from M20), and the second evaluation uses the final version of the prototype (version from M26).

A comparison of the two performance evaluations is presented in order to highlight the major performance improvements recorded despite the high increase in functionalities of the final prototype.

This section concludes with a deployment cost analysis based on the final prototype performance, the maximum performance required per process (based on its population dimension/reachability estimate) and the current Amazon Web Services (AWS) costs.

3.1.3.1 First prototype evaluation

The EMPATIA Platform first prototype was evaluated to assess its performance using the experimentation facilities of Fed4FIRE+ [6]. This work was performed by OneSource in the scope of an Fed4FIRE+ experiment and used the M20 version of the open source EMPATIA Platform. This evaluation followed the performance evaluation methodology defined in section 2.1.2. For simplicity we next focus on the more relevant test results achieved. The performance evaluation followed the methodology defined and all combinations of scenarios have been evaluated extensively.

This experiment was performed in Fed4FIRE+ imec Ghent Virtual Wall 1 testbed, using their *pcgen1* nodes, computers with 2x Dual core AMD opteron 2212 (2GHz) CPU and 8GB RAM. No virtualization or containers were used for this evaluation, nor there was sharing of resources between different services in the same node. This deployment strategy allowed us to assure no external impact affected the performance of the different scenarios. In the most resource consuming scenario a total of 15 servers were used between the EMPATIA Platform components, the monitoring tools and the users' emulators.

The results validating the support of diverse deployment models of the EMPATIA platform are analysed together, considering the metrics of latency, and error rates. The latency and the server processing time depicted in Figure 16 a) and b) for the home page vary according to the concurrency of users. All the scenarios present a higher latency when the number of concurrent users is higher (i.e., 1000) (e.g., 01-SA-SDB, 02-SA-CDB). The performance distinction between the deployment models is not so evident in this page (as for instance in the Detail Idea), since this page has a low volume of data. In fact, due to the small size of the page, the load balancing introduced in the cluster scenarios introduces more overhead, leading to higher delays in retrieving the content. For instance, considering the 500 simultaneous users, all the DB clusters (x-CDB) scenarios have higher values for the latency. With these results, the load balancing of the databases might decrease the performance when considering the time required to retrieve content.
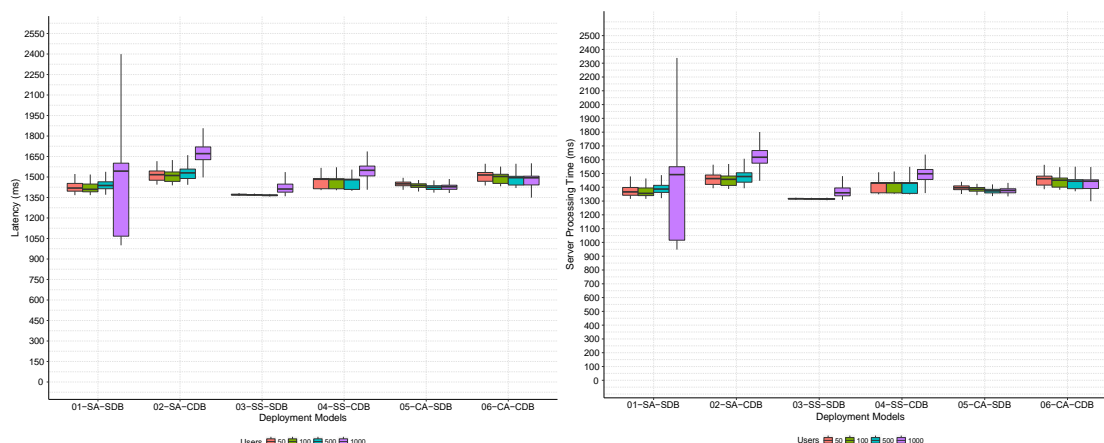

Figure 16 – a) Latency and b) Server Processing in the Home page

On the other hand, when considering pages with more content, with high volume of data, like the Detail of an Idea the observed values of these Latency and Server Processing metrics differs, as highlighted in Figure 17 a) and b), respectively. At a first glance, the difference of performance between the load

balancing database scenarios (x-CDB) is now evident since the load balancing is able to provide content in reduced time intervals. Considering the case with 1000 simultaneous users, the CA-SDB scenario has a latency around 15k ms, while in the CA-CDB this value falls to 5k ms. The main difference between the Detail of Idea page and the home page is that the former has more content, including images, more information and also requires additional lookup in the database to retrieve the information.
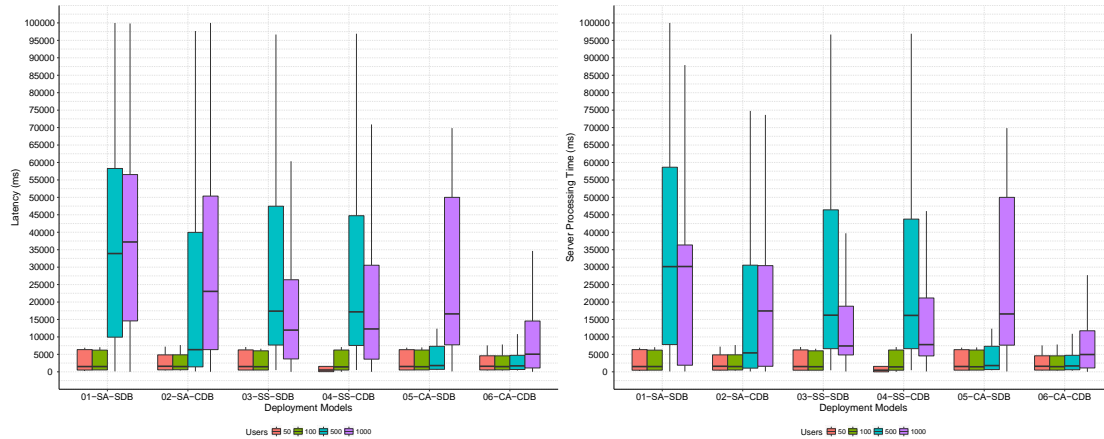
Figure 17 – a) Latency and b) Server Processing of Detailed Idea

Due to the processing inherent to the detail idea page, the number of errors is also higher. For instance, when loading the home page, no errors were verified in the different clients. Figure 18 a) and b) depicts the error ratio for Detail Idea and List of Idea pages, respectively. The errors include all the replies that have HTTP code different from 200 (the OK status). As pictured, the higher number of concurrent clients, introduces more errors, in fact all the scenarios with 1000 simultaneous users have representative error ratios (above 15% in the Detail Idea). Such errors occur due to high number of requests that are performed simultaneously. The deployment with all the components in a single server have the lowest performance, by introducing more errors, and in high rates (around 90%). The logic of splitting the functionalities of the diverse EMPATIA components lead to better performance, but introduce more communication overhead in the network, as happens in the cluster all in one scenarios (CA-SDB and CA-CDB).
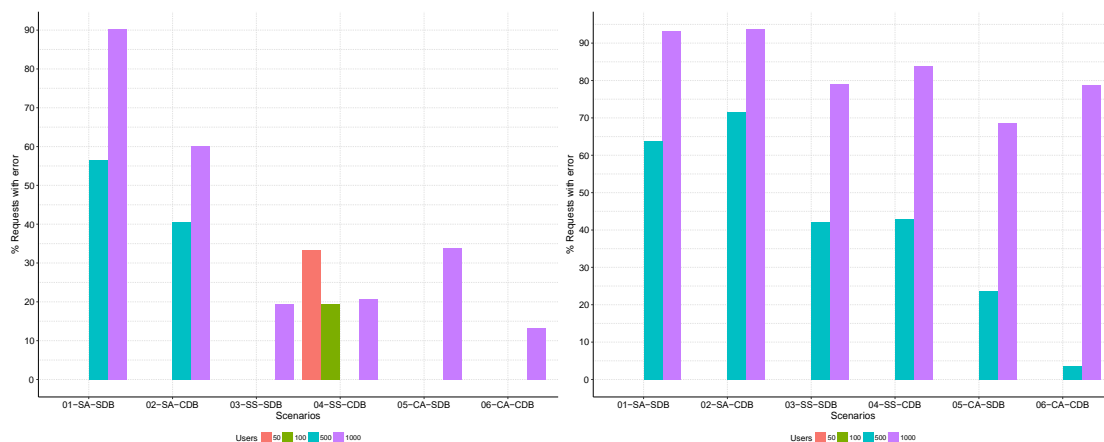
Figure 18 – a) Error ratio in Detail Idea, b) Error ratio in List Ideas

Another important action in the EMPATIA Platform is the voting process, which requires fetching data from the database to check the votes (number and type of votes) that a user can perform and also storing the votes performed by the user. Figure 19 a) and b) depict the Latency and the Server response time in the voting process. The same results occur in the Voting process, with the single all in one deployment (SA-SDB and SA-CDB) model presenting the worst results, while the cluster all in one (CA-SDB and CA-CDB) have the best performance due to the load balancing support.
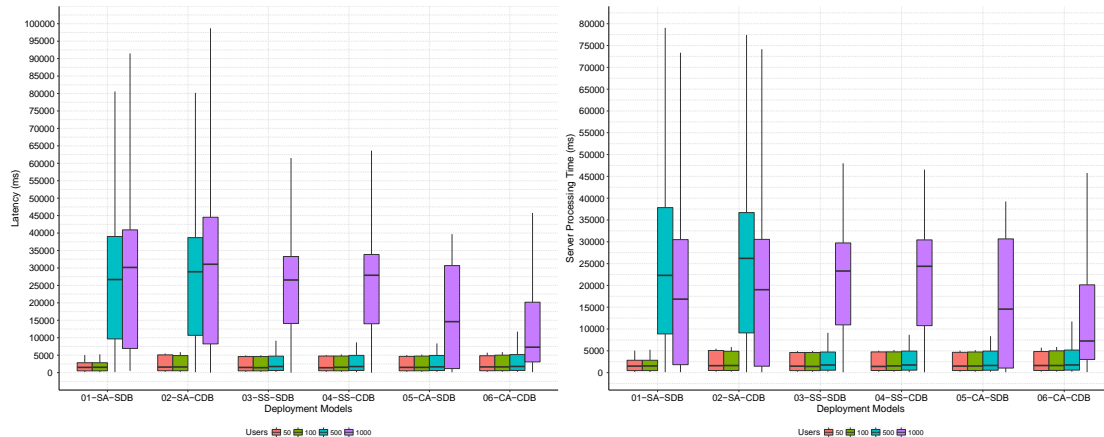
Figure 19 – a) Latency and b) Server Processing in Voting

When observing the error ratios in the voting process, the SA deployments also introduce more errors, as depicted in Figure 20, in particular for the 500 and 1000 simultaneous users.
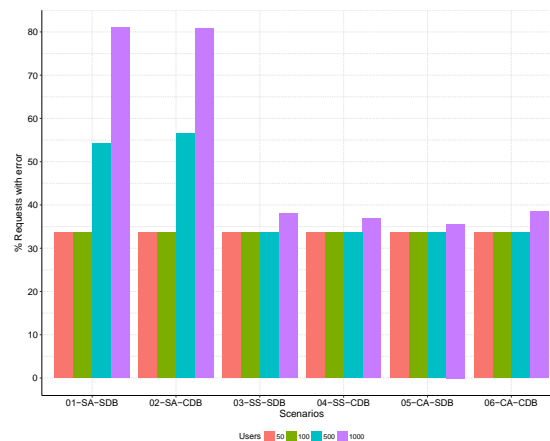
Figure 20 – Error rate in Voting

The voting process includes several operations, like verifying users' permissions to vote, number of available votes and type of vote that can be performed. Such operations require a lot of requests between the Vote and EMPATIA components, leading to high communication overheads. As such, in the voting scenario error ratios can be observed even with a low number of users 50, due to this overhead. In fact, the error ratios with a high number of users drops to the same levels as with low number of users, putting in evidence the impact of the communication overhead between components.

With the results obtained from these performance testes, we have been able to validate the impact that the different deployment models have on the EMPATIA platform. We observed a lot of communication overhead in the scenarios with load balancing proxies, which are perceived by clients either in the form

of error ratios or with high latency values. These results have impact in clients, either in terms of introducing high delay in the replies or by having high error ratios. Performance enhancements in the platform aim to mitigate such effects and can include efficient management of statistics data which are only calculated based on trigger and not on every request. For instance, the statistics associated with votes, comments and topics are stored in DB and updated based on triggers. Additional enhancements include the use of auxiliary tables to provide faster calculations.

3.1.3.2   Final prototype evaluation

This second evaluation aimed at repeating the first prototype performance evaluation. This time, the evaluation was done in the scope of the EMPATIA project. This evaluation followed the performance evaluation methodology defined in section 2.1.2, but was limited to the scenario SA-SDB since it was the one that provided a better performance/cost ratio in the first prototype evaluation.

Without the availability of Fed4FIRE+ testbed, these performance tests were conducted using ONE existing infrastructure. Hence, the deployment of the EMPATIA Platform was done in a virtualized environment, with VMWare as the hypervisor, supported by a dedicated Dell Precision WorkStation T5500 4 Intel Xeon E5607 2,27GHz with 16GB RAM. The webserver and database server were configured with 2 vCPU and 4GB RAM each. The monitoring tools and the users' emulators virtual servers were hosted in other virtualization servers to avoid their impact on the evaluation.

As described in section 2.1.2.2, the evaluation was performed with different simultaneous users (in a 10-minute window). Based on the first prototype evaluation, two additional simultaneous users tests were added: 200 users and 2.000 users. The 200 users test was included to allow a more comprehensive analysis between the 100 users and the 500 users range, because in several of the first prototype evaluation tests this was a turning point on the performance of the platform. The 2.000 users test was included to allow the evaluation of the platform in a higher load.

As such, next we present the results achieved by this evaluation of the EMPATIA Platform final prototype.

Figure 21 presents the latency values measured in this evaluation organized by simultaneous users, per type of request (home page, topics list, topic details and vote) and per authentication status (authenticated or not) – to vote it is required to be authenticated. Note that these graphs Y-axis is base-10 logarithmic.
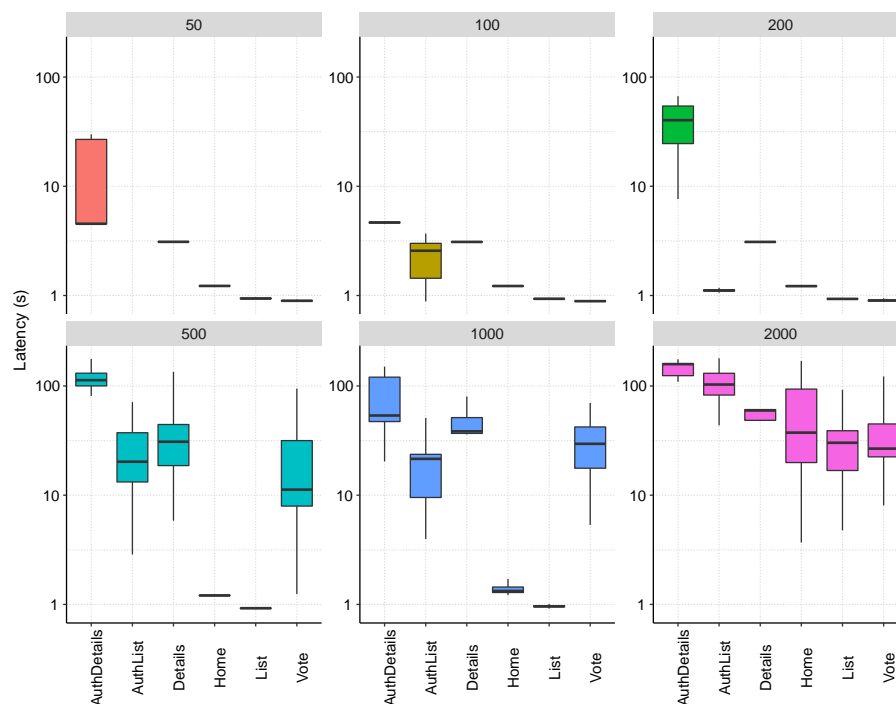
Figure 21 – Latency results in P2

With these results it is possible to conclude that up to 200 simultaneous users the platform performs well in all evaluated pages (except the AuthDetails page that has a higher latency than recommended). At 500 and 1.000 simultaneous users the latency of authenticated actions is still feasible, but with a high dissatisfaction factor. The 2.000 simultaneous users all evaluated pages have an unfeasible latency.

As expected, the non-authenticated pages (Home and List) have a stable latency performance up to 1.000 simultaneous users due to the lower complexity verifications and information required.

Figure 22 – Percentage of errors in P2

Figure 22 presents the errors generated by the EMPATIA Platform for each page. These results are consistent with the latency results, where up to 200 simultaneous users there are no errors (with the exception of AuthDetails which starts showing errors at the 200 simultaneous users), but when the simultaneous users increase the authenticated pages generate errors (due to timeout/internal errors). At 2.000 simultaneous users almost no request is successful.
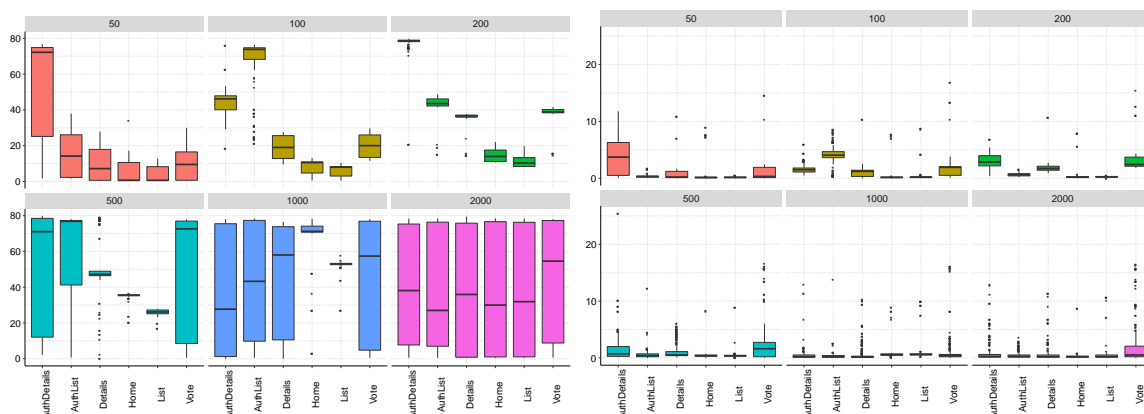
Figure 23 – Webserver (left) and database (right) CPU usage

Figure 23 presents the webserver and database CPU usage. Immediately it is possible to identify that the webserver CPU usage is exponentially higher when the simultaneous users increase, but the database CPU usage is constant and with limited fluctuations.

Analysing the webserver CPU usage allows us to conclude that, similarly to the latency and errors, up to 200 simultaneous users the average CPU usage is lower than 50%, but on the 500 and 1.000 simultaneous users only the non-authenticated pages the CPU usage is acceptable (despite its increase).

A deeper analysis of the CPU usage in the EMPATIA Platform architecture and code shows us that the split of the EMPATIA Platform in several components brings the complexity from the database to the webserver. Traditional correlations of database data now need to be performed in the different components, not using the optimized database operations.

As a conclusion, based on the scenarios defined in section 2.1.2, the current version of the EMPATIA Platform can successfully support the maximum calculated peak hour simultaneous users up to a municipality participation process with a SA-SDB scenario (one webserver and one database) in a virtualized environment with the characteristics of the one used. Only for a maximum expected peak hour in a national process the tested environment is not recommended.

This performance evaluation allowed us to identify several key future actions:

1. Improve details page (authenticated and non-authenticated);

2. Improve authenticated list page;

3. Improve vote page;

4. Perform additional performance tests of the SA-SDB with two webservers scenarios:

    a. Increase webserver to 4 vCPU (evaluate impact of vertical scaling)

    b. Add a second webserver (evaluate impact of horizontal scaling)

3.1.3.3 Comparison of P1 and P2 evaluations

This section aims at performing a comparison between the two versions of the evaluated platform in order to access the performance improvements done in the platform, despite the increase of the platform complexity due to a higher number of features available. The final prototype has improved performance due to the enhanced features like caching, efficient information sharing mechanisms between components (i.e. messages with non-redundant fields) and better code quality. The results herein reported for P1 and P2 version rely on the same physical characteristics, that is, both version of the EMPATIA platform have been evaluated in the same physical servers with the same CPU and memory characteristics.

To perform this comparison the First prototype evaluation was repeated in ONE evaluation infrastructure and limited to the SA-SDB scenario.

Figure 24 depicts the latency results in both versions of the platform. The final prototype includes more functionalities and still supports a better performance. The difference is more notorious in the List operation, where the latency is only higher with 2.000 simultaneous users. In the remaining scenarios the difference is also evident, with the boxplots presenting more variation in the P1 version.
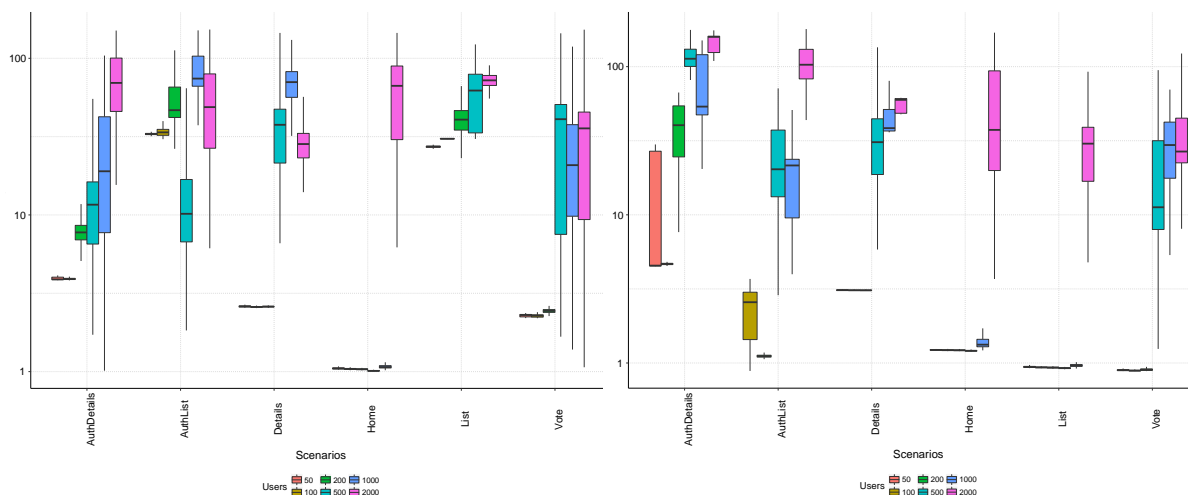
Figure 24 – Latency P1 (left) and P2 (right) comparison

The connect time, as depicted in Figure 25, is higher in P1. This metric puts in evidence the performance difference of P1 in accepting connections from new clients. One might observe that P2 supports connections bellow 1s, with the exception of 2.000 simultaneous users, as opposed to P1 version that with 1.000 users has test cases above 1s (AuthDetails).
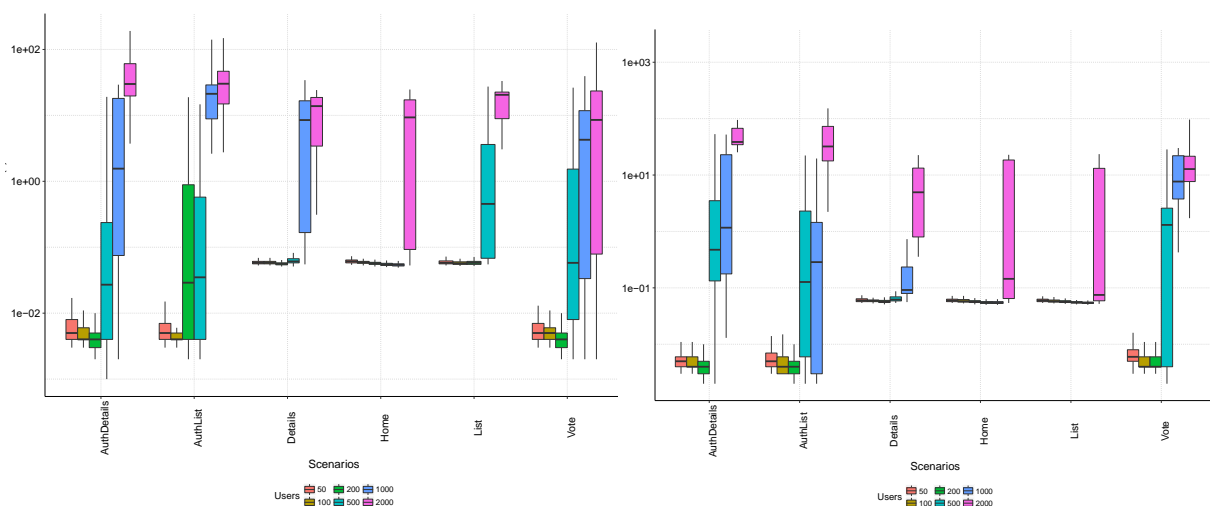
Figure 25 – Connect time (s) per scenario in P1 (left) and P2 (right)

The distribution of errors is also different in both platforms. As illustrated in Figure 26, the predominant class of errors in P1 includes the server errors (HTTP server error – 50x), while in the P2 version some test cases present errors associated with the timeout of certain operations. For instance, the vote scenario involves several operations (login, retrieve data, validate vote, store vote data).

Figure 26 – Detailed error rate per scenario in P1 (left) and P2 (right)

In this figure P2, unlike P1, has almost no errors up to 200 users, and the non-authenticated pages show now errors up to 1.000 users. In P2 the authenticated features show more errors after the 500 users due to the increase of features included in these pages (e.g. more validations and login levels checks, statistical information, interdependency between features – CB now can include content).

Figure 27 illustrates the CPU utilization in the webserver node. As with the latency it is evident the performance improvement in the P2 version by having less CPU utilization in comparison to P1 in some cases. For instance, the List page consumes less CPU in P2 version for the same number of users.
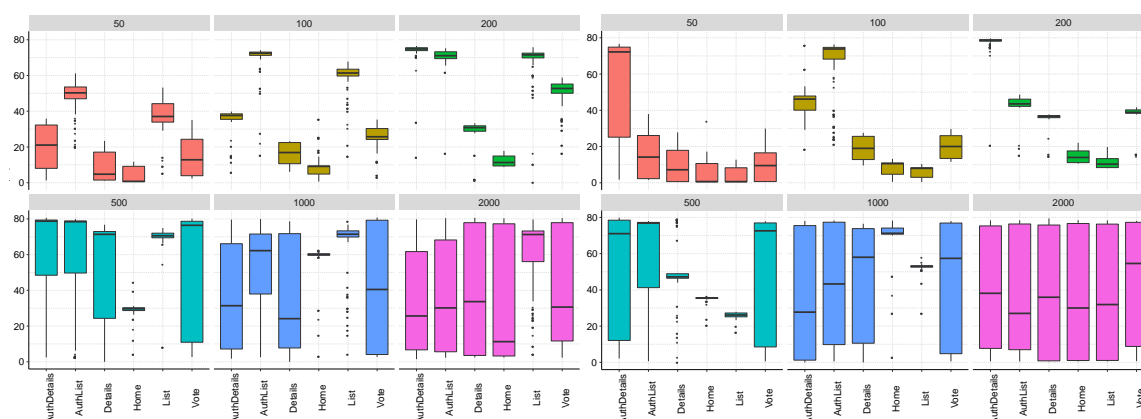
Figure 27 – CPU utilization rate of Webserver per scenario in P1 (left) and P2 (right)

The BD server mainly runs the database engine, but the optimizations performed in the EMPATIA platform also lead to a notorious improvement in P2 version, as depicted in Figure 28. The CPU utilization of the BD node is below 20% in the P2 version even for the test cases with 2.000 simultaneous users (note that the two graphs have different Y-axis scale).
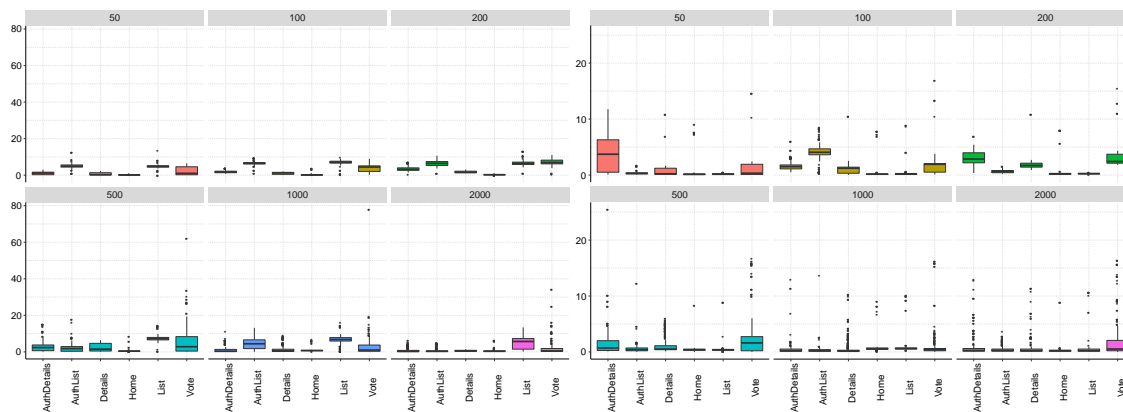
Figure 28 – CPU utilization rate of DB server per scenario in P1 (left) and P2 (right)

Finally, in Figure 29 it is presented the results of the APDEX metric for 50, 100 and 200 users, where the maximum value (1.0) corresponds to the excellent performance, considering the tolerance and frustration thresholds (recall Table 7). The difference between the platform versions is notorious, with the final prototype version being able to have an excellent performance in this simultaneous users range. For instance, in the List scenario, where in P2 is able to have an excellent performance, P1 achieved a poor and unacceptable performance.
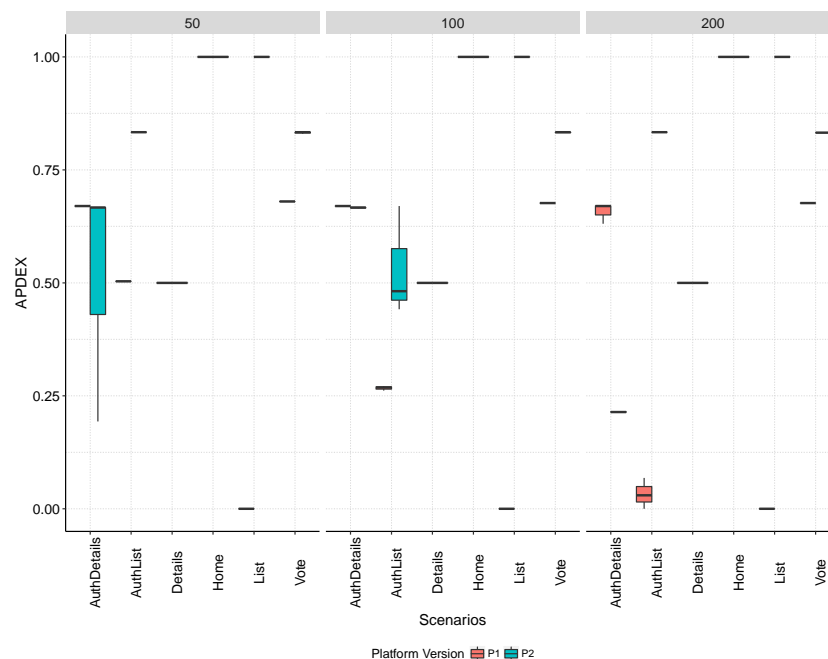
Figure 29 – APDEX for both versions of the platform (50, 100, 200 users).

To conclude, the last version of the platform supports a better performance, for instance the delay is lower in the different cases when considering the same number of simultaneous users. Within the maximum number of users (2.000), the delay is almost the same in P1 and P2, despite the lower variance in the final version of the platform. The difference in terms of performance is more evident, when considering the errors, as depicted in Figure 26, respectively for P1 and P2 prototypes. The errors include all the requests that are not received with the 200 OK HTTP status.

Specifically, the List page tests, the page that has been identified as the most important for any participation process, which requires data fetching from the databases, and the verification of several

parameters and login levels, presents some errors in P1 for 200 users, but in P2 supports up to 1.000 users without errors nor high latency.

3.1.3.4 Deployment cost analysis

Based on the results achieved on the performance evaluation, an exercise was done to be able to provide an estimate of the cost of hosting the EMPATIA Platform in a cloud environment. As a reference, the Amazon Web Services (AWS) was selected, and two server flavours compared: T2-small, server with 1 vCPU and 2GB RAM; and T2-medium, server with 2 vCPU and 4GB RAM. All prices are presented in US Dollars.

This exercise can support small municipalities or citizens communities to plan and predict the cost of using the EMPATIA Platform.

The different deployment scenarios of the EMPATIA platform have different costs, according to the deployment model and the number of servers required for each. Table 40 and Table 41 present the exercise done with the different configurations per scenario for the T2-small and T2-medium AWS flavours, respectively.

Table 40 – Deployment Costs in AWS using T2-small flavours

scenario	on-demand	1Y - no upfront	1Y - partial upfront	1Y - all upfront	3Y - no upfront	3Y - partial upfront	3Y - all upfront
01-SA-SDB	$463	$328	$311	$311	$242	$225	$207
02-SA-CDB	$1 158	$821	$778	$778	$605	$562	$518
03-SS-SDB	$2 547	$1 806	$1 711	$1 711	$1 331	$1 236	$1 140
04-SS-CDB	$3 242	$2 298	$2 177	$2 177	$1 693	$1 572	$1 452
05-CA-SDB	$1 158	$821	$778	$778	$605	$562	$518
06-CA-CDB	$1 852	$1 313	$1 244	$1 244	$968	$899	$829

Table 41 – Deployment Costs in AWS using T2-medium flavours

scenario	on-demand	1Y - no upfront	1Y - partial upfront	1Y - all upfront	3Y - no upfront	3Y - partial upfront	3Y - all upfront
01-SA-SDB	$926	$657	$622	$622	$484	$449	$415
02-SA-CDB	$2 316	$1 642	$1 555	$1 555	$1 210	$1 123	$1 037
03-SS-SDB	$5 094	$3 612	$3 421	$3 421	$2 661	$2 471	$2 281
04-SS-CDB	$6 483	$4 596	$4 355	$4 355	$3 387	$3 145	$2 903
05-CA-SDB	$2 316	$1 642	$1 555	$1 555	$1 210	$1 123	$1 037
06-CA-CDB	$3 705	$2 627	$2 488	$2 488	$1 935	$1 797	$1 659

Considering the conclusion of the two prototype evaluations, the SA-SDB scenario (one webserver and one database) is enough to support up to a big municipality participation process (with a very high peak hour participation). Communities and small municipalities requirements are much lower (according to the CPU measurements). Therefore, with the correlation of the performance evaluation and the costs presented in these tables the expected AWS hosting costs are summarized in Table 42 (1Y-all-upfront).

Table 42 – Recommendations for deployments in AWS

Type	# of citizens	# 10-minute peak citizens	Scenario	AWS flavour	AWS estimate cost (per year)
Small community	1.000	10	SA-SDB	T2-small	$311
Municipality district	2.500	25	SA-SDB	T2-small	$311
Small municipality	10.000	100	SA-SDB	T2-medium	$622
Municipality	20.000	200	SA-SDB	T2-medium	$622
National*	100.000	1.000	SA-SDB	T2-medium	$622

* Depending on the requirements it may require a more performant AWS flavour or a better performant deployment scenario

3.2 Behavioural evaluation

This subsection summarizes the findings obtained from the behavioural evaluation of the EMPATIA platform usage. As detailed in the previous report, behavioural assessment is required to indicate if this platform could attract usage. The outcome of this evaluation would provide assistance to enhance the features of EMPATIA platform to attract more usage. In general, the assessments were done for seven categories, i.e. provision of opportunity to participate in PB process, provision of facilities, ease of use, satisfaction, provision of information, functionality of the system and useful features.

3.2.1 Wuppertal, Germany
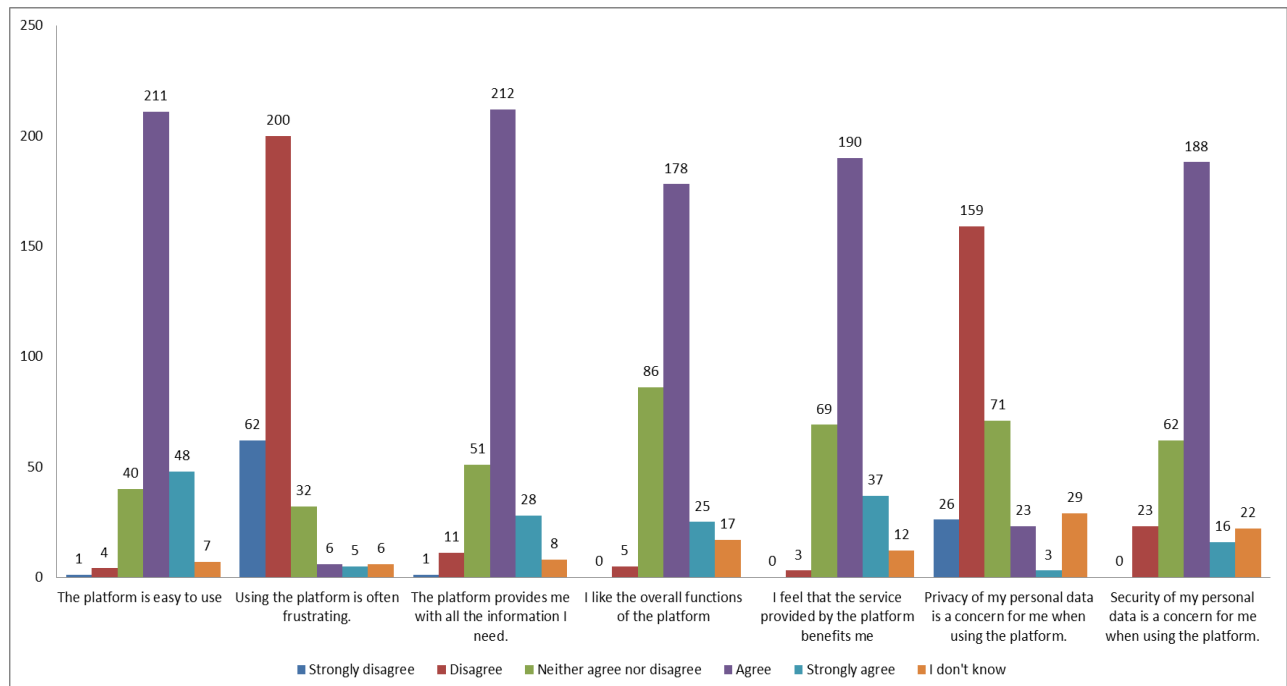
Figure 30 – Behavioural results in Wuppertal

In total, the number of participants taking the survey in Wuppertal, Germany is 153 respondents. As depicted in the graph, majority agree that EMPATIA provides them with satisfactory opportunity to participate in budgetary decision-making. Then, very significant majorities of respondents strongly agree that the municipality provides them with satisfactory level of facilities to allow them to use EMPATIA. Meanwhile, majority of the respondents agree or strongly agree that the platform is easy to use, always provide them with all necessary information, have good functions and features. As such, most of the respondents disagree or strongly disagree that the platform is often frustrating. Nonetheless, the number of those who are 'undecided' if the platform provides them with all necessary information is also alarming (i.e. the fence seater), thus their perspective need to be addressed.

3.2.2 Ricany, Prague
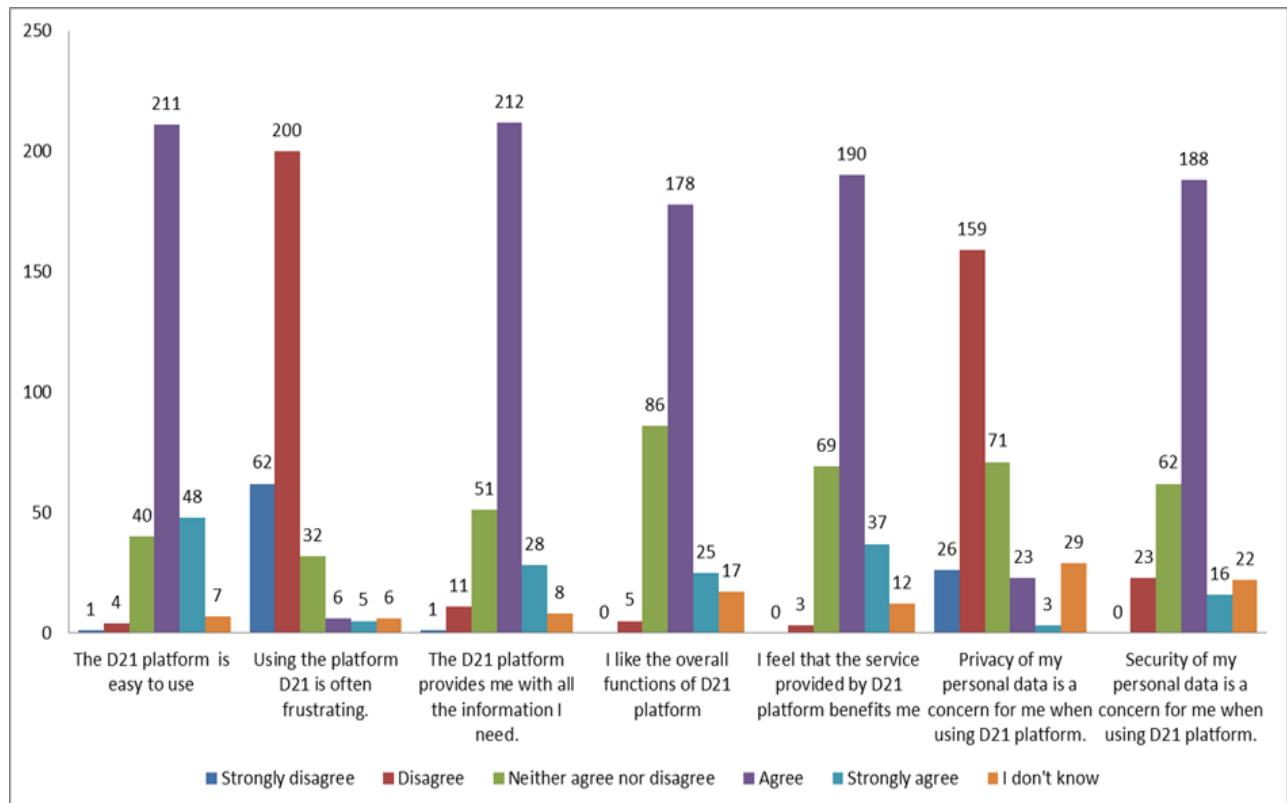
Figure 31 – Behavioural results in Ricany

In total, the number of participants taking the survey in Ricany, Prague is 311 respondents. As depicted in the graph, more than half of the respondents agree that EMPATIA is easy to use, in other words majority of the users 'disagree' that the platform is often frustrating to use. Meanwhile, majority of the respondents agree or strongly agree that the platform always provide them with all necessary information and have good functions and features. More than half of the respondents agree that the platform provides them with service that benefits them and disagree that their personal data is a concern when using the platform (i.e. majority of them agree that their data is secure).

3.2.3 Lisbon, Portugal
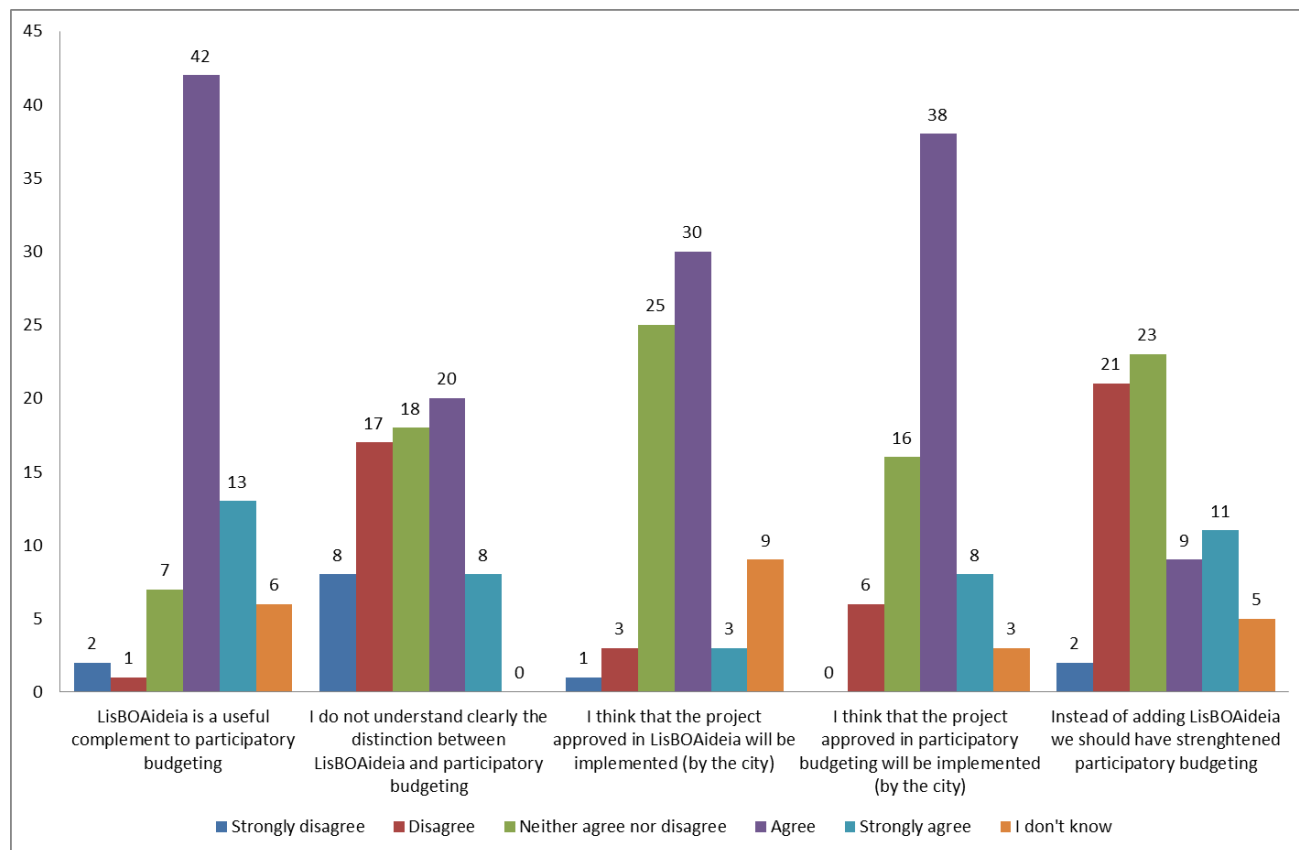
Figure 32 – Behavioural results in Lisbon

In total, the number of participants taking the survey in Lisbon, Portugal was 260 respondents. As depicted in the graph, more than half of the respondents agree that EMPATIA is useful in facilitating the PB process. Meanwhile, the tabulation of the answers to the second question, i.e. "I do not understand clearly the distinction between LisBOAideia and participatory budgeting" is interesting, with almost a similar number for each answer category. Next, while majority of the respondents agree that the municipality will implement the projects proposed through the system (EMPATIA), almost a similar number of respondents do not have opinion on this. Meanwhile, majority of the respondents agree that the municipality will implement the projects proposed through the existing system. This is unsurprising because the existing system has been in existence for a decade. However, a huge majority of respondents which disagreed and have no opinion on the last question (i.e. if the existing system need to be strengthened rather than having the new system) signposts that the new system has great potential to gain citizens' trust and being used by the citizens.

3.3 Process Evaluation

This subsection will summarize the findings obtained from the process evaluation of the EMPATIA platform usage. As detailed in the previous report, process assessment is required to indicate if this platform involves processes that are desired by the users in relation to PB and its engagement through ICT. The outcome of this evaluation would provide assistance to enhance the processes associated with the EMPATIA platform use.

The data was gathered from focus groups that were conducted in four pilot sites, i.e. Germany (Wuppertel), Prague (Ricany), Portugal (Lisbon) and Italy (Milan). Two focus groups were conducted in Wupertal, Germany, i.e. one was conducted before the ideation and voting phase and another one was conducted after the ideation and voting phase. But unlike Wuppertal (Germany), other sites had conducted one focus group after the ideation and voting phase due to local logistical and resource reasons. This did not influence the richness nor purpose and focus of the evaluation. The following sub-sections highlight the findings of process evaluation for each pilot site, followed by the overall finding for the EMPATIA processes.

3.3.1 Wuppertal, Germany

The online participatory budgeting in Germany began in the early 2000s. Currently, almost half of the country's municipalities utilize the internet-based solution as platform for PB process that enables online proposal submission and discussion (Ruesch & Wagner, 2013). Wuppertal is considered as an experienced PB user; since it had run (at least) three full-cycles of PB process (Ruesch & Ermert, 2014). As mentioned in the introduction, Wuppertal organized two focus groups. The following section, i.e. 3.3.1.1 summarizes the findings of the first focus group, whereas other sections outline the findings from the second focus group, which are divided into five topics (i.e. PR mobilization, Information on Budget and Process, Online Participation, Physical Participation and Organisation / Others). The detail report on the second focus group can be referred in Appendix E.

3.3.1.1 Findings of the First Focus Group

The first focus group was conducted in 2016. Although this was not required by the EMPATIA partners, the pilot sites insisted on conducting the focus group to gauge the important issues regarding the EMPATIA processes. As a result, the focus group had agreed on five key areas to be focused in developing EMPATIA processes. Those areas were PR mobilization, Information on Budget and Process, Online Participation, Physical Participation and Organisation / Others - which had become the basis of discussions in the subsequent focus groups.

3.3.1.2 PR / mobilization

Several existing initiatives were identified as "good or went well" in facilitating the public-relation / mobilisation of EMPATIA platform in the municipality. The information kiosks available in the city were seemed to be helpful in providing assistance in using the system to the citizens who are not internet savvy, especially the older citizens, thus encourage the platform use. Besides, the networking session organised by the municipality is viewed as an effective platform to engage with citizens and inviting them to be involved with the PB process through EMPATIA.

Nonetheless, it was agreed that such can be better if conventional media such as newspaper is used as medium to attract more citizens, particularly those who are non-IT literate to use EMPATIA. Moreover, it was observed that only one press release was made on behalf of one political party. Hence, the political party was criticised as having lack of commitment in promoting EMPATIA use. As such, it was that the politicians – especially the council members, should get more involved in this effort and use their influence to promote EMPATIA.

Meanwhile, it was suggested that the EMPATIA terminals e.g. computers or kiosks could be developed at public spaces to encourage more participations from the citizens.

3.3.1.3 Information on budget and process

The existing video feature (i.e. Younect) was claimed as a "good" way to communicate information. For improvement, it was suggested that any questions posted by the citizens to the municipality should be answered in video. Likewise, the citizens requested for the city budget to be disclosed alongside with the 'citizens budget' in the PB web page. Nonetheless, such was disagreed by some participants who thought that the information on city budget should be on the municipality's webpage, not EMPATIA. From the discussion, it was apparent that the citizens' budget information was under-utilised. However, the participants agreed that engagements with political actors of the municipality would elucidate solutions for this matter.

3.3.1.4 Online Participation

The focus group participants claimed that the following issues had prevented them from online participation.

a) Unable to access the system – i.e. error message was displayed after completion of registration at the homepage.

b) Unnecessary request for supplying the information of educational background. Since the participants felt uncomfortable giving the information, they decided to vote manually.

c) Unable to complete the SMS verification process, because of not having mobile phones.

According to some participants, issue (c) is unavoidable since all of the online participants need to be registered. Besides, SMS mode was preferred as compared to email based on its security, i.e. the potential of an individual creating many emails and using them to vote. Two-factor authentication (e.g. use of ID) was suggested as an alternative for the 'verification process' and to solve (f). Another alternative is the use of "citizen account" (i.e. the "Bürgerkonto" concept), where the system can skip the SMS verification process. Nonetheless, it was explained that the SMS verification was on trial. It was also suggested for the system to use the citizens' unique ID for verification. But unlike the SMS verification, such alternative would require the citizens to get the verification code manually. It was confirmed that the practice of sending the electoral letters via mail to the voters is unsuitable for PB process, due to cost and fraud prevention. The participants agreed that the verification and authentication of voter is very important to avoid repetitive vote. Hence, they had requested for update on practices related to this issue in other pilot sites.

It was also highlighted that the system's homepage was cluttered. Besides granting the citizens with 5 "votes", the system should allow the citizens to allocate the budget for each project. Such approach would make people more likely to participate in the online process since they would think more carefully about how much money they want to give to whom. It was reported that Stadtwerke Wuppertal (public services provider of Wuppertal) had did this.

In general, the participants concluded that the current features of online participation work well but need some improvements to be better.

3.3.1.5 Physical Participation

In terms of physical participation (or offline participation), the participant suggest to draw on the case of Stuttgart, where the rate of physical participation is high. Such was linked to the effect of 'supervised participatory process' implemented by the city. It was claimed that the city has trained mentors and

citizen ambassadors that provide assistance to the citizens on physical participation. The "Bürgerwerkstatt" (citizen workshop) that adopted this concept was praised for its effectiveness.

3.3.1.6 Organization / others

In general, the processes associated with PB were rated as 'good', but they can be better if allocated with more resources, especially funds. The participant thought that the budget allocated for the PB activities should be increased annually. Nonetheless, it was highlighted that a clear demarcation on the scope of projects under citizen budget and the city budget is urgent and important. They argued that the citizen budget should not be used to improve infrastructure - otherwise, there were concerns that the city budget would no longer funds the infrastructure projects. In that case, the citizen budget would have to be brought forward in time so that input from citizens can be incorporated in the city budget.

Some participants criticized that the allocation of citizens' budget is not the act of democracy, because that could lead to uneven development of the city. For instance, the region that has more active participants will be more developed than others. However, some participants disagree with such critics and named the "Gemeinwohlcheck" project as an example of a good democracy exercise. This is because the voters for "Gemeinwohlcheck" are the migrants who would not be able to vote without the citizens' budget. Besides having the best outcome, the project had involved the most diverse group of citizens who barely knew each other, but no conflict or bias was observed.

Meanwhile, it was commented that the administrator had very limited time to manage parallel activities such as idea submissions and project checks. It was also brought up that having a more standardized evaluation criteria on the ideas could have improved the processing time and judgement.

3.3.2 Ricany, Prague

3.3.2.1 PR / mobilization

Overall the first year of Ricany PB, which was part of EMPATIA project, had good feedback from both – public and town representatives. It was valued that the citizens involvement in PB had good implications. Nonetheless, the citizens were still confused between many platforms that exist, such as the original PB platform, EMPATIA platform and D21 voting app. Participants brought up some ideas on how to improve the process based on lessons learned in the first year. There were also plenty of methods that had good impact on the PB process and as such participants proposed to reuse them in the future. The message is that the evaluation and realization are the most sensitive and complicated phases for both – public and municipality representatives. Thus, they offer the biggest space for improvements.

All participants agreed that PR / mobilization is an important factor to promote EMPATIA use. Ricany used their town newspaper as a tool to spread the information about the projects. A special insert was attached with the monthly newspaper, where the projects and PB process were described in detail and examples from other places were outlined.

3.3.2.2 Information on budget and process

The first issue is unclear message delivery. The participants argued that the project information (during the ideation phase) was unclear. The municipality representatives claimed that they could not grab hold on the issue as such was handled by the contractors of EMPATIA. The participants also highlighted that it could have been helpful if there is someone who can help them with presentation of the project idea. Currently, they felt that they were unable to deliver the message precisely due to lack of capability in

developing a good presentation during the public assemblies. As an alternative, it was suggested for the municipality to create a presentation template that can be used by the citizens to promote their project idea. Another suggestion made was to hire an external graphic designer that could help the citizens with their presentation.

Second, it was highlighted that the project evaluation phase is the most critical point in the PB process and consumed the longest time. The process involved municipality representatives and citizens. Hence, this should be improved. One of the ideas is to organize a face-to-face meeting with the idea originator to clarify the feasibility of projects, rather than communicating with them through e-mail/telephone. That would also increase engagement level.

Third, the long response time taken to update the citizens on any information was also criticised as current weakness and need to be improved.

Lastly, having to go through several platforms before accessing EMPATIA had confused the citizens – i.e. Registration in one platform (Ridim Ricany), discussion / ideation in EMPATIA platform and voting in D21 app. Hence, it was suggested for those platforms to be integrated.

3.3.2.3 Online Participation

Generally, the online participation in this pilot site is good. Nonetheless, to improve, the participants discussed about the idea of unifying platforms used – i.e. one account for many applications such as the concept used by Facebook account and Google account. In the case of Ricany, all voters must be registered in the "Ridim Ricany" platform so they can vote in any poll related to the town. However, there are ways how to integrate the EMPATIA platform and "Ridim Ricany" platform.

3.3.2.4 Physical Participation

The participants agreed on the importance of having multiple public assemblies during the proposing phase (Ricany organized 4) so everyone can participate and come when it is suitable for her/him. It was also linked to the rule that everyone who wants to have the proposal added to the poll must present the project on one of the assemblies.

3.3.2.5 Organisation / others

The use of EMPATIA allows greater transparency in the municipality governance. The citizens' representatives in the focus group claimed that the platform had allowed them to understand the procedures involved in budgeting and limitations faced by the municipality's office, besides ability to track the project progress. Meanwhile, the municipality staff argued that the inputs given by the citizens were very invaluable. Overall, the platform had facilitated healthy discussions between citizens and the government, thus improved engagement significantly.

3.3.3 Lisbon, Portugal

3.3.3.1 PR / mobilization

In terms of mobilization, one of the themes that generated the most debate was the lobbying or channelling of votes. Some of the participants stated that on certain occasions it may be a positive factor, however, in most cases, it turns out to have perverse effects. Regarding this issue the case of the Parish Council of Carnide was given as an example, which as a rule, ends up having winning projects in its territory, in all editions of PB. In this way it is concluded that they have been able to set up an "effective

machine" for votes mobilization for local projects (destined to the territory of the parish). Sometimes the issue of channelling of votes is also evident in projects that are born in universities.

One of the proponents that participated in the focus group, explained that when his project for Graça Parish was a winner, there was no SMS voting yet. Voting was just online and in person. He also added that the Internet penetration in the neighbourhood was very low (mostly elderly population). The mobilization for voting in this case was very labour intensive, making presentation sessions, helping the elderly with voting information, in short, it involved practically knocking door to door. In the opinion of those present, this behaviour ends up generating an inequality between projects in the voting phase.

In this sense, it was mentioned that the voting methodology should be revised to face this situation, for example multiple positive vote with territorial condition. Or, for example, if a territory wins in one year, in the next it cannot win (although this ends up being a form of exclusion rather than participation).

Another suggestion was to create a mechanism of positive discrimination, so that smaller neighbourhoods are not disadvantaged compared to others with larger populations and greater mobilization capacity. However, these suggestions have to be well thought out, as there is a risk of creating a social program and subverting the objectives outlined for the Participatory Budgeting process. The suggestion of dividing the money by the parishes is also not feasible, since it would become the PB of the parishes and not of the Municipality.

3.3.3.2 Information on budget and process

Dissemination of information also turns out to be a way of mobilizing and keeping citizens faithful to the process. For this reason, a monthly feedback mechanism (e.g. Newsletter) should be created for proposers on the status of projects. It is not enough to publish on the website, as citizens often do not realize that recent information has been published. It will be a way to increase transparency.

Regarding the tool "Fix My Street", it happened to some of those present that the flagged event was closed, but in fact had not been resolved. These situations discredit the processes by causing citizens to stop using the platform.

The following negative points were highlighted in the debate on the dimension of information:

- The citizen has to request information on the state of the projects, as the Municipality does not take this initiative regularly;
- "Fix My Street" often has inappropriate feedback;
- Still there are many proposals that arrive to the services that do not follow the rules;
- Lack of information about tools other than PB;
- PDF files in open data are not functional
- The PB rules should be more accessible in terms of language to facilitate their understanding.

A detail of the proposals is necessary so that the technical analysis has the necessary information for a correct interpretation of the original idea. For example, upgrading a street can be inexpensive or expensive enough as it all depends on the details included. It is necessary to manage the expectations of the citizen and clarify what he/she wants. Questions were raised if their mediators between citizens and technical analysis and it was reported that this role belongs to the technical team of the PB. The interpretation of the rules remains at the mercy of the points of view. One way of improving the work

of technical analysis would be to introduce a checklist of prerequisites for pre-selection of the proposals that should be followed for this service.

In cases where there are discrepancies between the citizen's proposal and the adaptation to the project, is there a contact with the proposer? In most cases this is done, although it is not mandatory. It is also often not possible because the volume of proposals to be analysed is high. To solve this, it will be necessary to allocate more resources to the technical analysis, or to try to reduce the number of proposals (e.g., make the fields of proposal mandatory - may be an obstacle to participation). On the other hand, the process is designed to have numbers; the quantitative aspect seems to be very important for the Municipality. To help formulate proposals, a pre-filled example can be created to help with the submission structure of proposals.

3.3.3.3 Online Participation

It was reported that the PB platform has improved significantly. It is easier to use today. However, it was reported that "it should be remembered that online participation favours only a part of the population (higher academic qualifications, access and ease of use of IT), leaving the remaining population out". It was suggested that for all the tools, it would be useful to create habits of participation in the children, making them popular (aspect related with in person moments). Controlling the age in participatory budgeting processes is complicated (this is related with PB processes for children and youth). Participants suggested that it would be useful to create a tutorial to help citizens decide on the most appropriate channel or channels to exercise their right to participate. In this context, a small questionnaire on citizens' claims could be created, and the answer should provide the best tool to be used. It was also suggested that the tools should be better integrated since the ideal would be to have only one channel of participation that would then be directed to the relevant services. Citizens suggested that it is difficult to choose which tool to use. Therefore, it was suggested that it is necessary to integrate all accounts and logins so that it would be easier to participate and manage the processes. Here it is necessary to differentiate the technology dimension from the conceptual dimension. Conceptually there was a decision to aggregate the existing tools, which were scattered. It is essential to identify the boundaries between the tools and their differences, so that the citizen also perceives the differences.

3.3.3.4 Physical Participation

It was claimed that physical participation is important for PB. However, it was discovered that 90% of the proposals came through the online platform. There were huge differences between online and physical participation processes. From the perspective of the citizens, it is at the stage of the voting and dissemination of the projects that it is necessary to have physical participation.

3.3.3.5 Organisation / others

Fix My Street - often the parish councils themselves do not have access to the occurrences registered in their territory. This requires better articulation and communication by the City Council. "Fix My Street" is indeed a good tool and easy to use, although there have been some criticisms about how it works. The response time of the services tends to be slow, being contradictory with the sending of automatic responses to the participants, indicating that the subject is being treated. The messages should identify the services responsible for analysing and treating the occurrences and providing the respective contacts – such as email and telephone number.

Other problems in relation to EMPATIA use were: delays in project implementation and discrepancies of decision post technical analysis, difficulties of interpretation between the local and transversal

categories for the projects. Hence, the name of contact person should be indicated to facilitate communication.

Concerning technical analysis, there are proposals that are feasible at first glance, in other cases this is not so obvious. It should be possible to do a more in-depth study of the proposals and have more time to do the technical analysis.

It was suggested that at the project design stage, follow-up meetings with the citizen should be mandatory. Although there are many proponents interested in this involvement, others just want the project to be implemented.

3.3.4 Milan, Italy

3.3.4.1 PR / mobilization

The municipality efforts in promoting the EMPATIA were acknowledged as good.

3.3.4.2 Information on budget and process

Almost all participants reported that, in general, the platform was very informative. However, they thought that it can be improved if the presentation of projects could be done professionally (e.g. better information, standardise template and design).

There was a suggestion for the discussion on project selection to be recorded and provided online, so that those who were unable to participate could know the progress or what were discussed.

3.3.4.3 Online Participation

Although majority of the participants found that the online participation is a simple process, some thought that it was difficult to manage. For instance, when the user reset his/her password, a link will be sent to the email address which could be hard for those who do not have any email (e.g. the elderly). Besides, for the registration process, it is also challenging for the non-IT literate users.

It was understood that personal data need to be registered to enable the authentication process. However, some people (especially the former USSR citizens) did not want to disclose this information. In this respect, the process needs to be improved.

Like in the other pilots, the participants also discussed about the idea of integrating the users account, so that would enable them to use one account to access many systems.

Lastly, it was highlighted that the provision of facilities to access EMPATIA would encourage more participation.

3.3.4.4 Physical Participation

It was agreed that the concept of PB is good and time significant. However, it was warned that the government needs to be cautious that there are people who are not IT literate. Therefore, they need to be reached out physically.

3.3.4.5 Organisation / others

It was suggested for the municipality to establish a team of staff or volunteers that could provide training and help to the citizens on using the EMPATIA platform.

3.3.5 Summary

This subsection will conclude the findings of process assessment by providing an overview of the important points in relation to the EMPATIA platform in facilitating the PB process. Overall, despite of general consensus among the four Pilot sites that EMPATIA's implementation should be continued, many processes associated with its use need to be improved, including the followings:

- The politicians (i.e. municipal leaders) should be more involved in promoting the platform's use. Without strategic buy-in and political commitment to use PB, EMPATIA and other PB platforms will struggle to be institutionalized in municipalities' political and services agenda.

- There should be more cooperation between the politicians (i.e. municipal leaders), municipality staff and citizens in making EMPATIA a successful tool to enhance the quality of society's well-being through PB. In this respect, PB should be promoted at central government level and all local government (municipalities) expected to have a PB agenda. As it is, PB is scattered across countries and Europe and is not considered as mainstream policy agenda.

- More though should be given to how authority of allocating financial resource for the projects can be given to the citizens, since they are the main stakeholders for PB. In this respect, a clear process is needed with organisation and reporting structure around municipality staff and citizens with terms of reference (TOR). The same rules of transparency, responsibility and accountability should be applied as with any project or dealings with tax payers' money. Therefore, much more though and work is needed around closer involvement of citizens in the entire PB process

- It was found that after the voting process, there was very little involvement of the citizens in the implementation process of selected proposals. Therefore, citizens did not feel ownership or empowered beyond the voting stage. In order to improve trust, transparency and democratic process, the entire cycle of PB should involve full participation of citizens.

- The project proposals for PB should be limited to the projects that are not covered by city budget to ensure that PB is led, managed and implemented by citizens. While the selection process of projects can include a matching of policy priorities of the cities with proposals together with the votes received, there should be clear distinction of the budgets (i.e. the budget allocated for PB should be transparent and not mixed with budgets allocated for projects linked with city priorities). In fact, a good way of aligning policy agendas with local needs is to ensure that citizens are kept engaged in the policy making process through pre- PB engagement so that policy-making and resource allocation in government is shaped by citizens' needs, i.e. in other words, a bottom-up approach to policy making is encouraged through participation.

- The voting procedures, i.e. the authentication process needs to be improved and simplified where less IT savvy users don't feel threatened or excluded. If ICT introduces complexity to the PB process or makes the engagement with PB difficult to the user in terms of process or usability, it is unlikely that citizens will engage with the process. Here, parallels should be drawn to the lessons learned from the digital government or e-government systems, that for more than a decade and a half, has faced significant inclusion and adoption issues.

- The provision of facility such as EMPATIA kiosks and computer at public places need to be improved to increase EMPATIA use. This is important for accessibility and availability reasons where those who do not have IT or internet access have an equal opportunity to participate in the PB process.

The municipality should consider training staff or agents among the citizens that could assists EMPATIA users. Again, this is linked to the two points identified above.

4 Social and Political impact

In this chapter we will overview and analyse the data collected via the login system and via the survey to evaluate the socio-political impact of the participatory processes promoted by the EMPATIA platform. The chapter is divided in three main section. In the first section we leverage the focus groups, participant observations and informal interviews to construct a qualitative profile of each pilot. In the second section we leverage the login data to analyse the inclusion profile of each pilot and compare across pilot. In the third section we leverage the survey to analyse the impact of participation on participants' trust, efficacy and antipolitics sentiment. For a discussion on methodological choices and data collection mechanisms see section 3.2 of this document

4.1 Background Local conditions

As introduced in section 3.2, it is important to understand that the participatory processes promoted by the EMPATIA project are complex participatory systems that combine numerous elements many of which were not under the direct control of the EMPATIA consortium.

In particular, when looking at the impact of participatory processes on inclusion and participants' attitudes the literature identifies six primary local factors that significantly affect such impact (Avritzer 2004, Fung 2007, Wampler 2007, Smith 2009, Spada & Allegretti 2014, Parkinson & Mansbridge 2012, Baiocchi & Ganuza 2016, Warren 2017): Political support; Bureacratic support; Resources; Past history of participation; Other competing participatory processes; and Level of civil society support.

The amount of resources invested by the city in promoting the participatory process and the amount of resources specifically invested in promoting inclusion are important factors that affect the demographic profile of participants. Similarly, the level of public support offered by the city government to each of the four EMPATIA pilots affects participants' feelings of being taken seriously and consequentially their political attitudes.

The staff that the city dedicates to each process and the resources dedicated to management are another important factor that affects the capability of the city to organize events aimed at supporting the adoption of the participatory technology. Additionally, local conditions, such as the interest of civil society in the process and other participatory processes occurring in parallel to the ones encouraged by EMPATIA, also significantly contribute to the impact that each pilot process has displayed on inclusion and participants' attitudes. Citizens' experience with past participatory processes is another extremely important factor affecting the impact of any new channel of engagement. These factors together with structural factors such as size of the city, available resources and ability to spend them quickly are some of the crucial elements that affect participatory processes and have been analysed by a vast literature. The following scheme summarizes the key factors affecting output and impact for the specific case of EMPATIA participatory processes and for the two families of KPIs we have chosen to evaluate the socio-political impact of EMPATIA.
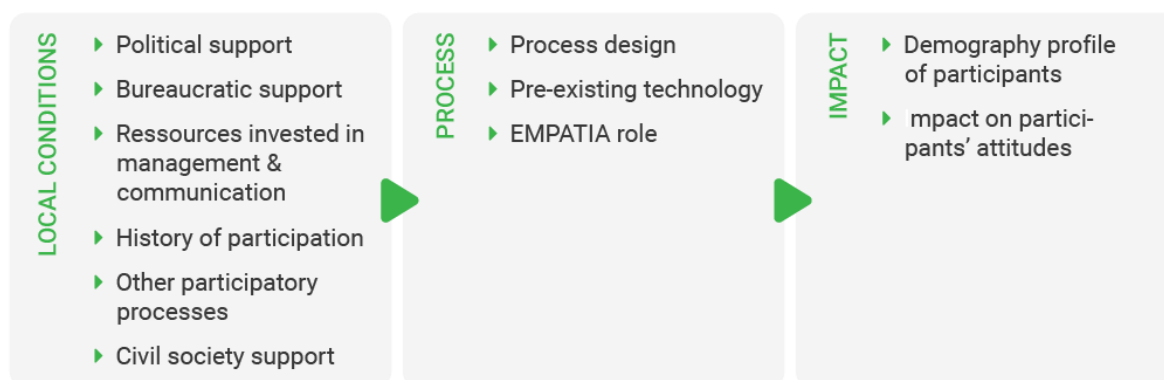
Figure 33 – Factors that moderate pilot impact on inclusion and participants' attitudes

While the deliverable 3.2 describes in detail each pilot, in the following section, before analysing the impact of each pilot, we provide a quick overview of key elements of each pilot that might have affected its outcome and impact. It is important to keep in mind these moderating factors to better understand the potential impact of EMPATIA across a large variety of different scenarios.

Our research design, due to the impossibility of implementing randomized controlled trials to sterilize local conditions and other moderating factors, aimed at testing the impact of EMPATIA in significantly diverse environment. This design cannot easily explain differences across pilots, such differences are confounded by local conditions, but it offers stronger support to common trends identified across all pilots. If the EMPATIA intervention generates similar outcomes across a variety of settings, there is preliminary evidence that the identified impact of the participatory processes promoted by EMPATIA is robust to a variety of local conditions. Obviously, such evidence requires further investigation and remains in the realm of correlation and not causation, but it is an important first step in evaluating the impact of such participatory practice.

In the next section using a combination of the data offered by the focus groups, anecdotal evidence offered by members of the consortium, open comments in the impact evaluation surveys and informal interviews with members of the team implementing each process we build a profile of the local conditions in each pilot site. This qualitative profile is designed to complement the quantitative data that will be presented in the next sections of this impact evaluation. Deliverable 3.2 offer a more complete description of each pilot process, this section is designed to focus on the elements described in the graph above that might directly moderate the impact KPIs we are focusing on. In particular the next section will focus on local conditions in each pilot, including an assessment of political and bureaucratic support, an assessment of the available resources, past history of participation, the presence of other concurrent participatory processes that might generate positive or negative interactions with the process promoted by EMPATIA and lastly the support provided by civil society. Then we will analyse in detail the design of each pilot. The EMPATIA consortium offered a set of recommendation and support during the design process, but each pilot design was influenced by a combination of local factors that were outside the control of EMPATIA that are extremely important to consider during the impact evaluation, lastly, we will move to present the impact evaluation itself with a focus on inclusion and attitudinal change.

4.1.1 Background local conditions - MILAN

In Milan the process was championed by a member of the city government, Lorenzo Lipparini, that belongs to a small party, partito Radicale supporting the majority that controls the city. The party is so

small that does not have a representative in the city council. Lipparini's role within the city government is to promote participation and manage the open data strategy of the city. His office is relatively new (Assessorato alla partecipazione, cittadinanza attiva e open data) and does not have a dedicated line of funding. The office has a staff of three person that supports all its activity including the pilot promoted by EMPATIA. In particular a member of the staff, Simona Bonfante, played a key role as project manager of the more than 50 face-to-face events coordinating the city staff and the staff of the University of Milan. Bonfante devoted hundreds of hours to the process outside her working hours.

The mayor of Milan supported the process with an initial presentation and a few videos during the electoral campaign. One of the key sponsor of the project was a senior member of the city staff, Eugenio Petz, that secured the collaboration of other members of the various departments involved in the evaluation of the feasibility of projects. One of the most successful elements of the Milan pilot is to the level of engagement of city bureaucracy.

However, the city channels of communications were only partially available to be used by the engagement campaign of the process. It was difficult for the Milan team to obtain spaces in the Milan newsletter and in the official Facebook page of Milan. The city investment in communication was minimal, with Facebook and Google ads in the order of 10.000 Euros. The major expense was dedicated to public billboards and a tram that was going around the city with a banner about participatory budgeting. The city did not allow the team to send emails to their email repository of citizens that possess the digital identification to access e-government services. This email list contains more than 100.000 members and would have multiplied the engagement capabilities of the process. The city allowed only a test in which 20.000 citizens were contacted that immediately resulted in a significant spike in voting. The team estimates an increase of 3.000 votes due to this test, around 15% conversion rate with just one email. If the entire mailing list had been available together with the possibility of multiple reminders, such as the ones employed for the surveys, our experience suggests a conversion rate of 25-30%, i.e. the pilot of Milan could have engaged additional 20000 people easily on top of the approximatively 22000 people engaged in the final vote.

With respect political will and available resources Milan represents the prototypical situation in which a small minority within a city government is strongly motivated to support a participatory process, but the rest of the city machine is somewhat reluctant to offer its resources. In this situation the potential of the participatory process cannot be fully achieved.

With respect the history of participation in Milan, the participatory budgeting process promoted by EMPATIA came after a first experiment implemented in 2015 that was considered by many observers a failure. Three key elements were particularly problematic, first the design failed to merge effectively assemblies open to all citizens and assemblies open only to a random sample of the population, this is a recurrent problem of participatory processes that combine such channels of engagement. Citizens that proposed ideas in the open to all meetings lost track of such ideas when they were combined, merged and modified by the randomly selected panels in charge of transforming ideas in feasible projects. Second due to the timing of the first process, implemented the year before the election, almost no projects were implemented for the first few years generating a significant distrust toward the process. Third, the participatory budgeting in Milan is effectively the combination of 9 participatory budgeting one for each district of Milan. In the first iteration of 2015 these municipalities contested the process because it was perceived as a way to bypass their political mandate.

Therefore, this negative experience of the first iteration of the Milan PB process in 2015 implied that citizens were significantly sceptical about this new implementation. The focus groups also included

participants of both the 2015 and 2017 PB process and such participants highlighted their frustration with respect the first implementation of PB and how much that had biased people against participating in the 2017 edition.

Thus, when evaluating the impact of PB in Milan it is important to keep in mind that it did not build upon a positive track record with the citizenship, but it had to deal with scepticism and open criticism. Many citizens questioned why a new process was initiated when the projects of the previous one was not fully implemented.

To overcome this problem the EMPATIA project in Milan begun with a transparency operation that collected all the information available past projects and uploaded it online on the website of participatory budgeting. The previous operation however was only partially successful due to the fact that the digital infrastructure requires complex input that is not simply obtainable without strong city support. At the same time Lorenzo Lipparini secured from the mayor additional funding to implement past projects. It is unclear if the combination of these intervention did much to engage participants in the first iteration. Our impact evaluation surveys show that the majority of participants were new participants.
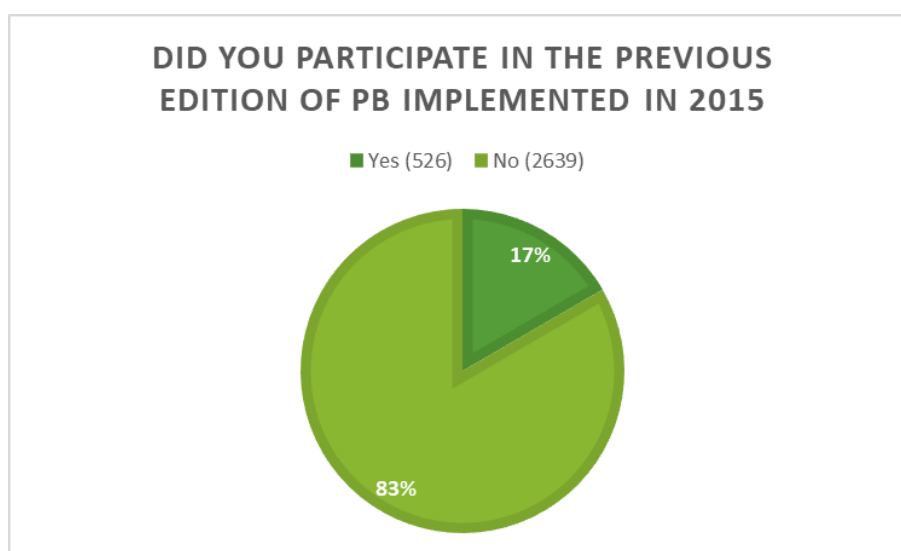
Figure 34 – Milan - past experience with participation

Additionally, the amount of money that the city devoted to the PB process in 2017 was reduced to 500.000 euros per district, a total of 4.9 Million euros, while at the same time more money was given to the city district direct control. This design choice was again a consequence of the 2015 implementation of the PB process that saw city districts complain that citizens randomly selected in the PB process controlled more funding than district councillors that had been elected. The objective of this redistribution was to secure the collaboration of the elective bodies in each city district, objective that was achieved in the majority of districts according to the feedback expressed by Lorenzo Lipparini during the focus group, but at the same time the reduction in the budget generated criticism from citizens that often read the amount of resources devoted to PB and the amount of resources to communicate the process itself as too low for a city of the size of Milan.

With respect other participatory processes directly implemented by the city, Milan was not implementing any other participatory engagement during the months of PB. Therefore, the participatory budgeting in Milan did not have to compete for attention and it was the highest profile participatory process of 2017-2018.

With respect civil society support, Milan managed according to all observers, the qualitative interviews and the focus groups to activate a significant number of groups that quickly became the backbone of the process in each district. Groups organized their own meetings and their own communication campaign to complement the scarce resources invested by the city in communication. This is significantly reflected by the following table that shows that the second main source of engagement were the groups themselves. The table displays data from the pre-survey that had around 3000 respondents out of around 10000 participants in PB.

Table 43 – Milan engagement analysis

How did you discover the possibility of participating in PB?	Percentage	Number
Some friends invited me to participate	36.87%	1060
I am a member of a group that participated in the PB	13.88%	399
From the city newsletter	12.80%	368
From an event organized in my district	10.57%	304
I have been contacted by a group I am not a member of	7.76%	223
Other (open text)	6.64%	191
From the Facebook page of the city of Milan	3.27%	94
From a Facebook ad	2.54%	73
From a leaflet	2.37%	68
From an article in a newspaper	1.50%	43
From the Facebook page of PB	1.32%	38
From a radio program	0.45%	13
From a tv program	0.03%	1
	TOTAL	**2875**
	Not Answered	**288**

If we sum the participants that were members of a group and those that were contacted by a group they were not member of, we see that 21.63% of the respondents declares they were contacted by group. And while analysing the open answers in the other option we also find that a majority of them can be linked to a social street (an online community of the citizens residing in a street), a political party, a group of parents within a school, and other form of associations. This quantitative result is reinforced by our own participant observations during the face to face events that supported the digital participatory process. Many people were representatives of associations and provided projects that had been pre-written by a group of people in a pen-drive. There were actually some complains because the online form to upload the project did not allow to have more than one person as writer of the project. Therefore, many groups included in the description of the project itself the name of the group, or coalition of groups, that had designed it. Some of the project were also long-standing request of groups that had never been fulfilled by the city in years and PB offered a new venue to provide visibility to these projects. In sum the participatory budgeting of Milan was extremely successful in engaging pre-existing active groups, while less successful in promoting new ideas from single individuals and promoting the formation of new groups around projects.

Lastly, the majority of citizens perceived the participatory process as a useful process and that Milan should continue implementing the process in the coming years. This level of satisfaction should be taken

with caution because social desirability bias significantly affects answer rate in surveys and even responses in face to face interviews with organizers. The focus group in fact highlights that some citizens had some concerns with the difficulty of the platform (see section 3.3.4). That said the next graph offers a general positive overview of the process.
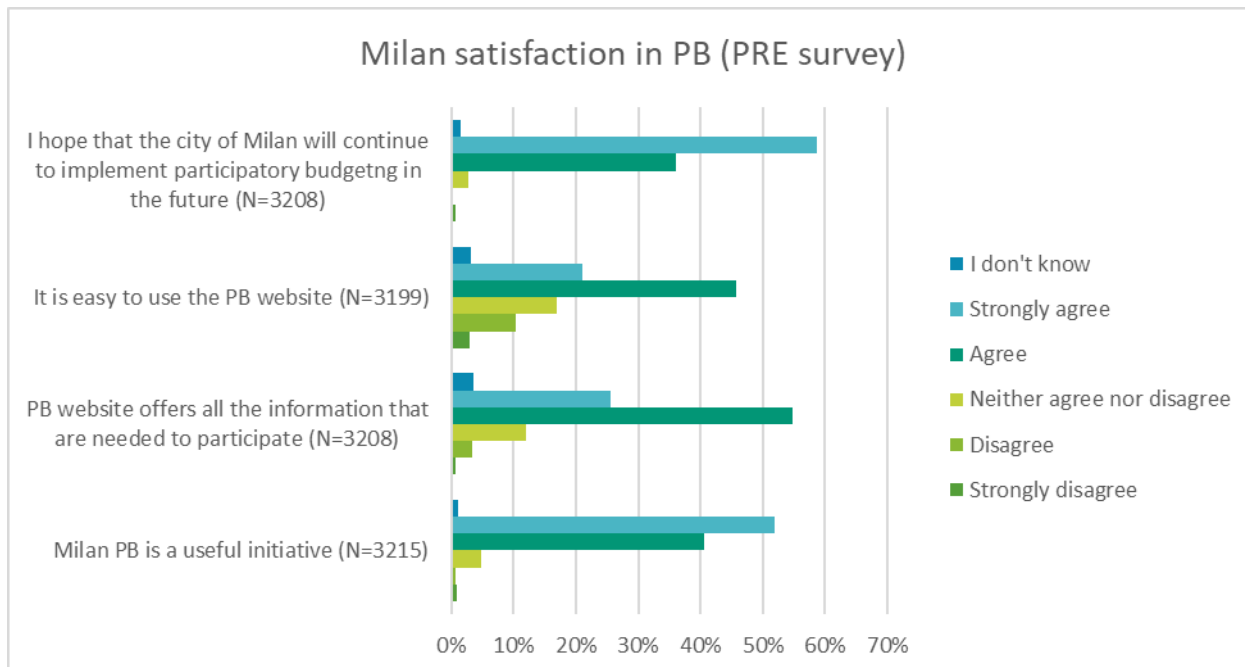

Figure 35 - Milan participants' satisfaction

4.1.2 Background local conditions – WUPPERTAL

Originally, the German pilot was planned to be held in Bonn. However, it turned out at the beginning of the EMPATIA project that this was no longer feasible due to changes in the time schedule envisaged by the municipality, and changes in the political leadership. Pilot partner Zebralog thus opened a call for a new pilot municipality via the German PB portal www.buergerhaushalt.org.

Zebralog was approached by the city of Wuppertal only a few days after the opening of the call. Their 'department for participation' was founded only a year before the start of the EMPATIA project. It is directly connected to the Mayor and consists of a team responsible for strengthening citizen participation in Wuppertal, with a high interest in developing a new model of Participatory Budgeting with the support and use of EMPATIA.

The level of political support throughout the pilot was medium. On one hand the city of Wuppertal directly requested the EMPATIA support and shared, with the pilot implementer Zebralog, the objective of reinventing the classical consultative German model of PB (for more detail see deliverable 3.2). On the other hand, the pot of funds that the citizens controlled in the PB was extremely low, 150.000 euros, an amount lower than the amount made available in Říčany a city that is 20 times smaller than Wuppertal.

Wuppertal had previous experience with several consultative PB processes. However, they saw the need to rethink this dominant model of PB in Wuppertal – just as in many other consultative PB processes throughout Germany – since only a minority of proposals by citizens that made it to the TOP list could actually be implemented, a situation which often led to dissatisfaction amongst citizens, municipal staff

and political representatives. More precisely, in the German consultative PB model, there is no predefined budget, but citizens can submit proposals regarding the whole municipal budget, including both suggestions for cost cutting, such as the stop of funding a particular cultural site like a theatre, and 'big ideas' like the building of a new site or the restructuring of particular municipal processes. In the case of the previous PBs in Wuppertal and many other German municipalities, the scope for change due to such proposals is usually very limited; many proposals cannot be accepted because they contradict previous city council resolutions, or certain political commitments like the promise not to cut the budget for cultural activities. The particular challenge in Wuppertal was thus to create a participation process with a clear scope of participation, including a defined financial scope. Moreover, PB processes in Germany – and in Wuppertal as well – have in the past almost exclusively been conducted via an online platform, and there has been little integration of on-site opportunities of deliberation. By developing a new multichannel model of PB in Germany with the help of EMPATIA, Wuppertal aimed to set an example for other municipalities in Germany as well. Thus, the past experience with participatory budgeting in the city of Wuppertal was significant but overtime the interest with the traditional model had decreased and the overall perception of the citizens of the traditional consultative model was negative.

As for the case of Milan this negative past experience is reflected in the pre-surveys that show that the majority of participants had not participated in previous public consultations organized by the city.
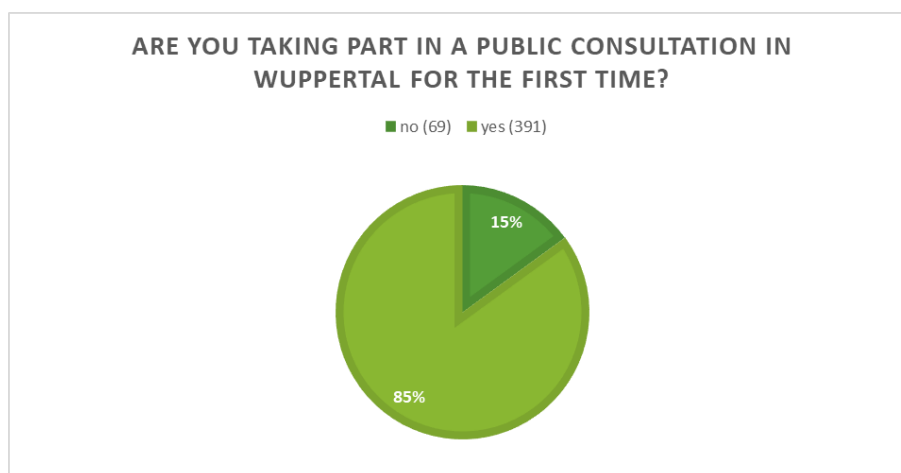
Figure 36 - Wuppertal past experience with participation

During the EMPATIA pilot the citizens were allowed to decide only 150.000 euros that for a city of 360.000 inhabitants is very little. Nonetheless the city provided significant support and resources to the communication campaign allowing Zebralog to utilize official channels and spaces to promote the process. This while the experiment was small, the amount of resources to run such experiment were high, potentially higher than the amount of money destined to the decision of the citizens. The latter is the fundamental problem of the Wuppertal pilot, it is not sustainable economically and while as we will see in this impact evaluation it has achieved the best results within the EMPATIA project the cost per participant is extremely high and the cost per project implemented, when they will realize, it will be the highest among all our pilots.

Another important feature that differentiates Wuppertal from the other pilot is the focus on high quality and curated face to face experience. Two large scale deliberative events were implemented. The first event during the filtering phase, i.e. the phase that selects the project ideas that will enter the final referendum. Instead of relying exclusively on a competitive design, in which the project ideas with the

most "likes" were the ones that would be evaluated by the city, as in Milan, Lisbon and Říčany, in Wuppertal the filtering of ideas was conducted via a deliberative event.

After the end of the ideation phase (phase 1 in the graph below) citizens were invited to a deliberative event designed to evaluate the ideas and analyse their contribution to the Common Good (Common Good Check).
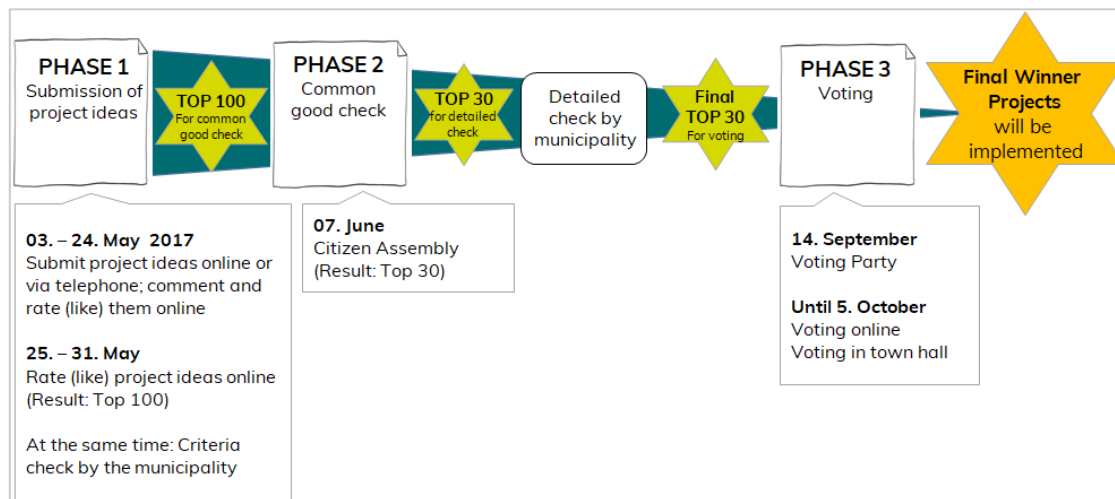
Figure 37 - Wuppertal process design

The event started with a presentation by the Wuppertal Institute / Transzent Centre for transformation research and sustainability. They presented their definition of 'the common good', including twelve dimensions of 'the good life'. Amongst these dimensions are housing and infrastructure, security, education and community, for example. These categories were also already used in the first phase as part of the form to submit project ideas. A list of criteria for measuring the common good was handed out to all citizens present at the assembly.

Figure 38 - Citizen Assembly in Wuppertal

About 170 citizens attended the event. People who knew each other were asked to sit at different tables. In total, there were 20 tables with five to eight citizens each. In four rounds of 20 minutes each, each table was given a set of five ideas that were randomly compiled. Participants at each table were asked to review these ideas and discuss them from the perspective of their benefit for the common good. They

were then asked to rank the ideas by giving them points from one to five. One point meant the lowest and five points the highest benefit for the common good. The random compilation of project ideas had been prepared beforehand so that it was ensured that every idea was evaluated exactly four times. During the group discussions and ranking, every group developed their own system: While some worked closely with the common good criteria from the Wuppertal Institute, others discussed rather freely. After every round, the evaluation results were collected from the 20 tables and all results were entered into an Excel sheet by employees of the municipality while the next round took place. Thereby, the event ended with a presentation of the results of the common good check. Since three project ideas ended up with the exact same total number of points, the result was a list of the TOP 32 project ideas. These 32 ideas went on to the detailed municipal review. The results of the common good check were published on the EMPATIA Wuppertal platform immediately after the event, including an update of the status of each proposal.

Civil society support was high throughout the entire process. Citizens and groups were involved since the beginning of the design phase in a steering committee, and then subsequently in the common good check event and lastly in the voting party, an in-person celebration and presentation of the final 32 projects that were in the ballot of the final referendum.

Lastly when we look at the citizens' satisfaction in the process we observe as in Milan high level of satisfaction across the board of our battery of questions:
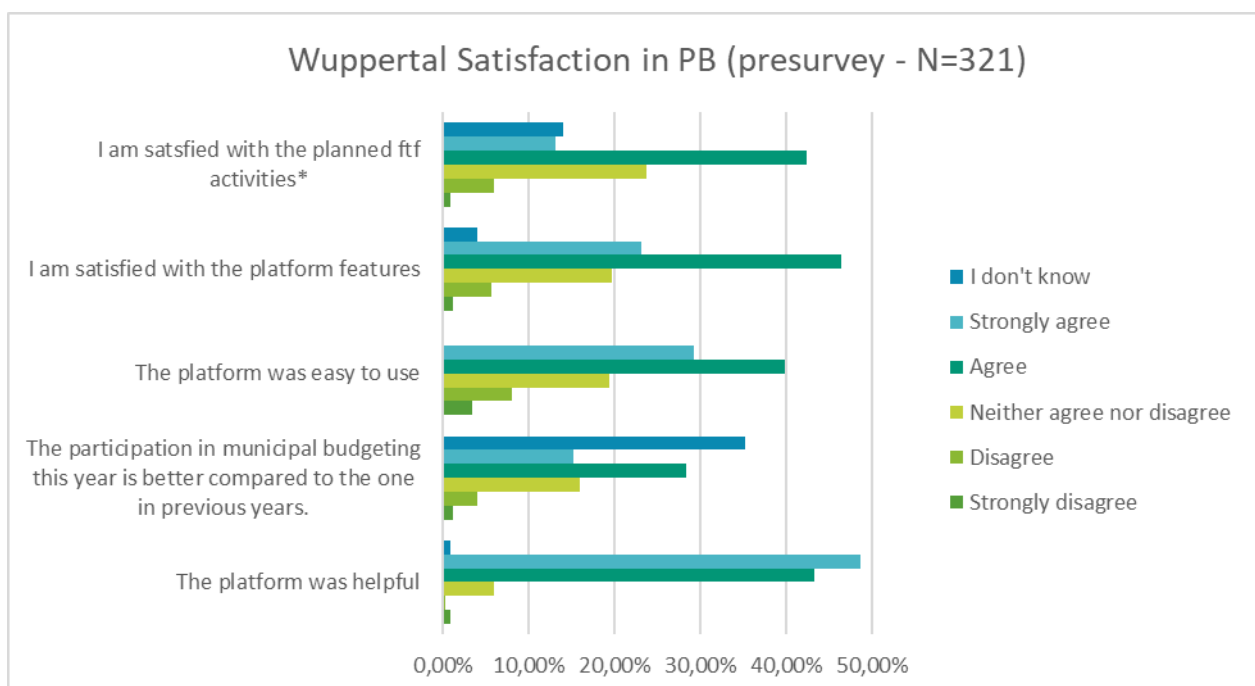
Figure 39 - Wuppertal participants' satisfaction

4.1.3 Background local conditions – LISBON

Originally EMPATIA had envisioned to support a participatory budgeting process in Lisbon. However, the city of Lisbon could not wait the end of the design phase of the EMPATIA project and thus adopted a different participatory budgeting platform provided by a local firm (Libertium).

Thus, the purpose of EMPATIA changed from providing a PB platform to fostering the creation of a participation system for Lisbon that was going to bring together, in the same virtual space, the different

participation tools available, while assuring the interconnection with PB (the other platform acquired by the Municipality).

Within the tools of participation, those that already existed but that were dispersed, in different portals and managed by different services, were identified. New tools of participation were also created with the aim of strengthening the municipal policy of citizens' involvement in the management of public policies.

In particular the city required the implementation of a continuous ideation platform modelled on the experience of Reykjavik to complement participatory budgeting and with the objective of targeting the demand for smaller public projects. Participatory Budgeting in Lisbon is designed for large public projects, LisBOAideia, the name of the new process, instead was targeted to smaller projects.

Citizens were not directly involved in the design of the platform. The EMPATIA project managed to provide some support during the design phase. However, many of the features that were recommended by the EMPATIA consortium were not implemented. In particular:

1) **The integration of the participatory system was incomplete.**

   While EMPATIA allowed participants that had credentials in other process to automatically login in the EMPATIA participatory spaces, the opposite was not achieved. Users that created their account in an EMPATIA process had to re-perform the login in other participatory spaces, such as participatory budgeting and fix my street

2) **The continuous ideation platform had design flaws**

   The EMPATIA consortium during the co-design phase highlighted significant design flaws in the participatory process requested by the city. In particular, the continuous ideation platform did not have a defined budget and thus was a purely consultative process with no guarantee that any of the requests of the citizens was going to be implemented. Additionally, EMPATIA recommended to avoid running the new process at the same time of the participatory budgeting process, to distinguish the two more clearly with a specific communication campaign, and ideally to setup milestone face to face events to engage the public. Lastly, we expressed concerns with respect the feasibility of providing feedback information in a timely fashion on a constant flux of ideas. However, these recommendations were not implemented. To our knowledge LisBOAideia has not generated any project that will be implemented by the city. Few ideas passed the threshold of 100 likes to enter technical review, and the fate of ideas that went into technical review is unclear.

The resulting Lisbon pilot is somewhat disappointing given that it did not reflected the design principles and the recommendations of the EMPATIA consortium and the research on multichannel engagement that is at the root of EMPATIA and specifically highlights the risks of not clearly defined parallel channels of engagement. However, the Lisbon pilot offer a unique test of some of the hypothesis of the theory of multichannel engagement.

With respect political and bureaucratic support, the EMPATIA pilot received significant support from the very active team of bureaucrats that manage the variety of participatory processes in Lisbon, but overall the pilot did not have significant political support, in fact it failed to achieve integration, and the resources devoted to creating a specific communication campaign to support the new continuous ideation platform implemented by EMPATIA were minimal.

Almost half of the participants in the pilot (41%) declares that they stumbled upon LisBOAideia almost by chance due to the cross-selling effect of the integrated portal of participation.
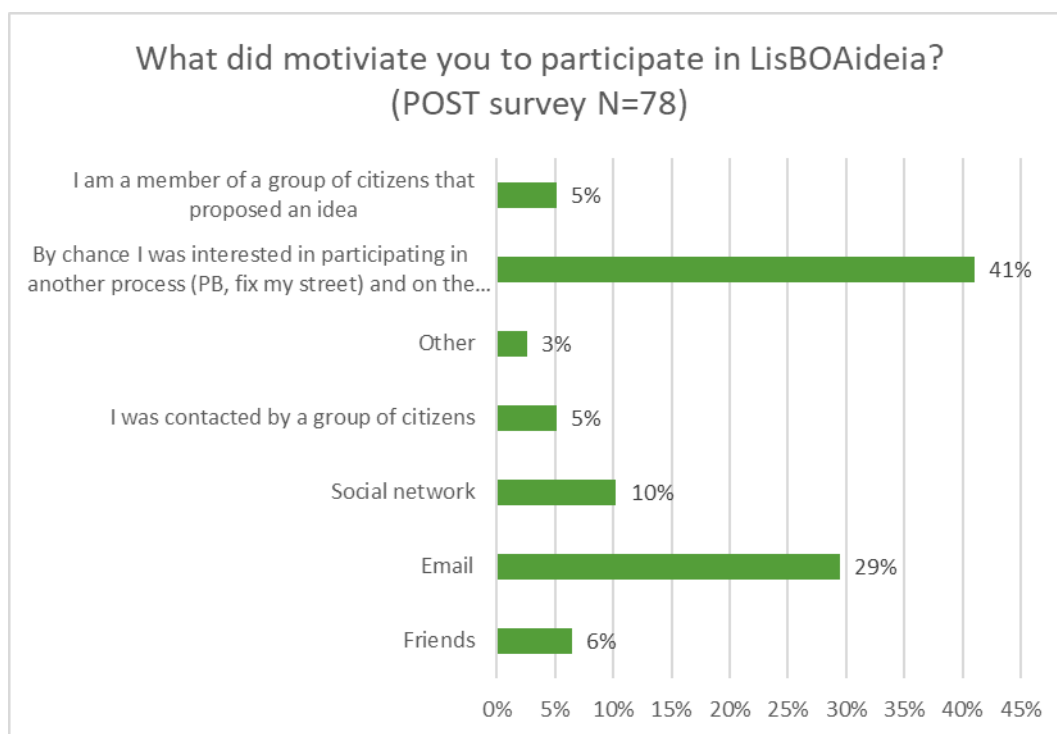
Figure 40 – What motivated you to participate in LisBOAideia?

To further explore the participatory system in Lisbon and the visibility of LisBOAideia within the system we also deployed an additional survey targeting not just citizens that had participated in LisBOAideia, but a more general mailing list of 20.000 active citizens that the city maintains for engagement purposes.

This survey was distributed directly by the city in a mailing list that according to the city includes 20000 emails of active citizens. Almost two thousand people answered the questionnaire (1805), but only 63 declared they had participated in the continuous ideation platform implemented by EMPATIA reinforcing the result that the investment in promoting the platform by the city had been minimal. When we ask instead if the respondents had participated in participatory budgeting we obtained a different answer, 64% of the respondents (808) declare they have participated in PB. This is an important signal to gauge the extremely low visibility of LisBOAideia, and its low capacity to engage active participants possibly due to its consultative and experimental nature. By reflection this data shows also that the city of Lisbon invested very little in promoting engagement in the continuous ideation platform. For example, the mailing list used to deploy the survey was not used to contact the participants and promote the process.
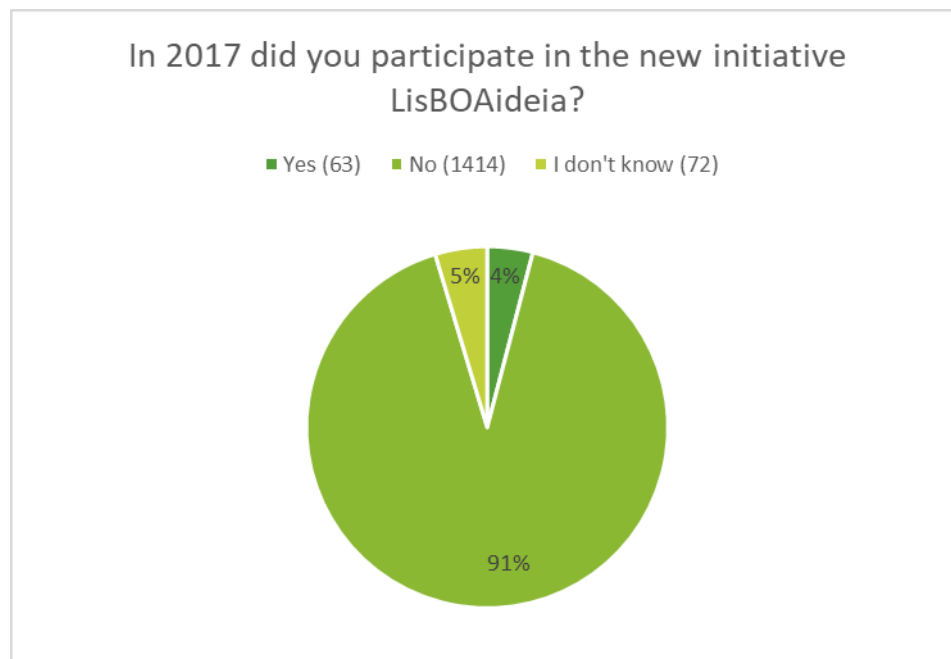
Figure 41 – The invisibility of LisBOAideia
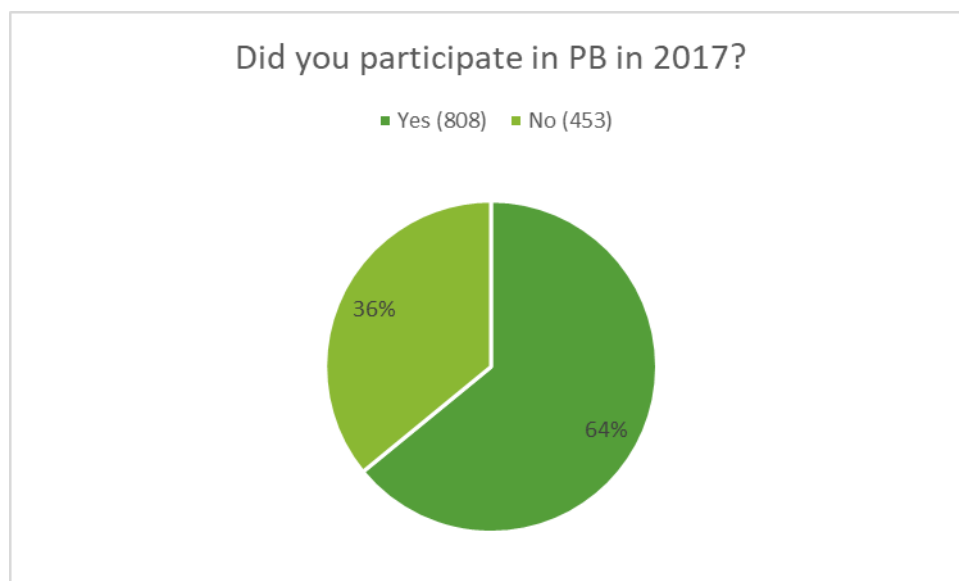
Figure 42 – Lisbon PB participants
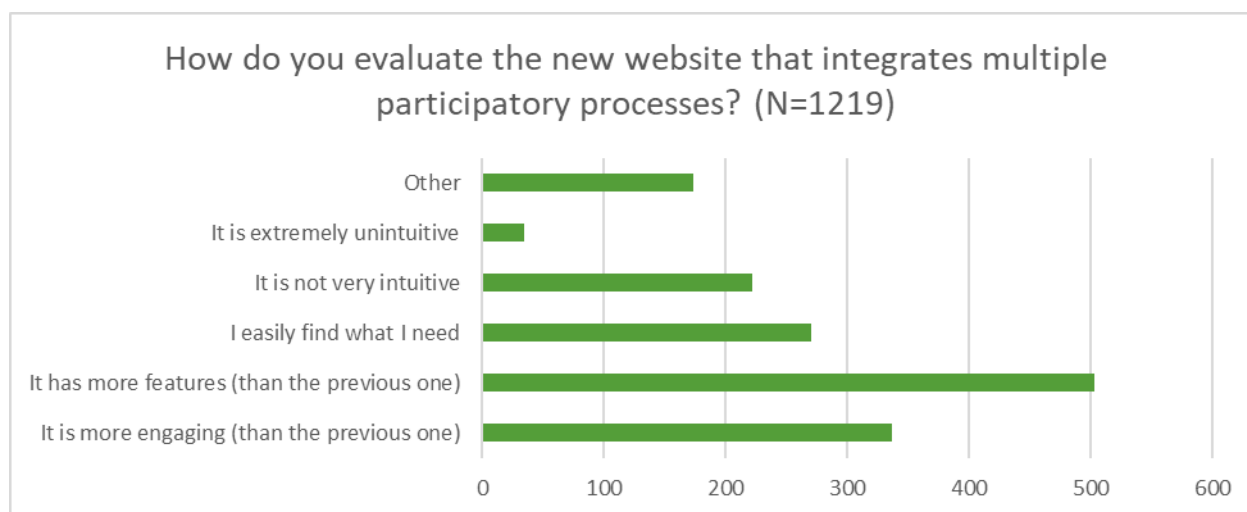
Figure 43 – Lisbon Integration portal evaluation

However, when we ask the participants their point of view on the newly integrated portal that EMPATIA has delivered we observe that a majority of respondent had interacted with it (66%, 1219 out of 1805 respondents). Moreover, almost half of the respondents find the new portal offering new features and around one third of the respondents view the portal as more engaging than the previous one that was not integrated.

In sum while LisBOAideia suffered some design issues and was not sufficiently advertised by the city of Lisbon, the integrated portal Lisboa Participa instead appears to be a promising feature of the pilot in Lisbon, and most importantly it shows the power of cross-selling even at its most rudimentary level. Many LisBOAideia users (41%) discovered the process by chance via the cross-selling inherent capacity of the integrated portal.

When we look at past experience with participation, Lisbon has been implementing a variety of participatory processes for the past ten years, thus differently from the other pilots the majority of participants of LisBOAideia that answered the pre-survey had been engaged in previous participatory processes.

IS THIS THE FIRST TIME YOU PARTICIPATE IN A PUBLIC CONSULTATION PROCESS?

■ no (94) ■ yes (169)

36%

64%
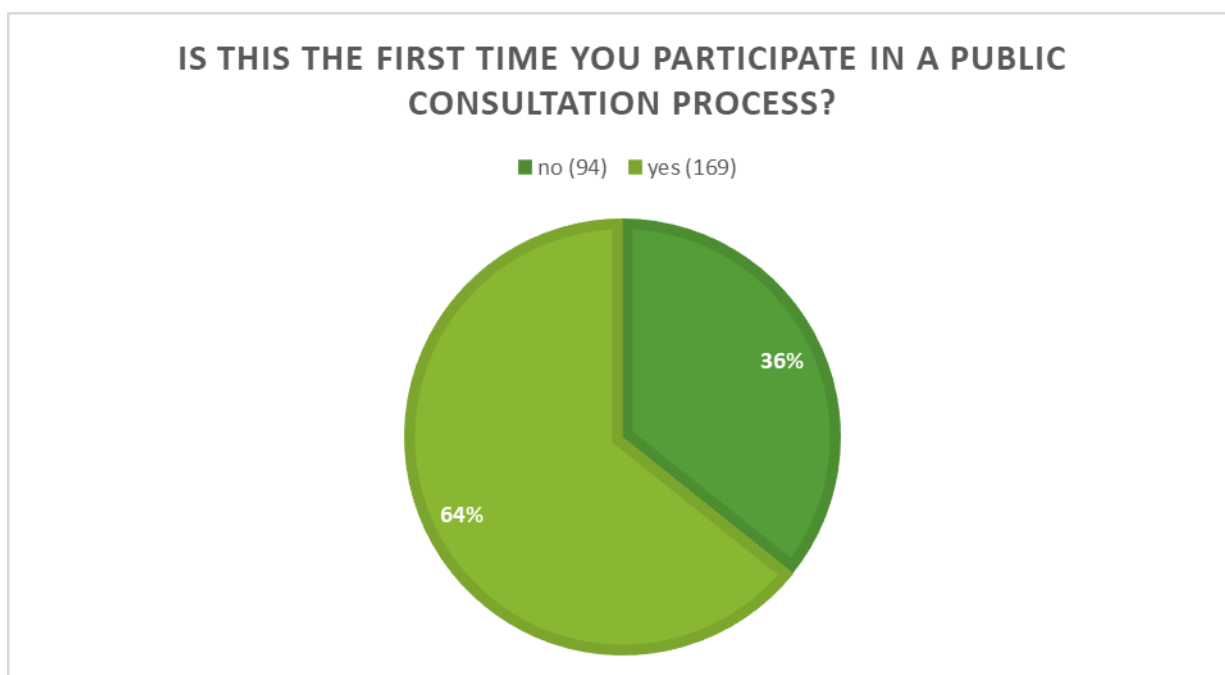
Figure 44 – Lisbon past experience with participation

With respect civil society support we have no data to evaluate properly the support given to the continuous ideation platform LisBOAideia, because it was not co-designed in conjunction with civil society members as in Wuppertal, nor it had a significant amount of face to face events organized by civil society organization. Given that only 63 out the 1800 respondents that completed the additional survey in Lisbon declared that they had participated in LisBOAideia and the sample of the citizens targeted by the survey is a sample of the most active and most engaged citizens in Lisbon we suspect that LisBOAideia had minimal support from civil society organizations that preferred to focus on participatory budgeting. The focus group results described in section 3 of this document reinforce this assessment.

While most of the metrics collected so far and the focus groups themselves depict a somewhat problematic pilot, interestingly enough the participants' evaluation of the digital component of the process are positive. Given that we observe almost no variance across pilots in the satisfaction question, it is difficult to gauge if social desirability bias completely eliminates the usefulness of this battery of question.
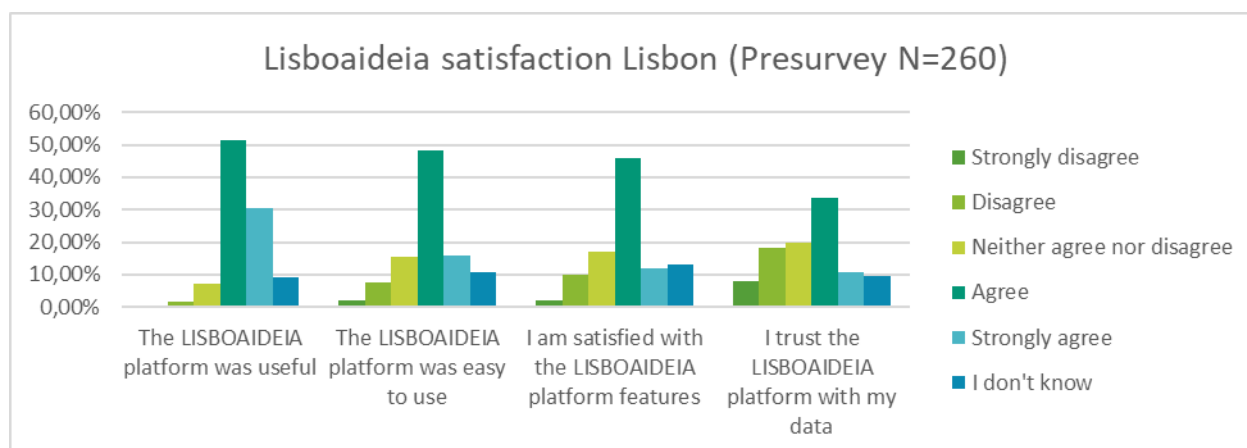
Figure 45 - Lisbon satisfaction

Thus, the overall preliminary picture of the local conditions in Lisbon are mixed, the potential of the process was not fully achieved because its visibility was extremely low

4.1.4 Background local conditions – ŘÍČANY

Říčany is among the very first cities to pilot PB in the Czech Republic. Though a small city (population 17500) with limited capacity in its municipal administration, progressive town leaders have made a significant investment of public funds to realize its first-ever PB process: 5.000.000 Czech crowns, or roughly 185.000 €.

The amount of resources available in Říčany signals the strong political commitment that the city expressed toward the implementation of participatory budgeting. In comparison, Wuppertal, a city of more than 20 times the size provided less money for the budget to be decided by the citizens. Another signal of the strong political support that the process received is the fact that the mayor participated in the co-design phase of the process and he was present during many face-to-face events (see deliverable 3.2 for a more detailed description).

Ríčany has very little past history with citizens' participation. The city previous the implementation of the EMPATIA pilot had developed a citizens' digital panel that was surveyed through the D21 platform. The pilot implemented by the EMPATIA consortium integrated to this pre-existing consultation process an ideation phase conducted face to face. The results of such ideation phase where then subsequently uploaded by city officials in a website constructed via the EMPATIA platform.

The EMPATIA platform was mostly used for information purposes. Then the ideas after being reviewed by the city staff were uploaded in the D21 survey platform and D21 was subsequently used to conduct the vote and the impact evaluation survey of the process.

Given that this PB process was the first of its kind in Říčany and was also the earliest pilot of the EMPATIA project, a number of challenges emerged:

- Administrative capacity. The PB coordinator hired in October 2016 by the town was a new team member with duties that extend beyond PB.

- Low public awareness of PB. Participatory budgeting is still a very new phenomenon in the Czech Republic, with the first-ever PB process being conducted by the 10th district of Prague earlier in 2016. Citizens of Říčany are expected to have a low level of prior awareness of PB, how such a process bears upon their quality of life, and the various ways they can participate in it.

- Low public awareness of town budget and services. As discussed above, a significant part of Říčany's population work in Prague and have oriented their lives toward issues in the capital city. As such, not all citizens of Říčany were expected to be aware of the city budget and how the budget impacts their quality of life. Motivation to participate in PB was likely to be a special challenge for this population.

- Utilization of an early prototype of the EMPATIA platform. The Říčany pilot was one of the first pilot of the EMPATIA platform and that implied that a lot of elements of the platform were not yet ready.

Given the size and nature of Říčany we have very limited data on the presence and participation of civil society organization to the PB process.

Říčany did not include a satisfaction battery in the pre-survey and did not collect a unique ID required to complete the pre-post impact evaluation survey. However, we can still construct a comparable, albeit less efficient impact evaluation, and we can use the post-survey satisfaction battery.
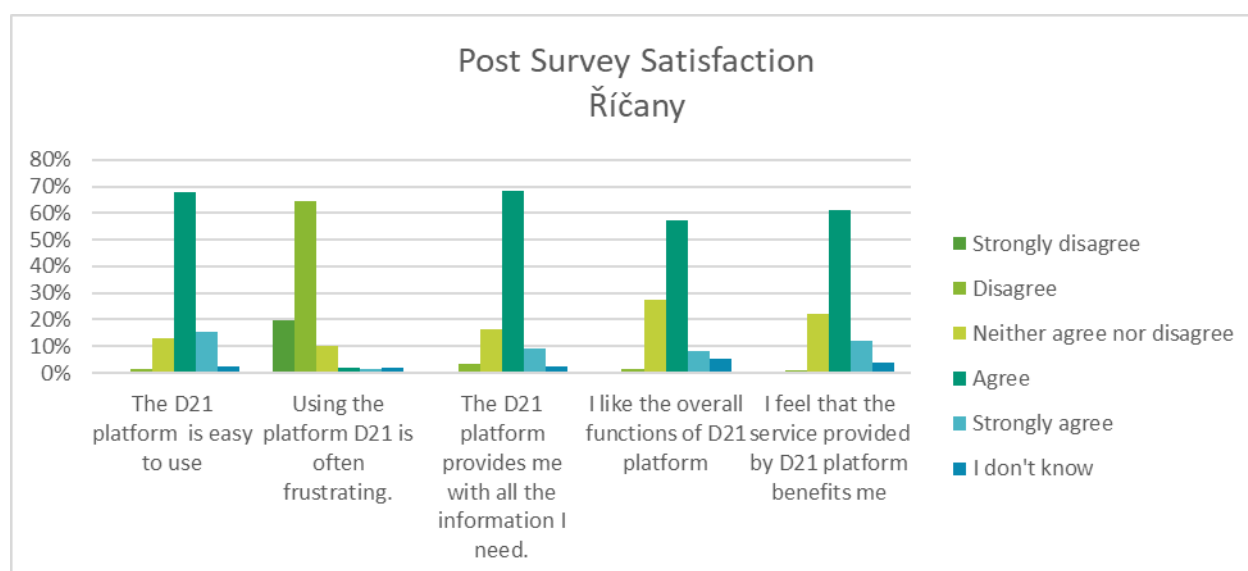
Figure 46 - Říčany satisfaction

4.1.5 Comparing Pilots

Now that we have analysed in more details the various pilots we can summarize the variety of local condition. It is important to understand that the details of the qualitative analysis of the pilot local conditions cannot be easily summarized and they are prone to a significant degree of subjectivity.

What emerges from the focus group and the surveys is the complexity of each pilot site and the significant differences across sites. The following table highlights some of the key findings:

Table 44 – Qualitative assessment of local conditions affecting outcome

	Wuppertal	Milan	Lisbon	Říčany
Past experience with participation	Negative	Negative	Positive	Positive
Political support	High	Medium	Low	High
Civil society support	Medium	High	Low	NA

Other significant participatory processes	None	None	Participatory Budgeting	None
Resources invested in communication relative to size	High	Low	Low	High
Perception of quality of the process by Citizens	High	High	Low	High

It is important to understand that these findings are based on qualitative focus groups and interviews with stakeholders, thus they capture the feelings and observation of key actors that will moderate the socio-political impact of the participatory processes promoted by EMPATIA.

It is important to highlight once more that our research design, due to the impossibility of implementing randomized controlled trials to sterilize local conditions and other moderating factors, aimed at testing the impact of EMPATIA in significantly diverse environment. Each Use Case was selected to maximize diversity across pilot. This design cannot easily explain differences across pilots, such differences are confounded by local conditions, but it offers stronger support to common trends identified across all pilots. If the EMPATIA intervention generates similar outcomes across a variety of settings, there is preliminary evidence that the identified impact of the participatory processes promoted by EMPATIA is robust to a variety of local conditions. Obviously, such evidence requires further investigation and remains in the realm of correlation and not causation, but it is an important first step in evaluating the impact of such participatory practice. Our designed is also strengthened by the combination of multiple data source that combine both qualitative and quantitative approaches. This triangulation approach allows to strengthen and reinforce the anecdotal evidence we collected.

4.1.6 Key Lessons

While chapter 4.2 is designed to offer a strategic overview of all pilots' processes and complement the impact evaluation, this chapter nonetheless offer four interesting lessons.

1) Co-designing digital social innovations involves a bargaining process with stakeholders that in the case of EMPATIA has made more difficult the possibility of testing new and more complex feature of the digital platform

Across all pilots we observed that the fear of bugs, the complexity of understanding the impact of new features and the desire of replicating famous processes significantly affect co-design. EMPATIA offered a significant number of features that could not be tested in the four primary pilots due to co-design choices and the ability of the consortium to reassure cities of the quick resolution of bugs. The latter element of the problem is easily solvable with more resources. EMPATIA needed twice the budget and twice the amount of time to be able to launch a phase of internal testing strong enough to eliminate all the bugs before the pilot occurred. However, no amount of resources can solve the more profound problem that lies in the desire and risk aversion of city officials and politicians. Any pilot program cannot solve such issues, only the building of a long-term relationship with a city, capacity building and the creation of a pragmatic experimental approach that tests new features in sandbox environment that are protected can overcome the natural and legitimate fears of politicians and officials that incur in significant risks when adopting potentially flawed products. In sum the lesson for future projects similar to EMPATIA in terms of budget and length is to first establish a core platform that is non-negotiable and conduct co-design only on additional features.

2) Investment in communication is a crucial element that should be negotiated before the beginning of a pilot OR should receive a significant dedicated budget

Our city partners invested a varied amount of resources in supporting the visibility of the pilots promoted by EMPATIA. The pilot's visibility impacts the number of participants and also it is a heuristic that participants themselves utilize to evaluate the probability that a participatory process is not tokenistic and will not result in nothing. Negotiating a baseline level of communication support including digital ads and survey incentives could be a way to overcome these problems in future project. Another way is to include in each pilot implementation budget a specific task and a significant budget to support the engagement effort of the city.

3) Cross-selling is a powerful tool, but it does not increase engagement, it simply allows participants of one process to experiment another

Lisbon, the only pilot that implemented a participatory system and a cross-selling strategy, shows the power of such strategy. Even if the city did not invest resources in advertising for the new continuous ideation platform a significant number of citizens participated in LisBOAideia. When these citizens were asked what motivated them to participate, 41% replied that while they were looking to participate in another process they stumbled upon LisBOAideia on the integrated participatory platform.

4) The impact evaluation surveys should be centralized and curated directly by a research partner that specializes in surveys, RCT should be promoted

In the EMPATIA project the pilot that have the best performance in term of answer rate are the pilot of Milan that was evaluated by CES, and the pilot of Říčany, that was evaluated by D21. Both D21 and CES have significant experience with deploying and advertising surveys. The other pilot partners instead had limited experience with such tasks. Note also that in Říčany the research design approved by the consortium was not implemented and D21 implemented their own approach that prevents us the possibility of a proper pre-post design and did not include education questions. Thus, overall EMPATIA shows that impact evaluation is best conducted by third party research institutions that have a familiarity with the impact evaluation instrument of choice. Even if partners that implement the pilot have familiarity with the instrument, the fact that their priorities might not perfectly aligned with the objective of the impact evaluation and more generally the fact that the majority of their resources are necessarily spent promoting and implementing the pilot generates risks embodied by the D21 case that can be overcome by centralizing impact evaluation in a third-party research centre. Lastly impact evaluation should have the necessary funds to conduct randomized controlled trials (RCT), without such methodology the wild variety of local conditions prevents a good understanding of causal factors.

4.2 Inclusion

This section utilizes the data collected via the EMPATIA platform and via surveys to create a demographic profile of the participants in each pilot. For the case of Milan, Wuppertal and Lisbon, this profile is enriched by the possibility of segmenting the participants with respect their actions within the digital platforms used in each pilot. Additionally, we collected benchmark data for each pilot site from secondary sources in order to better understand the ability of each pilot to engage the local population and differences across pilots.

In this section, first, we will provide an overview of engagement levels in all pilots comparing transversally the main data regarding the engagement of participants divided for gender, age and education level.

Second, we will deliver an in-depth analysis of each pilot by comparing the data regarding the sample of participants with the population of the municipalities exploring the capacity of each pilot to engage a representative sample of the population.

Lastly, we overview lessons that emerge from the specificity of each pilot. The diversity of the pilots of EMPATIA offers the opportunity to extend the scope of the analysis to three additional point of view that represent the peculiar challenge of each pilot:

- In Lisbon we will analyse the engagement capacity of the Democratic Innovation "LisBOAideia" in relation with the other democratic innovations carried out by the Municipality of Lisbon. In the case of Lisbon the scope of the pilot extended beyond the simple delivery of a specific democratic innovation, and extended to the support to the design of an integrated portal for all the participatory processes coordinated by the municipality (see Deliverable D3.2 Pilots- Final) In this way we aim to analyse the inclusive capacity of the overall multi-channel system of Lisbon.

- In Milan we will deliver a spatial analysis of the BP process, observing the territorial distribution of the participants in the nine districts that compose the city and compare it with the distribution of proposals.

- Wuppertal is the only pilot of EMPATIA where the PB process encompassed two different stages of vote collection. In this case we will compare the two samples of participants that took part to each voting session.

4.2.1 Comparing pilots

4.2.1.1 Levels of Engagement

When we look at the overall capacity of each pilot to engage citizens we observe that Milan has generated in absolute numbers the highest number of participants (more than 10.000), while the continuous ideation platform in Lisbon the lowest (1855).

In relative terms however Říčany generates the highest percentage of participants in the local population. This result is consistent with the size of the city. In smaller cities engaging participants is easier. As expected in all pilots we observe the usual profile of engagement that decreases the more complex is the task. Very few participants propose ideas, while the majority simply votes. In Říčany we do not observe this pattern because the D21 platform was used specifically to vote and we cannot track the users that browsed the project in the ideation phase because the city required such phase to be completely open and anonymous.

Table 45 – Levels of Engagement

			% x/pop	% active/part	% prop/active
Lisbon	Population >16yo	423,015			
	Participants	1,855	0.44%		
	Active	812	0.19%	43.77%	
	Proposers	117	0.03%		14.41%
Milan	Population >16yo	1,082,866			
	Participants	10,995	1.02%		
	Active	7,574	0.70%	68.89%	
	Proposers	242	0.02%		3.20%

Říčany	Population >16yo	12,898			
	Participants	1,022	7.92%		
	Active	1,022	7.92%	Na	
	Proposers	-	0.00%		Na
Wuppertal	Population >16yo	298,562			
	Participants	3,324	1.11%		
	Active	2,404	0.81%	72.32%	
	Proposers	134	0.04%		5.57%

The table analyses the quantity of participants in each pilot in absolute terms and in percentage of the population. Moreover, we classify the intensity of participation in the platform in three levels, from the simplest level of engagement to the most complex: 1) participants, i.e. citizens that completed the login, 2) active, i.e. participants that interacted with the platform leaving a support, a vote or a comment, and 3) participants that spent significant time in the platform proposing a project. In all pilots' participation was open to citizens from the age of 16. Where not available the data have been estimated. In the cases of Milan and Lisbon the processes were opened to the participation of city users, defined as inhabitants of the city for work and study reasons, even if non-legally resident. For these cases we decided to use the statistics available for the city to deliver the inclusion analysis. In the case of Milan, the city users represent the 11,33% of participants, and this percentage can slightly alter the sample, more detailed data regarding this case are presented in Pilot Lessons: Milan. In Lisbon the data regarding city users is not available.

For the cases of Wuppertal and Milan, part of the difference between participants and active users captures the fact that a number of users did not complete the "advanced" stage of registration, necessary to submit proposal or cast preferences and votes. In Lisbon it is estimated that a number of participants registered through the portal lisboaparticipa but did not chose to participate in "LisBOAidea", the participatory process analysed in this chapter, and instead participated in another of the six available processes.

4.2.1.2 Gender

When we analyse the gender profile of participants in Figure 47 we observe that women are the majority of participants in Milan, Říčany and Wuppertal, while men are the majority in the Lisbon continuous ideation platform LisBOAidea. On average the results displayed in this graph reflect the results observed in the literature. Participatory budgeting is an effective way to engage women. To understand why LisBOAidea is such an outlier see the peculiar moderating conditions described in section 4.1.3.

The presence of individuals that do not identify in the binary distinction of the gender option male and female is minimal in all pilots. Non-binary individual is a minority of the population and in some countries societal customs generate a stigma in self identify as outside binary option. Thus, while for research purposes the addition of the non-binary option in the survey had limited value, for EMPATIA it was important to include such signal as a signal of inclusiveness for participants and as a pedagogic tool for cities in countries such as Italy in which homophobia is significant.
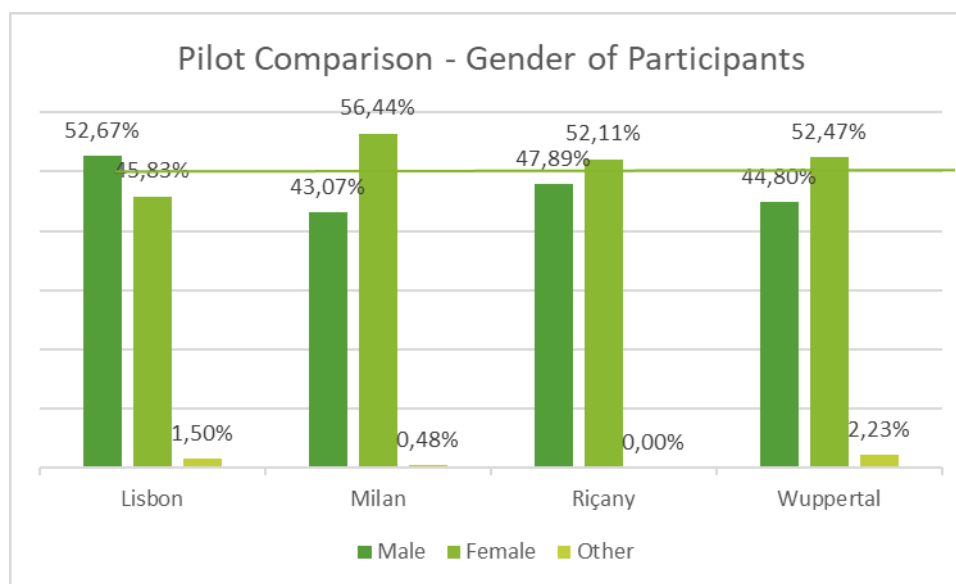
Figure 47 – Pilot Comparison - Gender of Participants

When we move from participants to proposers the gender profile changes significantly in Milan and Wuppertal, unfortunately we do not have the data for Říčany. The majority of proposers are men in all pilots and in particular in Milan 65% of the proposers are male. One distinctive feature of the pilot of Milan is the fact that the city implemented an advanced idea proposal form that required a significant investment of time. While in the other pilots in the idea collection stage simple ideas could be proposed, in Milan the city requested citizens to provide more data including their own assessment of the cost of each proposal. Moreover, as described in section 4.2.1 Milan invested a very limited amount of resources in advertising the process, this underinvestment privileged the participation of representatives of organized groups that inevitably reflect the inequalities that dominate Italian society.

Figure 48 – Pilot Comparison - Gender of Proposers

4.2.1.3   Age

When we look at the age distribution of participants we observe a peak in the age bracket 30-49. Interestingly Lisbon manages to engage more than the other pilots' younger participants, while Milan is the pilot that manages to engage the most elder individuals.

Pilot Comparisons - Age of Participants

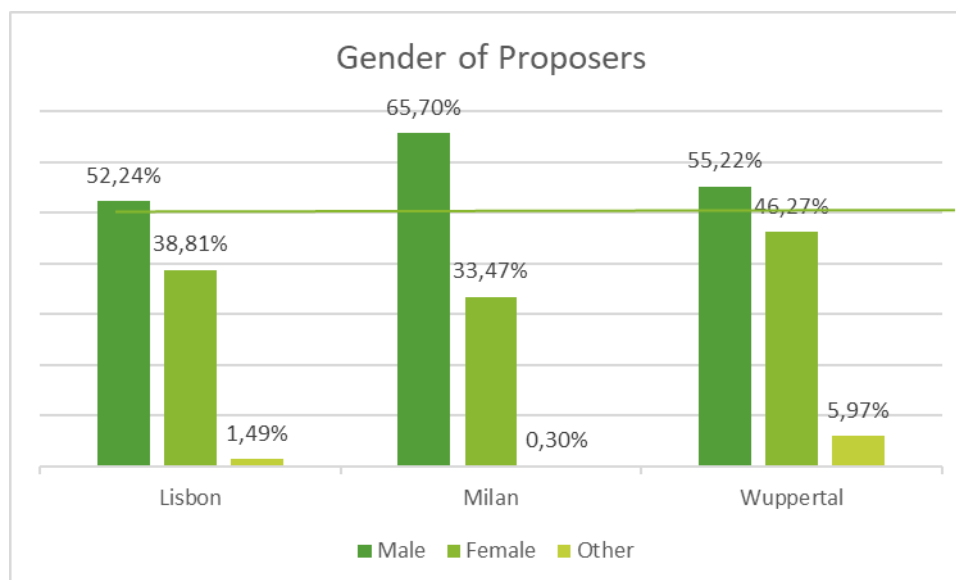|	under 18	18-29	30-49	50-64	over 65
Lisbon	1,36%	29,13%	48,04%	16,52%	4,94%
Milan	0,97%	10,97%	49,43%	25,43%	13,20%
Riçany	0,00%	11,29%	64,02%	16,75%	7,94%
Wuppertal	4,57%	20,82%	34,48%	29,09%	10,44%
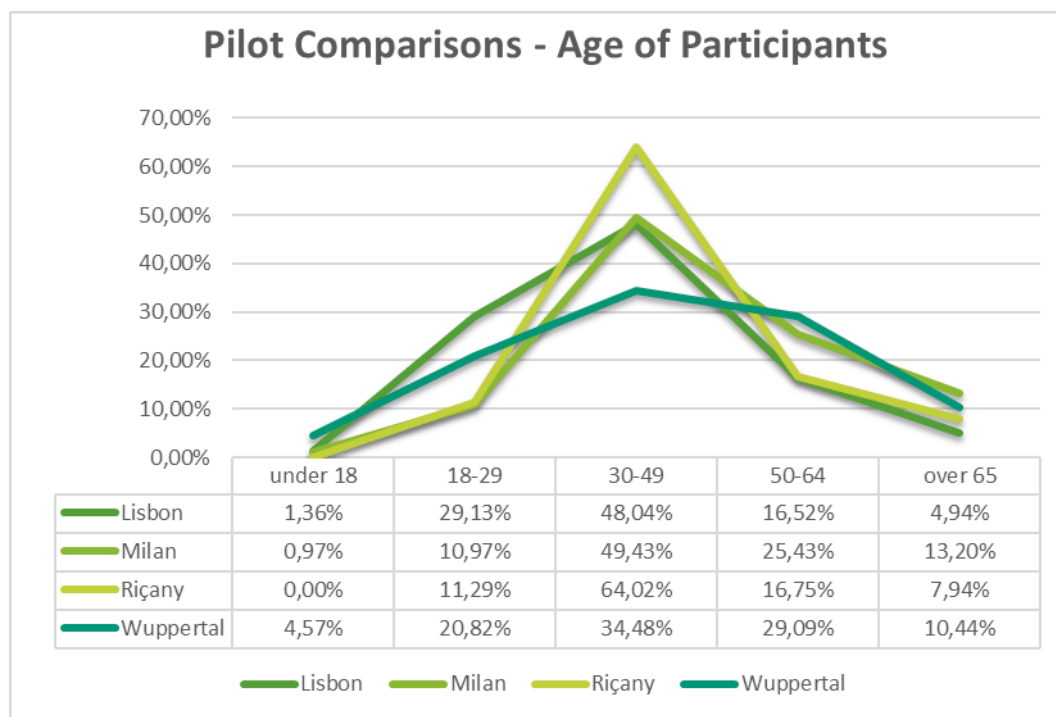
Figure 49 – Pilot Comparison - Age of Participants

We will return on this data when we analyse each pilot more in detail to observe how close each pilot is to the age distribution of the active population of each city.

In general, the digital divide literature tells us that the most difficult bracket of the population to engage are the elderly. While the face to face participation literature find slightly different results, identifying the usual suspects in people that have significant free time, hence students and retired individual.

The processes implemented by EMPATIA were hybrid, but the level of hybridization and the quality of hybridization was different across pilots as described in detail in Deliverable 3.2.

4.2.1.4   Education

Education data offers a unique opportunity to understand the capacity of the hybrid participatory processes promoted by the EMPATIA consortium to engage people that are not members of the elite that already dominates traditional politics. Education attainments are highly correlated with income and political participation. Therefore, the education level of participants is one of the best metric of the effectiveness of the EMPATIA project in engaging disadvantaged segments of the population that do not participate in politics.

Pilot Comparisons - Education of Participants

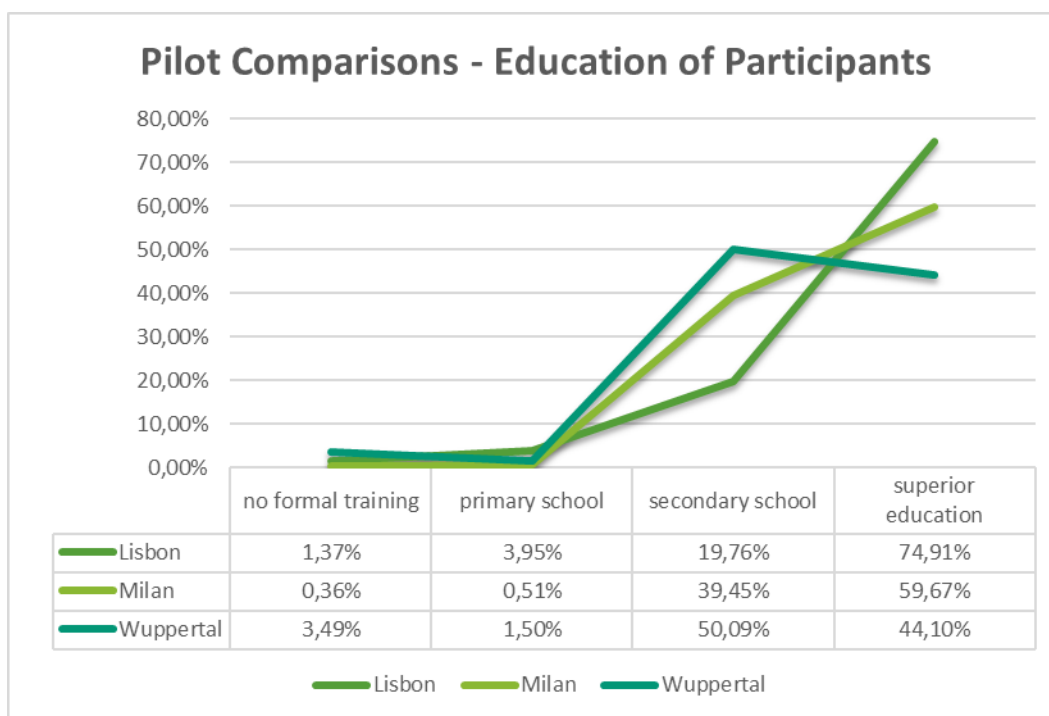|	no formal training	primary school	secondary school	superior education
Lisbon	1,37%	3,95%	19,76%	74,91%
Milan	0,36%	0,51%	39,45%	59,67%
Wuppertal	3,49%	1,50%	50,09%	44,10%

Lisbon — Milan — Wuppertal

Figure 50 – Pilot Comparison - Education of Participants

A part for the case of Wuppertal, in all EMPATIA pilots the majority of participants report having completed university or a higher degree.

As described in section 4.1, Lisbon was an exclusively digital pilot, while Milan was a hybrid pilot that included many face-to-face events, but mostly focused on providing information and assistance to users. Wuppertal differs from both cases because it included a specific face to face phase, a large scale deliberative event in which more than 170 citizens participated. This event was a crucial event that took the 100 raw ideas provided during the digital ideation phase and merged them and improved them transforming them in the 32 projects that entered the ballot. Moreover, Milan and Lisbon significantly underinvested in communication and in particular communication targeted to promote inclusion. Thus, this graph and the differences that can be observed across pilots have roots in specific background local condition of each pilot.

To better understand the overall performance of the EMPATIA pilots with respect best practices

4.2.2 Lisbon: multichannel engagement does it work?

4.2.2.1 Comparing the sample with the population

When we analyse in detail the Lisbon case and in particular we compare the demographics data with the baseline population data some of the trend we have already observed in the comparison across pilots become even more prominent.
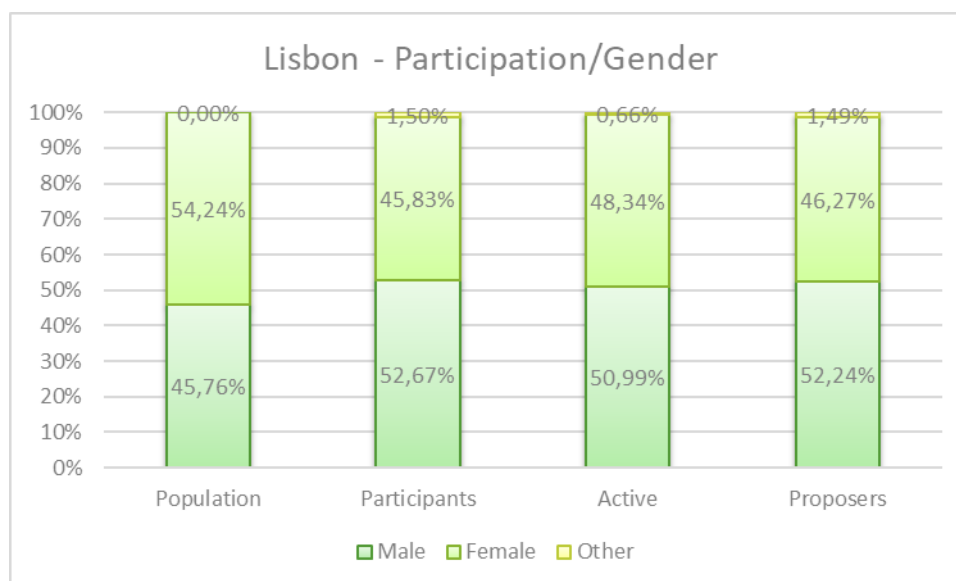
Figure 51 – Lisbon Participation/Gender

With respect gender the population of Lisbon is composed by a majority of women (54.24%), this fact heightens even more the unusual result that LisBOAideia engaged a majority of men (52.67%). Similarly, the population of Lisbon has a significant percentage of people that attained only primary education (44%), and a relatively low percentage of people that completed university (33%). This result further heightens the fact that 74% of LisBOAidea participants declare to have completed a university degree. When we look at proposers of ideas this number raises to a staggering 81%. Was LisBOAidea a platform that attracted only elites?

One possible moderating factor for these results is that LisBOAidea circulated among engineering and computer science students in Lisbon due to the fact that the launch event of LisBOAidea occurred in one of the most important engineering University of Lisbon with various professors and students present. Moreover, the city of Lisbon invested very little in the promotion of LisBOAidea, thus it reasonable to assume that it circulated among practitioners and people interested in computer science. Such conjecture would also explain the quite unusual gender profile and also age profile of participants. LisBOAidea manages to engage quite significantly the university student age bracket (18-29) more than any other pilot. However, we do not have a way to test such conjecture and further analysis of the Lisbon participatory system is required to better understand what happened.

Lisbon - Participation/Age

	under 18	18-29	30-49	50-64	over 65
Population	3,87%	9,24%	30,77%	22,24%	33,89%
Participants	1,36%	29,13%	48,04%	16,52%	4,94%
Active	2,01%	37,12%	45,15%	13,04%	2,68%
Proposers	2,99%	13,43%	53,73%	22,39%	7,46%
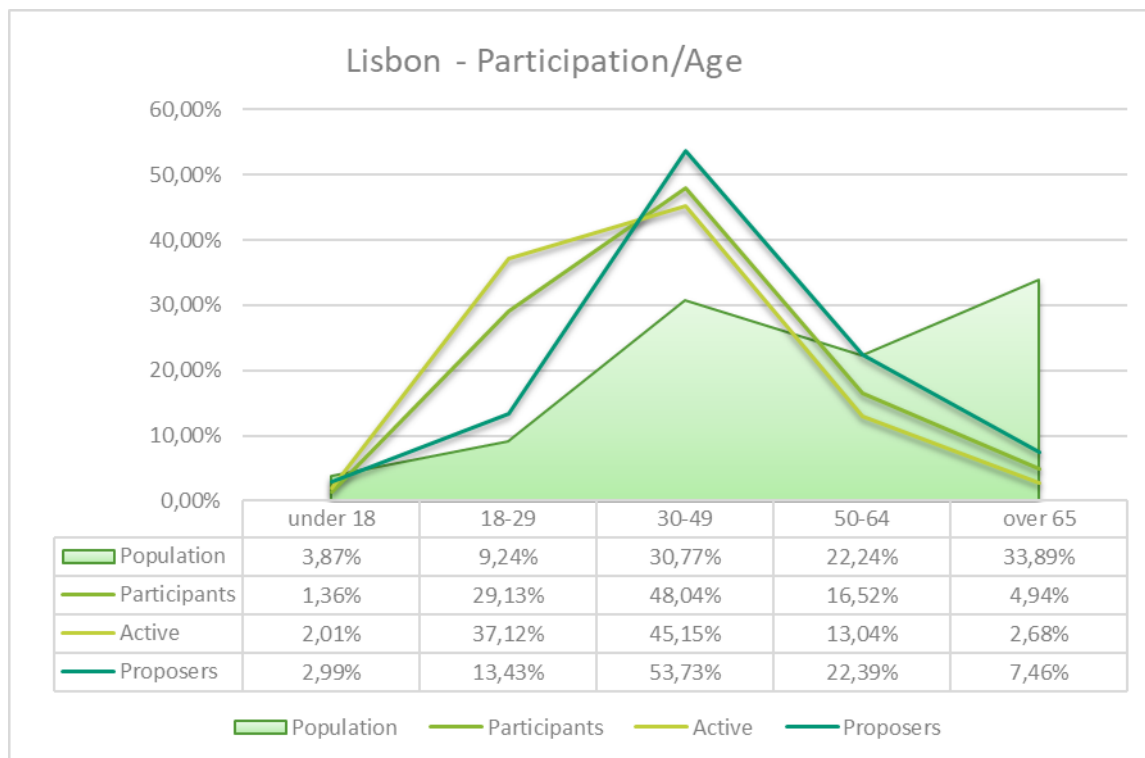
Figure 52 – Lisbon Participation/Age

Lisbon - Participation/Education

	no formal training	primary school	secondary school	superior education
Population	6,79%	44,09%	18,02%	31,10%
Participants	1,37%	3,95%	19,76%	74,91%
Active	0,67%	4,01%	18,73%	76,59%
Proposers	0,00%	6,25%	12,50%	81,25%
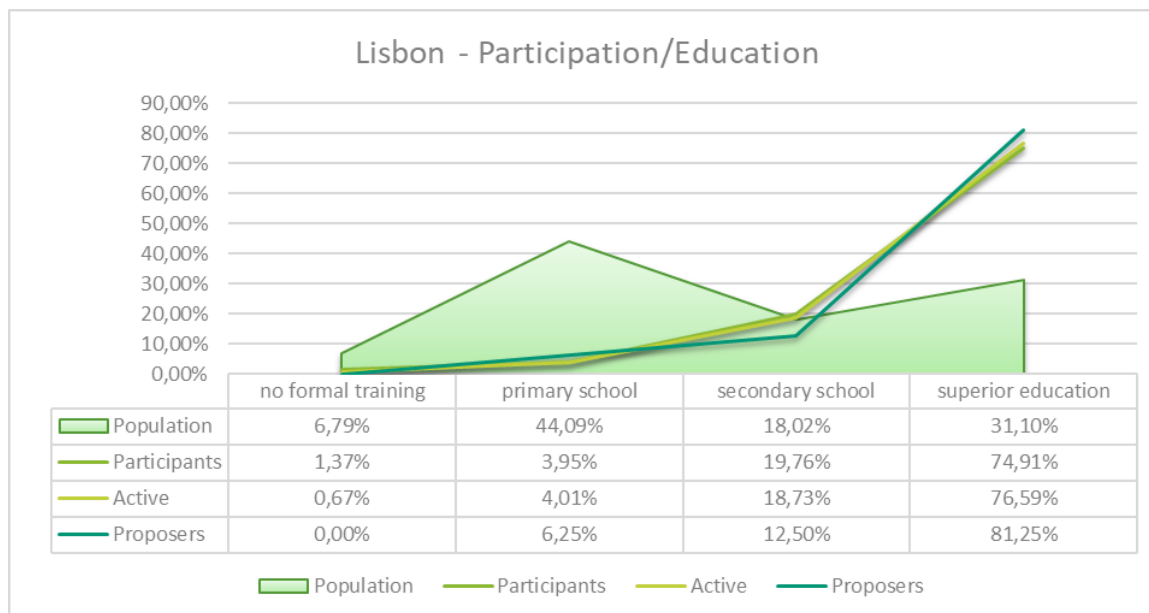
Figure 53 – Lisbon Participation/Education

4.2.2.2 Participation Across Channels & cross-selling

As mentioned in the section detailing the peculiar characteristics of the Lisbon pilot, EMPATIA in Lisbon implemented both a continuous ideation platform, LisBOAidea, and a portal to integrate multiple participatory processes including digital participatory budgeting, an issue reporting platform similar to fix my street, and an e-consultation platform.

In this section we leverage the additional survey we deployed in Lisbon to compare the demographics profile of participants in the various channels of engagement. As described in the section about background conditions Lisbon underinvested in communication to promote LisBOAidea, thus we expect LisBOAidea to underperform also in inclusion with respect all channels.
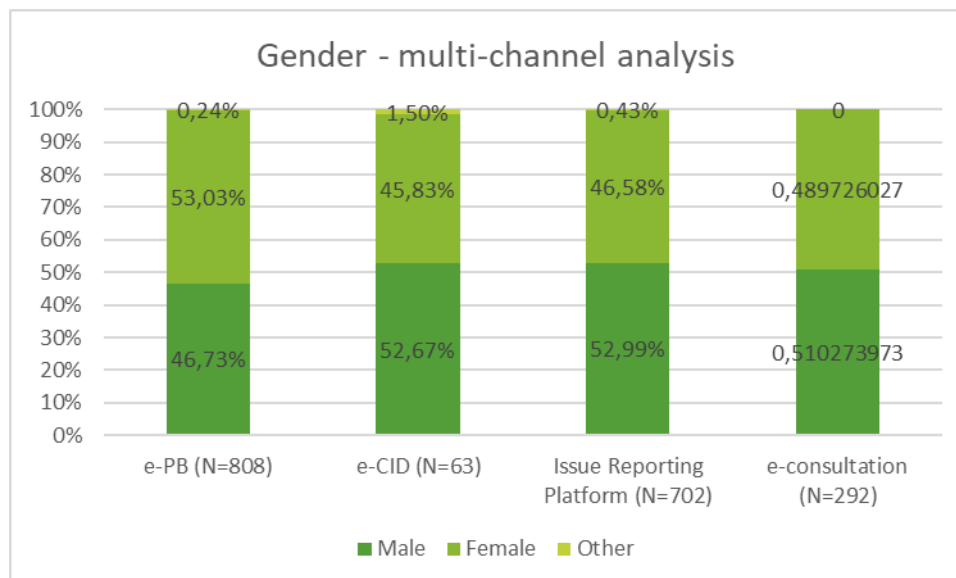

Figure 54 – Lisbon gender multi-channel analysis

Looking at the demographics profile of the different channels, first we observe that the respondents that declare to have participated in the continuous ideation platform are the smallest group. Participants predominantly have engaged with participatory budgeting and the issue reporting software for street problems.

When we look at the gender profile, PB was the platform that managed to engage the most women among the four channels of engagement, but the differences are somewhat small, apart for the case of LisBOAidea that is the channel that engages the least women.

When we look at the age profile of participants we find an interesting result that supports our original hypothesis that a multichannel strategy might promote inclusion. The age profile of the participants in the continuous ideation platform includes a greater proportion of younger people, this result is preliminary and due to the fact, that combines survey data and login data might be an artefact of non-response and small sample size, however if confirmed by future research it might point in the direction of a very practical results of a purely digital multichannel strategy that target students. Different channel of engagement in Lisbon managed to engage different age groups. We believe that LisBOAidea in particular attracted university students due to specific local conditions, and this preliminary demographic analysis shows that in fact it managed to engage more youth than the other platform.
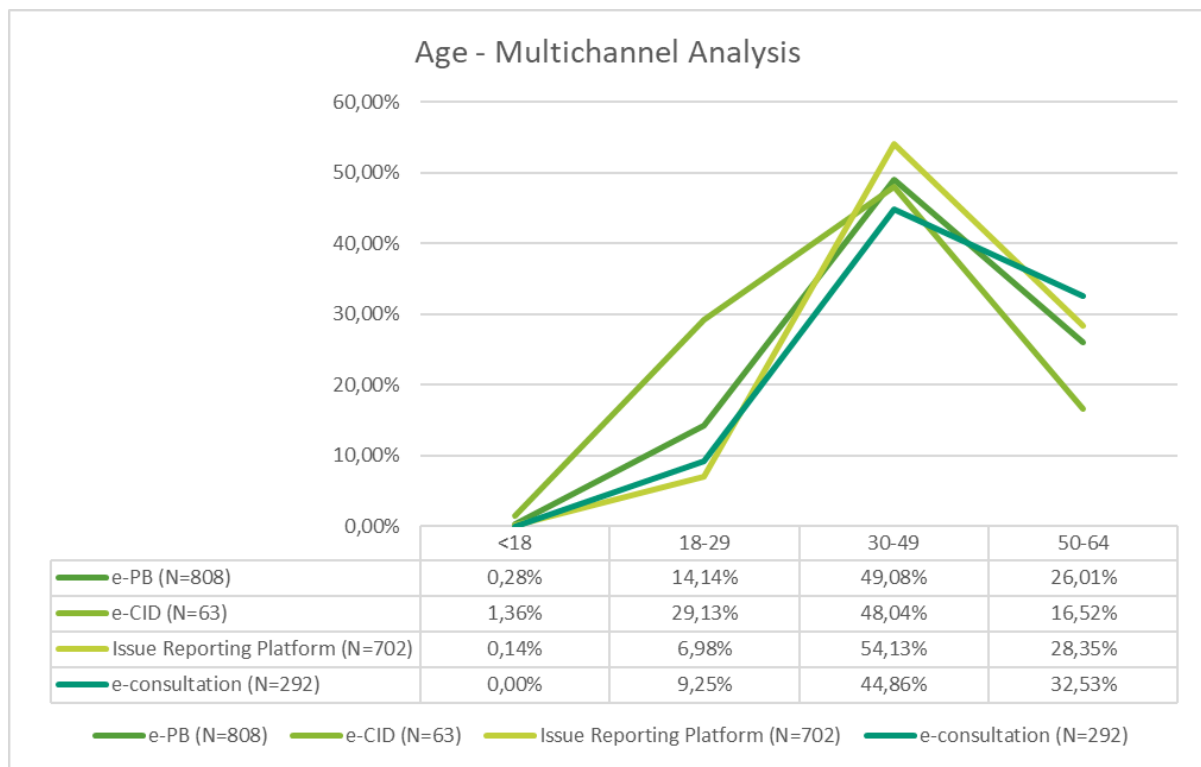
Figure 55 – Lisbon age multichannel analysis

Lastly when we look at the education data we observe that all channels privilege highly educated people that have completed a bachelor's degree. Interestingly enough, our priors that LisBOAideia would underperform with respect inclusion is not reflected by the data collected in the mailing list of engaged participants (~20.000 members, 9% answer rate).

All channels of engagement we analyse suffer from similar problems, in particular the difficulty of engaging people that do not have a university degree is quite impressive and a significant problem for any participatory process that aims at being inclusive and provide a venue of engagement for all citizens.

Education - Multichannel Analysis

	no formal training	primary school	secondary school	superior education
e-PB (N=808)	0,12%	0,74%	16,71%	82,43%
e-CID (N=63)	1,37%	3,95%	19,76%	74,91%
Issue Reporting Platform (N=702)	0,00%	1,28%	19,66%	79,06%
e-consultation (N=292)	0,00%	1,71%	16,78%	81,51%

Figure 56 – Lisbon education multichannel analysis

4.2.3 Milan: the advantage of geolocating participants and projects
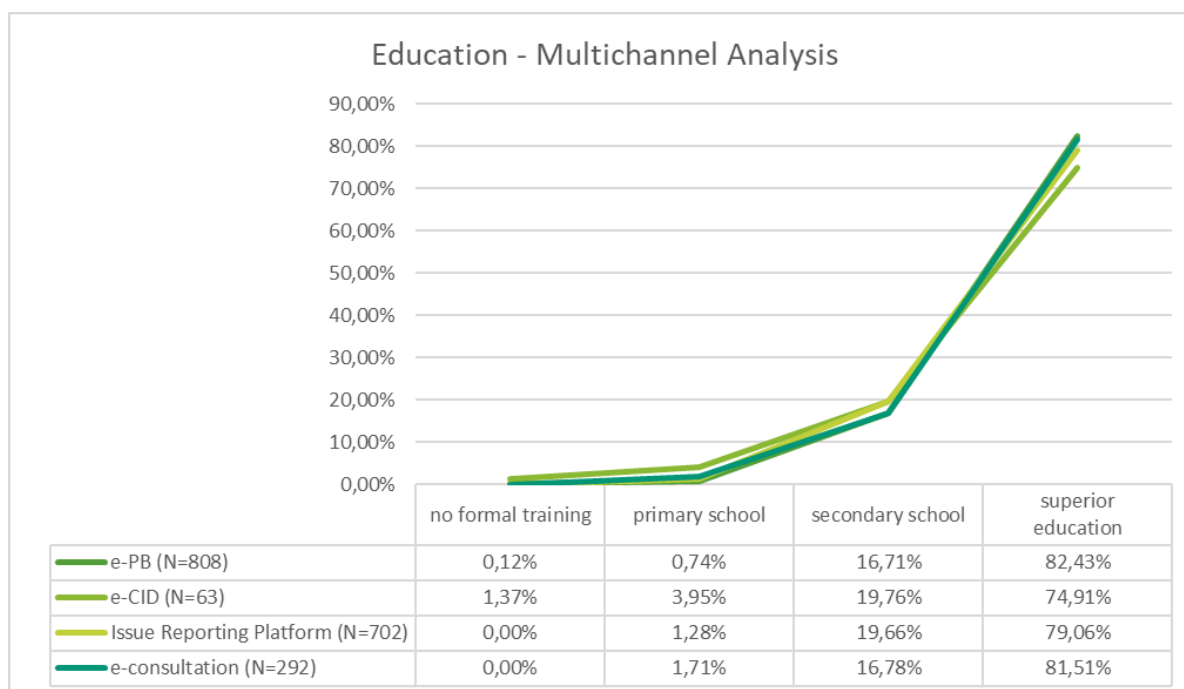
4.2.3.1 Comparing the sample with the population

When looking in more detail at the case of Milan we observe that gender composition of participants and active members represents fairly closely the general population that includes more women than men, however only 33% of the proposers are women. A similar trend is observable in all pilots, but in the case of Milan the difference is even more evident. One potential explanation of this heightened difference is the fact that the majority of proposers in Milan were civil society leaders and NGO representatives that are predominantly male. Thus, an unintended consequence of promoting the participation of groups that are active in society is the fact that the inequality that are present in such groups is reflected in the participants' demographics.

Regarding the Age, while the people above 65 appear to be underrepresented, overall the sample achieves a good level of representativeness of the population. In particular, the age of the proposers is slightly higher than the other pilots implemented in the EMPATIA project and this better reflects the Italian aging population.

Also, in Milan the data on the education level confirm the trend of overrepresentation of citizens with superior education levels, around 60% of the total of participants possess a university degree, while when we look at the general population we observe that only 23% has such degree.
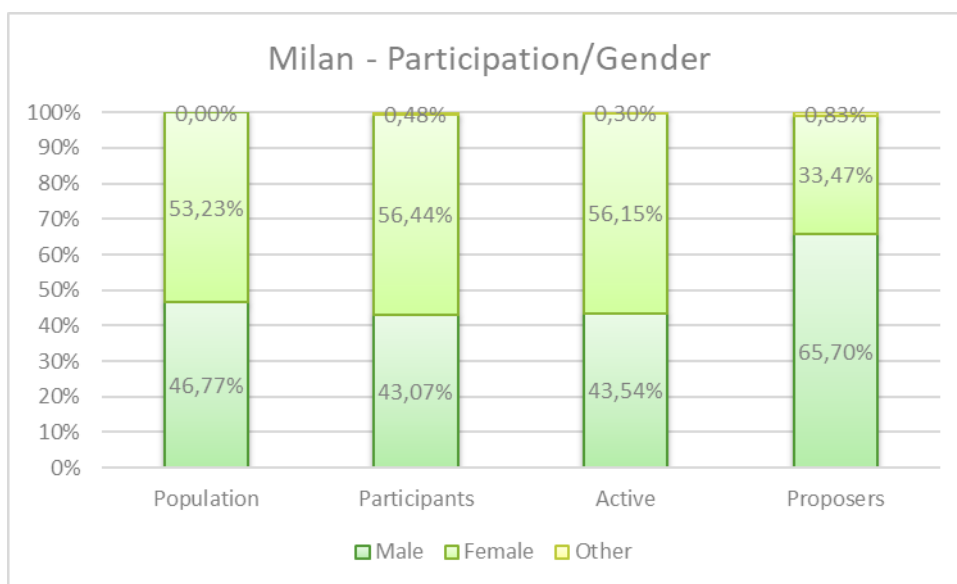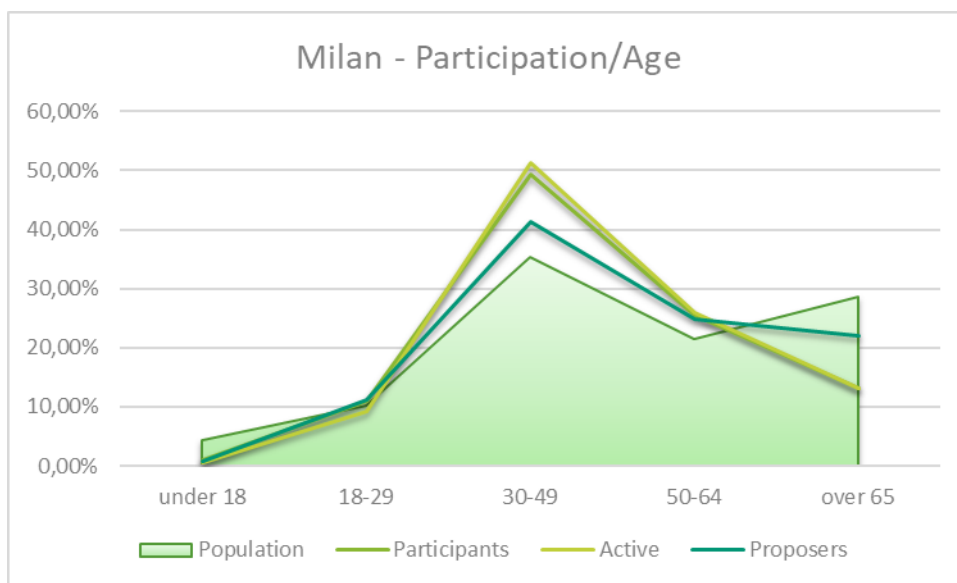
Figure 57 – Milan Participation/Gender

Figure 58 – Milan Participation/Age
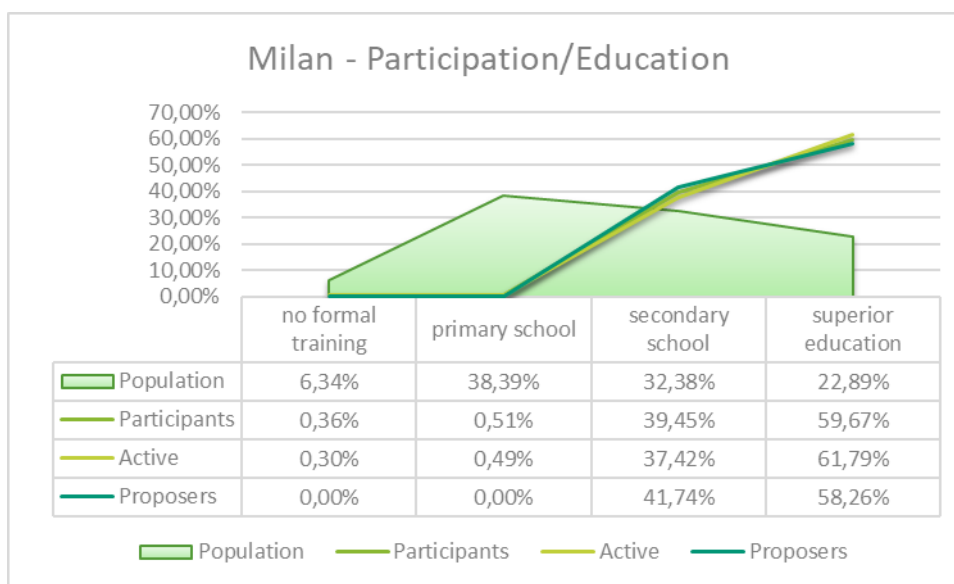
Figure 59 – Milan Participation/Education

4.2.3.2 Milan spatial analysis

One of the interesting features of collecting data on the geolocation of participants and the geolocation of ideas is to create a database that can be integrated with secondary sources and explore subsequently research questions such as:

- What is the correlation between district level variables and participation/projects?
  - o Is the median income of a district correlated with level of participation?
  - o Is inequality correlated with participation?
  - o Is the lack of infrastructure of a district a variable that affects the type of projects proposed?
  - o Is the level of political participation in election a good predictor of participation in PB?

Additionally, having data both on the geolocation of participants and the geolocation of projects allows to explore more advanced research questions such as:

  - o Do people present projects in their own neighbourhood? Or do they also present project that promote public investments in other neighbourhoods?

These are just examples of research questions that researchers will be able to analyse leveraging the unique dataset generated by the EMPATIA project and released as an open dataset.

In this section we overview the data we have gathered.
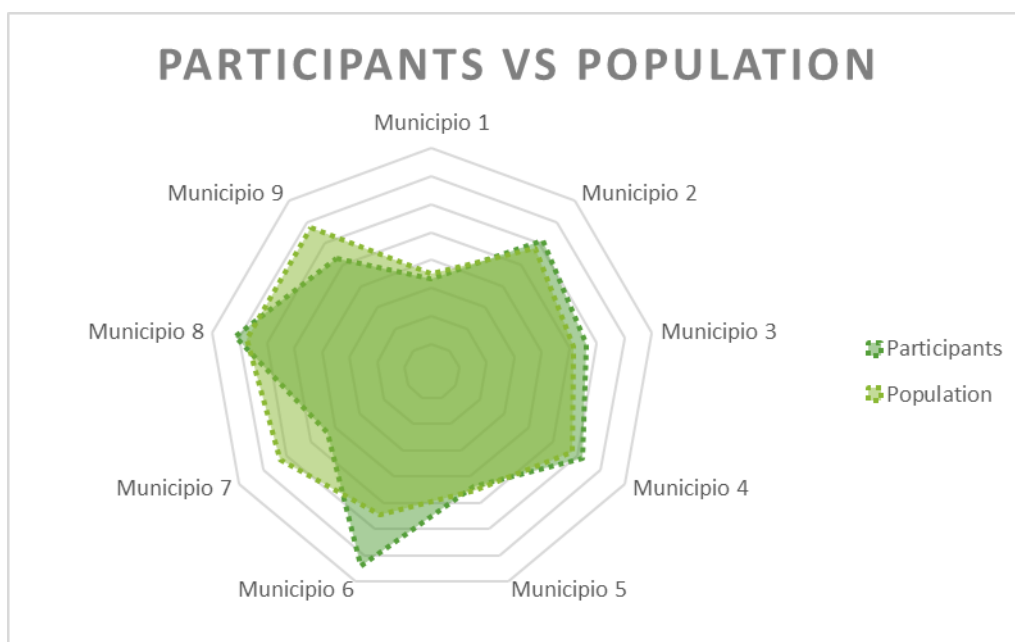
Figure 60 – Milan Participation/Population per Districts
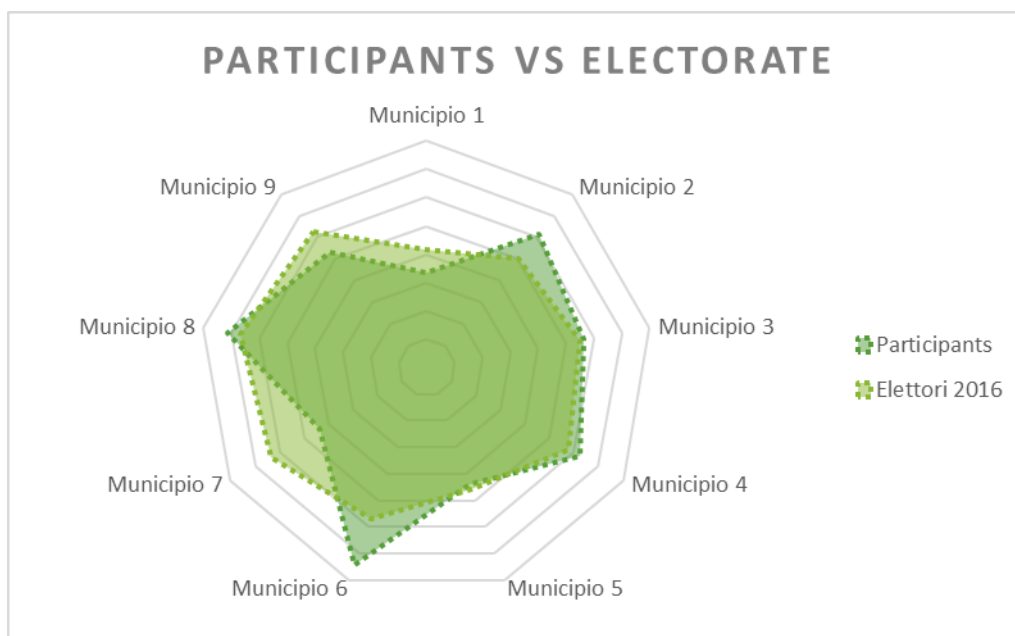
Figure 61 – Milan Participation/Electorate per Districts
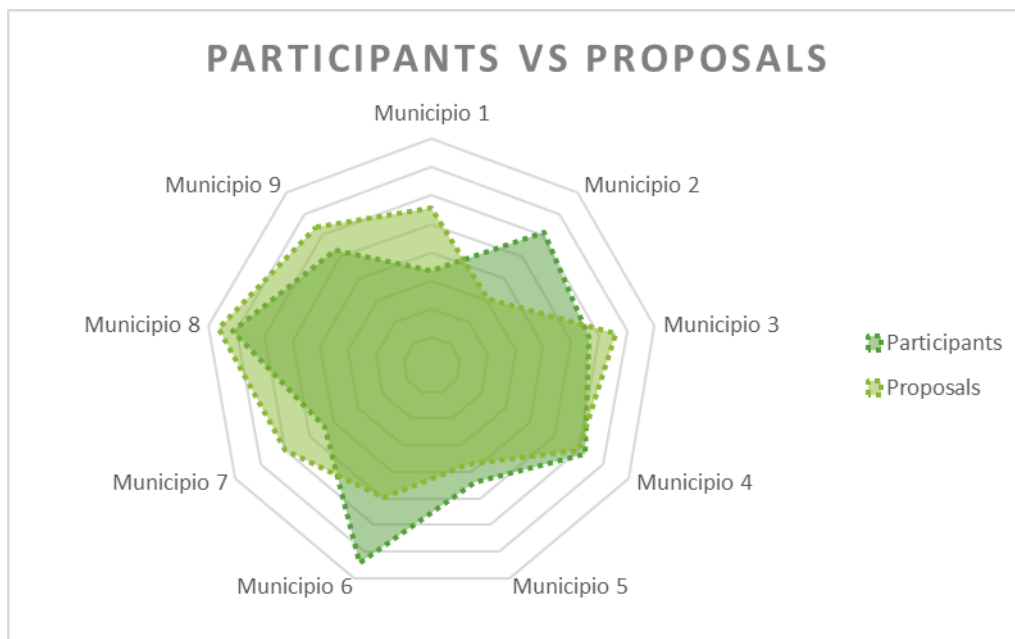
Figure 62 – Milan Participation/Proposals per Districts

At the moment without conducting secondary research collecting district level variable we can draw the most interesting lesson from the graph that compares the geolocation of proposers with the geolocation of proposals.

Figure 63 – Milan Proposers/Proposals per Districts

This graph shows that some of the legitimate fears that PB processes promote localism might not be significantly supported by the geolocated data. The geolocation of participants and proposals do not perfectly overlap. Additional exploration might be required to confirm this evidence that hints that participants in district 3 and district 1 proposed projects in another district. Note that district 1 is the richest district in Milan, while district 3 was the most active district in Milan due to the fact that it contains a vibrant civil society.

While this data is not extremely useful by itself it shows the incredible potential of the monitoring capabilities promoted by hybrid participatory processes.

4.2.4 Říčany: the difficulty of transplanting processes and technology

Říčany was the simplest pilot of the EMPATIA project, it was meant to explore a small city low budget use case scenario. EMPATIA was used in a very light way, supporting the pre-existing D21 public consultation technology. For more information refer to section 4.2.4 of this document and deliverable 3.2 that contains the description that each pilot implementer provided to the consortium.

The city government was interested in exploring a face to face approach at ideation. Ideas were collected in four events held in cafes and bars and then uploaded manually in a website supported by the EMPATIA consortium. Then these ideas were moved to the pre-existing D21 platform that routinely survey a citizens' panel. D21 has a full anonymity approach to its community that could not be altered by the consortium, therefore the impact evaluation that we can conduct on the case of Říčany is extremely limited. In particular we do not exactly know who the participants in the process are and the information they provide is not certified. In all other pilots the city implemented a system of certification of the information provided by the citizens that required uploading an ID that would match demographics. In many cities proof of residency, or proof of having a work relationship with the city was also required.

The only interaction here analysed for the case of Říčany regarded the voting session taking place in spring 2017, through the platform ww.ridimŘíčany.org. As explained in detail in D 3.2 Pilots – Final, the participants to the pilot where a pre-existing community of users already registered to the poll platform ridimŘíčany, managed by D21 on behalf of the Municipality of Říčany, to submit polls and questionnaires to inhabitants. D21 provided data regarding only the sample of respondent to the voting poll while there are no data available regarding the overall sample of their citizens' panel in Říčany.

The data regarding the population of Říčany divided per age were not attainable directly and has been estimated based on the data available in Eurostat for the correspondent NUTS2.

Therefore, in the case of Říčany we cannot distinguish between different types of participants, we cannot track the demographics of proponents of ideas, where they reside and what is the percentage of members of the panel that participated in PB. The only thing we can do is analyse the demographics of those that completed the survey that was attached to the voting of the projects of PB. This is the reason why the following graph displays no variance across the three types of users.

Moreover, data about education was not collected. It is unclear why this happened given that the consortium had specifically requested such data.

As in Milan and Wuppertal we can see from the graph that women composed a majority of participants.
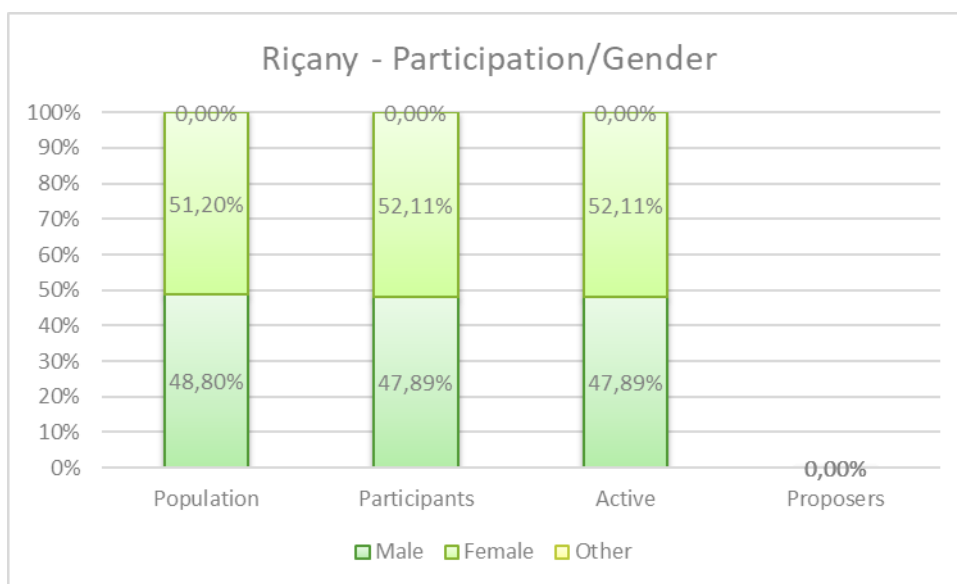
Figure 64 – Říčany Participation/Gender
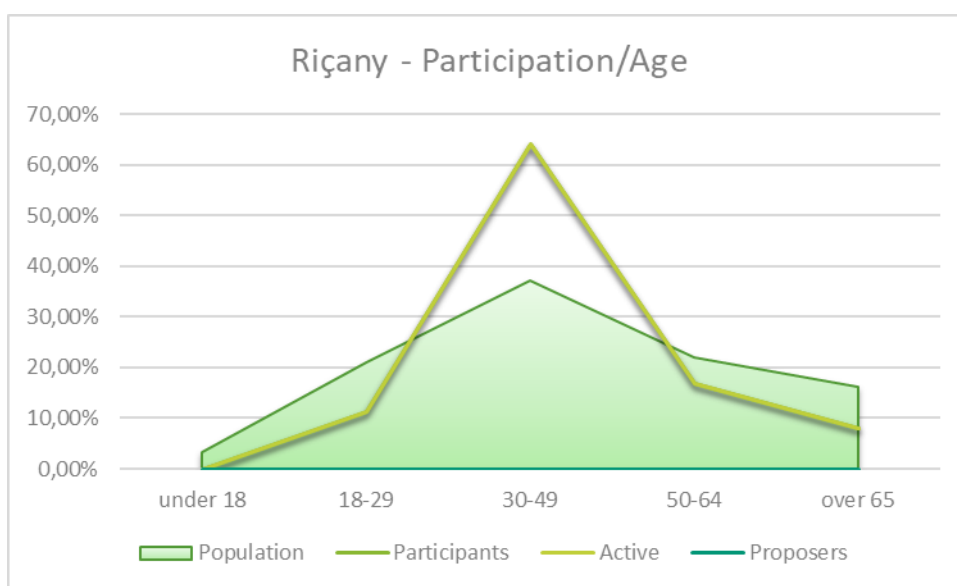
Figure 65 – Říčany Participation/Age

Considering the weaknesses of the dataset regarding this pilot, it is possible to only observe the extreme polarization of the age range 30-49, even taking into account the younger average age of the population in Říčany with respect to the other cases observed.

Thus, the main lesson we can draw from the case of Říčany lies in the difficulty of transplanting technology and participatory processes. Pre-existing technologies, such as the D21 platform, shape the local contest, create familiarity and habits that are difficult to modify. The case of D21 acts as a reminder of how difficult it is to promote change and the little bargaining power that an international project such as EMPATIA has when dealing with pre-existing participatory processes. That said this case is a crucial case to understand the fact that the only viable business model for a firm or a foundation that desire to offer a digital platform to promote participation is one that is extremely adaptable to local condition and

has the capacity to scale up or down (as EMPATIA in the case of Říčany). Deliverable 5.4 will explore this topic in more details.

4.2.5 Wuppertal: monitoring retention data to improve on a best practice

4.2.5.1 Comparing the sample with the population

In section 4.3.1 we have observed that Wuppertal was the most inclusive of our pilot. When we look more in detail at the case of Wuppertal and we compare the demographics of participants to the population demographics we observe that the process managed to include a fairly representative sample of the population both in terms of gender distribution and age. In term of age there was some difficulty at engaging the population bracket above 65.

Figure 66 – Wuppertal Participation/Gender
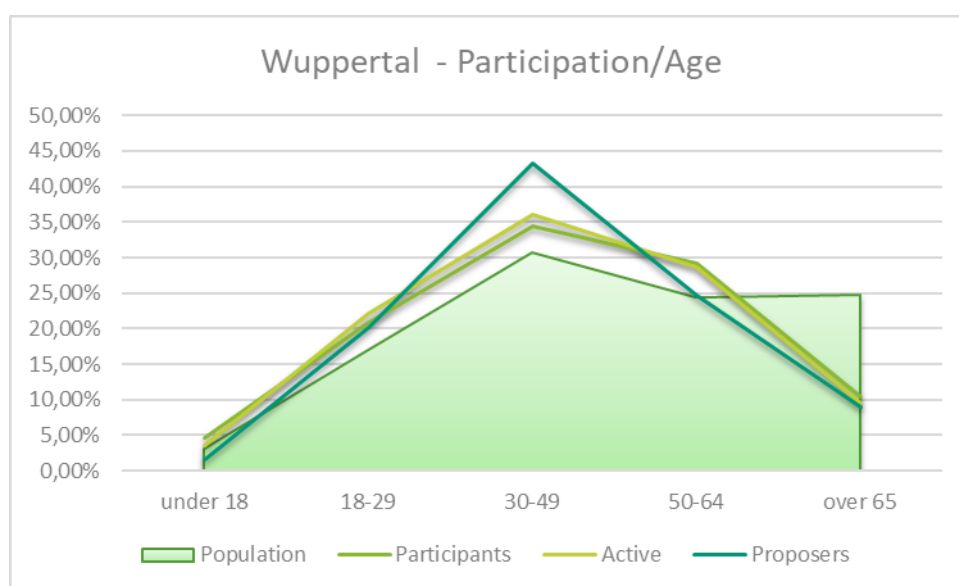
Figure 67 – Wuppertal Participation/Age
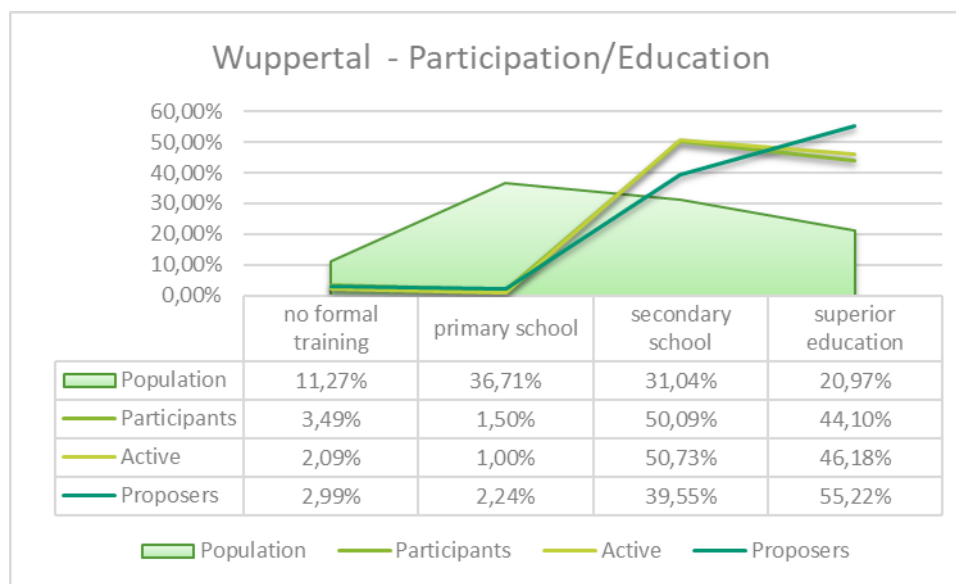
Figure 68 – Wuppertal Participation/Education

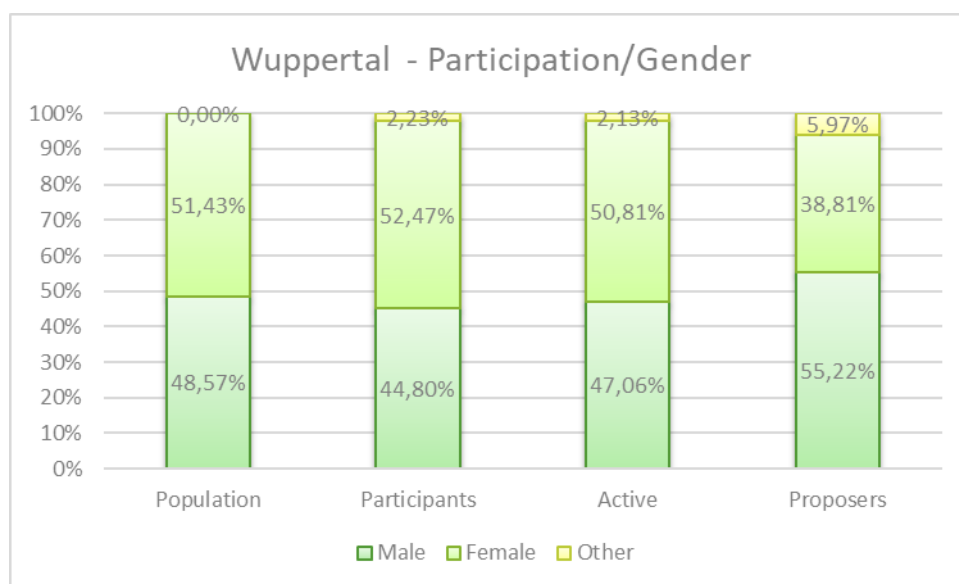However, when we look at the education level of participants we observe the general difficulty of engaging people with less education. In particular the large number of people with primary education is left out. Wuppertal differently from other pilots perform significantly better at engaging people that do not have a university degree but have completed high school. The difference between participants with superior education and the general population is "only" 23 percentage points, while in Milan is 37 percentage points, and in Lisbon a staggering 44%.

4.2.5.2 Pilot lessons: differentiated engagement in the full PB cycle of Wuppertal

One very peculiar characteristic of the Wuppertal process was the extremely low retention rate between the ideation phase and the vote phase. The retention rate is so low that it almost appears as if Wuppertal has conducted two separate processes and two separate engagement campaigns.

To our knowledge the EMPATIA project is the first research project that has data on the retention rate across phases due to its multichannel tracking capability.

Figure 69 shows that only 4% of the participants both participated the ideation phase and in the voting phase. This incredibly low retention rate might be a feature of the fact that prevailing model of German participatory budgeting does not have a voting phase and concludes with the ideation phase.

This is however a crucial element in which the PB in Wuppertal could be significantly improved. Implementing a retention strategy would easily allow to increase participants.

When looking at the demographics of those that participated just in the first phase (support), those that participated just in the second phase (vote), and those that did both (S+V) we observe some minor differences. Not surprisingly the participants that participated in both phases have a higher level of education with respect the others.

empatia

Figure 69 – Wuppertal Support and Vote

Figure 70 - Wuppertal Support and Vote/Age
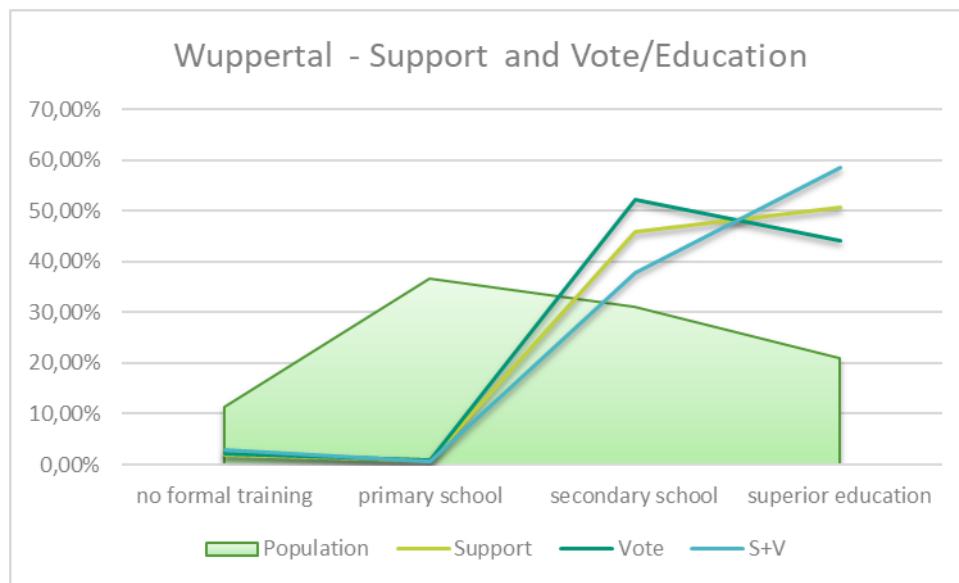
Figure 71 – Wuppertal Support and Vote/Education

4.2.6 Conclusions

Overall the data presented in this section shows poor inclusive capacity of EMPATIA's pilots towards weak societal groups, and a weak support for our initial hypothesis, i.e. the introduc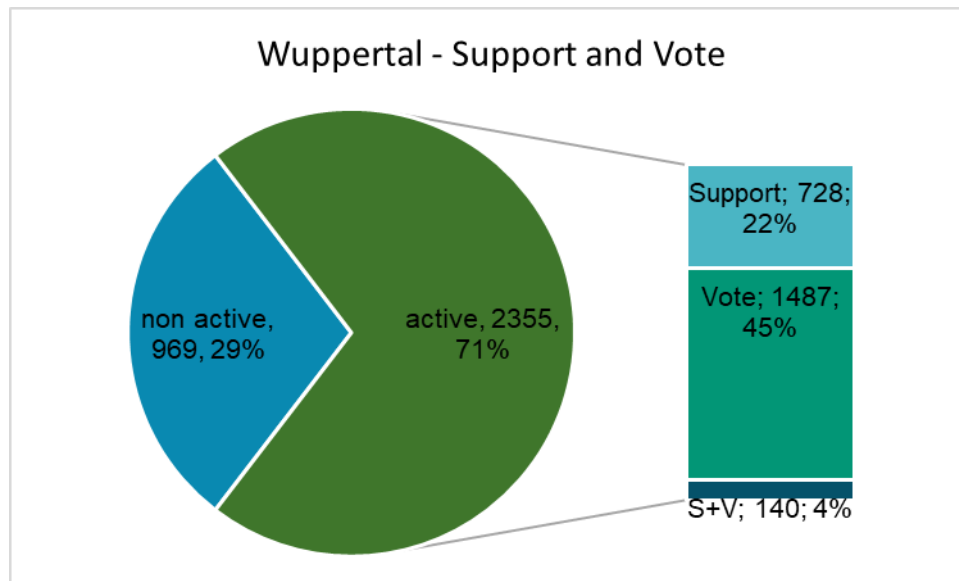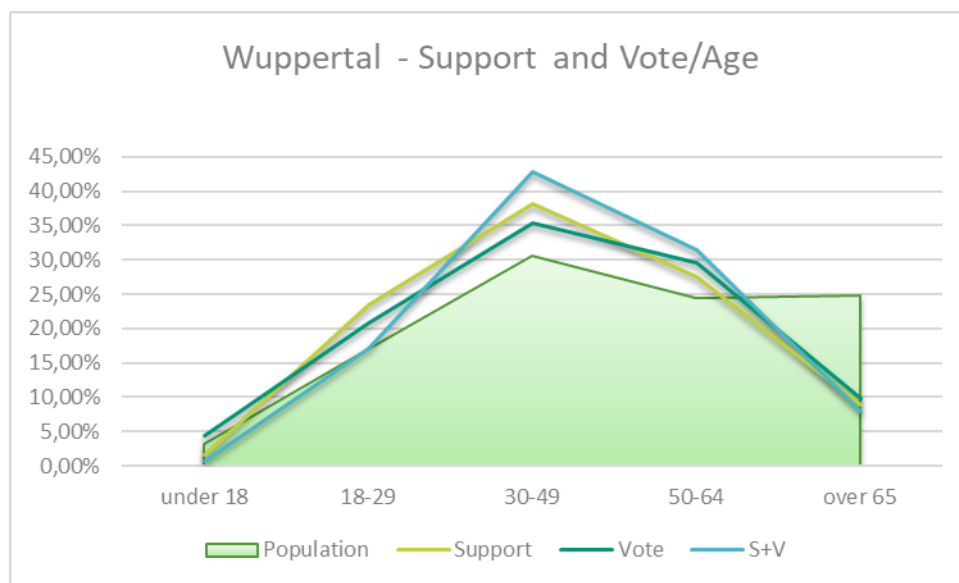tion of face to face channels of engagement would promote more inclusion, and in particular promote the participation of elderly people and people with lower education. These results overall reinforce the vast literature on digital divide and highlight how these innovations have difficulty not replicating inequalities that already exist in society.

Wuppertal among the three pilots is the process with the best capacity to engage a more representative sample of the population and engage elderly and less educated people.

It is interesting to note that from a quantitative standpoint Milan implemented more than 30 face-to-face events, while Wuppertal implemented only a handful (4). The difference between Wuppertal and Milan was in the design of the face to face events. While most of Milan face to face events were decentralized at the district level and mostly offered support to already engaged citizens, Wuppertal invested in a significant communication campaign specifically targeted to people that had never participated before and concentrated their effort in a large face to face event that include capacity building for inexperienced participants and managed to collect idea from a more diverse set of the population.

Thus, the first lesson we can draw from the EMPATIA impact evaluation is that the key resides more in the quality of the communication campaign and in the quality of the participatory processes, that their quantity. Increasing face to face events per se improves a bit the participation of elderly but seems to do very little with respect the inclusion of less educated people.

To further expand on this result, we also collected secondary data from other famous participatory processes, in particular we collected data from Participatory Budgeting in Lisbon, Participatory Budgeting in Cascais in Portugal, Participatory Budgeting in New York City and from Porto Alegre cities that are considered best practices for inclusion. Cascais employs a model that is similar to Wuppertal, but stresses even more the quantity and quality of face to face participation, while Porto Alegre was an entirely face to face process. New York City in its first year followed a model inspired by the one in Rosario (Argentina) concentrating on face to face events with a strong pedagogic

component. The graph shows also the preliminary data on the voting phase in Milan that have just been completed and we did not have the time to analyse in detail yet given that the vote was completed the 15th of April. The graph should be considered mostly as suggestive, because the differences across population socio-demographics are significant, however it is important to note how completely different was the structure of the participants' sample. In Brazil the majority of participants did not possess any formal education. While even in the flagships best practices of the current European processes, Cascais, of the current US processes, New York, the demographics is not significantly different from what our pilot in Wuppertal achieved. Moreover, the profile of the PB process in Lisbon is practically identical to the one of the continuous ideation platform implemented by EMPATIA showing that the new channel of engagement we introduced did not underperform in term of inclusion.
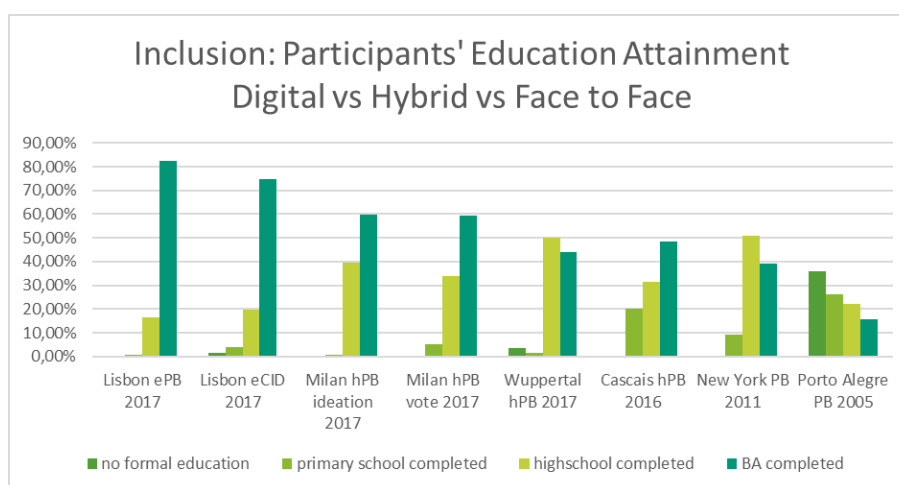
Legenda: ePB=digital participatory budgeting, eCID=digital continuous ideation platform, hPB=hybrid participatory budgeting, PB=face to face participatory budgeting. Data Sources: Lisbon, Milan & Wuppertal are drawn from the EMPATIA dataset, Cascais provided the data directly upon request, New York data is publicly available here, and Porto Alegre data is publicly available here.

Figure 72 – Inclusion analysis

The latter graph reinforces even more our conclusion, hybrid technology improves the inclusion of less educated people and achieves level of inclusion that are comparable to the ones achieved in New York City face to face PB. However, all processes implemented in the global north are still significantly distant from the results of Porto Alegre in which the majority of participants did not have any formal education. In Porto Alegre the entire communication strategy of the city government and the design and timing of participatory venues was targeted to include difficult to engage population on the basis of the famous slogan "giving voice to those that do not have voice". Additionally, the graph highlights the hybrid processes in Wuppertal and Cascais achieving the best results introducing a deliberative face to face component with curated small group discussions, similar to the ones adopted in New York, during the ideation phase and not just information events as in Milan.

Among our pilot only Wuppertal had the explicit objective to promote inclusion and enacted specific communication strategies both online and on paper to engage difficult to engage population. Therefore, the lesson of EMPATIA is that more than quantity of face to face events, what counts is the overall communication and design objectives.

As a note of curiosity, demographic data regarding the participants in Madrid or Barcelona or Paris do not exist. Most European cities implementing hybrid participatory processes are aiming at maximizing the number of participants assuming that by including more people inclusion will automatically be

achieved. The example of Milan that passed from 10000 participants in the ideation phase, to 22000 participants in the voting phase without altering much the profile of participants tells a different story. Without the precise objective of promoting inclusion and without tracking inclusion data even doubling the number of participants does not necessarily guarantee significant improvements in inclusion.

In this chapter we also offered pilot specific lessons:

1) Lisbon – multichannel analysis

   In Lisbon we explored the engagement capability of multiple parallel channels of engagement. We showcased that multiplying the channel of engagement does not appear to promote significantly inclusion.

2) Milan – the potential of geolocation data

   In Milan we showcased the potential of geolocated data. At the moment the data we have can offer limited lessons but integrating the existing data with district level data can offer unique lessons.

3) Říčany – data failure

   The case of Říčany does not offer specific lessons on inclusion, because the data that was collected does not offer the richness of the other dataset. However, this impact evaluation failure offers an important lesson with respect the difficulty of transferring technology and participatory processes across cultures and the difficulty of creating a transparent impact evaluation framework.

4) Wuppertal – the power of monitoring to improve on best practices

   Our best pilot Wuppertal achieves have we seen level of inclusion that are comparable to more blazoned and famous PB such as Cascais and New York City. However, thanks to the monitoring capabilities of the EMPATIA platform we have identified a flaw that could be easily fixed to promote even better inclusion. Only 4% of participants in the ideation phase also continue to participate in the voting phase. Effectively Wuppertal ran two separate processes. Enacting a dedicated communication strategy that would promote retention would increase participation significantly and would potentially promote even further inclusion.

Table 46 – Overview data from Pilots

	Lisbon				Milan				Říčany			
	Pop	**Part**	**Act**	**Prop**	**Pop**	**Part**	**Act**	**Prop**	**Pop**	**Part**	**Act**	**Prop**
Complete	0	572	298	64	0	10995	7574	242	0	565	565	0
Incomplete	0	1283	514	53	0	0	0	0	0	457	457	0
Tot	*504964*	*1855*	*812*	*117*	*1242123*	*10995*	*7574*	*242*	*15027*	*1022*	*1022*	*0*
Gender	**Pop**	**Part**	**Act**	**Prop**	**Pop**	**Part**	**Act**	**Prop**	**Pop**	**Part**	**Act**	**Prop**
Male	231082	316	154	35	580978	4736	3298	159	7333	272	272	0
Female	273882	275	146	31	661145	6206	4253	81	7694	296	296	0
Other	0	9	2	1	0	53	23	2	0	0	0	0
Na	0	1255	509	50	0	0	0	0	0	454	454	0
Tot	*504964*	*1855*	*811*	*117*	*1242123*	*10995*	*7574*	*242*	*15027*	*1022*	*1022*	*0*
Age	**Pop**	**Part**	**Act**	**Prop**	**Pop**	**Part**	**Act**	**Prop**	**Pop**	**Part**	**Act**	**Prop**
under_16*	16390	8	6	2	46111	107	35	2	426	0	0	0
18_29	39067	171	111	9	110808	1206	701	27	2705	64	64	0
30_49	130141	282	135	36	383141	5435	3883	100	4809	363	363	0
50_64	94068	97	39	15	232700	2796	1967	60	2855	95	95	0
over_65	143349	29	8	5	310106	1451	988	53	2104	45	45	0
Na	0	1268	513	50	0	0	0	0	0	455	455	0
Tot	*423015*	*1855*	*812*	*117*	*1082866*	*10995*	*7574*	*242*	*12898*	*1022*	*1022*	*0*
Education	**Pop**	**Part**	**Act**	**Prop**	**Pop**	**Part**	**Act**	**Prop**	**Pop**	**Part**	**Act**	**Prop**
no_formal_training	32413	8	2	0	74565	40	23	0	0	0	0	0
primary_school	210402	23	12	4	451408	56	37	0	0	0	0	0
secondary_school	86011	115	56	8	380746	4338	2834	101	0	0	0	0
superior_education	148413	436	229	52	269088	6561	4680	141	0	0	0	0
Na	0	1273	513	53	0	0	0	0	0	1022	1022	0
Tot	*477239*	*1855*	*812*	*117*	*1175807*	*10995*	*7574*	*242*	*0*	*1022*	*1022*	*0*

4.3 Impact on efficacy and political discontent

The second set of hypotheses that the EMPATIA project aims to investigate explores the capacity of multichannel democratic innovations to affect participants' efficacy, trust and antipolitics sentiment (see section 2.3).

In order to explore these questions, the EMPATIA project deployed a pre-survey, during the ideation phase of each pilot, and a post-survey, around a month after the announcement of the result of the voting results (see section 2.3.9). Given that the post-survey in Milan will be deployed in May 2018, after the completion of the EMPATIA project, at this moment we can only evaluate the impact of participation on participant trust, efficacy and antipolitics in Wuppertal, Lisbon and Říčany.

In Wuppertal, Lisbon (and Milan) we managed to complete a pre-post design that tracked uniquely the participant change in opinion, while in Říčany, unfortunately, the local implementer did not retained a unique identifiable ID for the respondents of the pre and post survey, thus we cannot create a proper pre-post evaluation, that analyses the average individual change, but we can still offer an estimate of the change in the individual average.

Before delving in the analysis of the results, it is important to highlight again that without an experimental design and a control group this study identifies only correlations that might be affected by the unobserved variables.

Additionally the behaviour literature has identified two powerful effects that bias these types of survey 1) social desirability bias, and 2) survival bias. In general participants tend to answer in a polite way trying to please the respondent (social desirability), and those that stop participating in the process are not captured by the post survey conducted at the end (survival bias).

However, both these biases promote positive evaluation of participatory processes. Therefore, when detecting negative impacts these biases actually generate effects that underestimate the negative impact of the process. Thus, on average positive impacts should be taken with a greater grain of salt, while negative impacts should be more robust, ceteris paribus.

Table 47 – Summary of PRE/POST results - attitudinal change

	Wuppertal (paired)	Lisbon (paired)	Říčany (unpaired)
Q1) Political attention **How much attention do you generally pay to politics? [scale 0 to 10]**	No effect	Decrease *	Increase *
Q2) Local budget attention **How much attention do you generally pay to way your city spends its budget [scale 0 to 10]**	No effect	Decrease *	No effect
Q3) External efficacy – national **People like me don't have any say in what the national government does. [scale likert]**	No effect	No effect	No effect
Q4) Internal efficacy – national **I have a good understanding of the important political issues facing our country. [scale likert]**	No effect	Decrease ***	No effect
Q5) External efficacy – local **People like me don't have any say in what the city government does. [scale likert]**	No effect	No effect	No effect
Q6) Internal efficacy – local **I am well enough informed to make recommendations on how the city is governed. [scale likert]**	No effect	No effect	Decrease ***
Q7) Antipolitics sentiment **The solutions for the city problems are simple, but politicians refuse to implement them. [scale likert]**	Decrease **	No effect	Decrease *
Q8) Trust – national parliament **[scale 1 to 7]**	Increase *	Decrease ***	Increase ***
Q9) Trust – regional council **[scale 1 to 7]**	No effect	Not asked	Not asked
Q10) Trust – local council **[scale 1 to 7]**	Increase ***	Decrease ***	No effect
Q11) Trust – local city staff **[scale 1 to 7]**	No effect	Decrease ***	No effect
Q12) Satisfaction in democracy **[scale satisfaction]**	No effect	Decrease *	Increase***

LEGENDA: No effect/Increase/Decrease represent the average individual change in the KPI; *=significant effect at 10% level, **=significant at the 5% level, ***=significant at the 1% level; (paired)=results of a paired ttest that uses the email to match the respondent and thus tests if the average individual change is different from zero; (unpaired)=results on an unpaired ttest that investigates if the difference between the entire average of all the participants before the process and the entire average of all the participants is different from zero. This test is shown for Říčany because we were not provided a matching ID, results should be taken with a grain of salt. The likert scale is Strongly agree/Agree/Neither/Disagree/Strongly Disagree and I don't know. The satisfaction scale is Very dissatisfied/A little dissatisfied/Fairly satisfied/Very satisfied/Don't know.

When we look at the first two hypotheses:

- **Hypotheses H1:** Participation in the pilot increases internal efficacy (the feeling that a citizen has the knowledge to propose meaningful projects)

- **Hypotheses H2:** Participation in the pilot increases external efficacy (the feeling that the city is responsive and listens to the ideas of citizens)

table 47 shows that participatory processes of the type promoted by EMPATIA have no effect (Wuppertal and Říčany), or even have a negative effect (Lisbon), on efficacy with respect national level politics, while when we go at the local level we observe no effect (Wuppertal and Lisbon) and a negative effect in Říčany. This result goes against the findings of the anecdotal literature that claims that democratic innovations promote efficacy (Geissel and Hess 2017).

Interestingly, during our career of impact evaluator of PB processes, we have encountered many politicians that have suggested that one of the main reason for them to adopt PB was to show how difficult was their job. It appears that the intuition of these politicians might be correct, against the optimistic belief of many academics.

The ideation platform in Lisbon and PB in Říčany might depress the false sense of efficacy of participants showing them the complexity of policy making. This result begs for more research in particular due to the recent results published by members of the SEAB that describe how citizens' assemblies in the UK, a democratic innovation that has a radically different design from PB, promote internal efficacy (See Flinders et al. 2016). We might be on the verge of linking design elements with impact on efficacy. Deliberative innovations, such as citizens' assemblies might promote internal efficacy, while participatory innovations, such as PB and continuous ideation platforms, might reduce internal efficacy. More nuanced metrics of efficacy and further explorations are required to better gauge this initial result identified by the combination of the EMPATIA project results and SEAB members' work.

When we look at trust and antipolitics sentiment we find instead some support for our initial hypothesis

- **Hypothesis H3:** Participation in the pilot decreases political discontentment and increases trust

The table shows a significant decrease in antipolitics, and some increase in trust both in Wuppertal and Říčany. While in Lisbon we observe a significant decrease in trust.

Overall, we take this group of results to signify that participatory processes can both promote or hinder trust and political discontent. The case of Lisbon in the end becomes the most important case study of the EMPATIA project exactly due to its negative impact on trust.

Lisbon represents the failure that reinforces the design philosophy of EMPATIA. Lisbon is the pilot with the least integration between face to face and online channel of engagement, and the pilot that has invested the least in engaging minorities and in communication in general. The participatory budgeting process in Lisbon has completely obscured the continuous ideation process implemented by EMPATIA going against the design philosophy of the EMPATIA model that stresses integration against parallelism. The paper written by Spada and Allegretti in 2014 had exactly foretold the risk of parallelism and the continuous ideation platform designed by Lisbon leveraging the EMPATIA platform is the perfect example of such parallelism and its risks. What was a theoretical hypothesis is now supported by data that show an impressive decrease of trust across the board in all our metrics.

When the surveys of Milan will be available in mid-June, EMPATIA will complete a unique dataset that not only can compare across four large scale pilots of hybrid participatory processes, but can also be compared with the results of the ongoing European Social Survey given that it has drawn its question

from such survey, but also can be integrated with other survey projects promoted by other members of the SEAB, in particular Graham Smith's projects on citizens' assemblies in the UK that have used the exact same surveys. Those democratic innovations are based on a random sample of the population and a design that is consultative but promotes high quality discussion something that was completely lacking in the participatory processes promoted by EMPATIA. Therefore, the EMPATIA project is building a scalable and open source impact evaluation database that will continue to grow thanks to the effort of various members of the SEAB.

In the next sections we will analyse more in detail the effect size of the significant effects displayed in the table to better understand their relevance. We will do so exploring one pilot at the time. We will forego the display of the non significant effects.

4.3.1 Wuppertal

In Wuppertal we find a significant impact of participation on the reduction of antipolitics sentiment. Participants were asked both before and after participating in the process how much they agreed or disagreed with a statement aimed at capturing antipolitics sentiment ("The solutions for the city problems are simple, but politicians refuse to implement them."). The answer scale was a typical likert scale that assigned values from 1 to 5 to the following discrete answers: Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree. Participants were also offered the choice to avoid answering the question by selecting I do not know.

Figure 73 showcases the matched answers to the survey questions. In Wuppertal we managed to match 118 individuals that answered both the pre-survey and the post-survey.

The graph showcases an increase in the percentage of participants that disagree with the statement, and a decrease in the amount of participants that neither agree nor disagree, and a decrease in the percentage of participants that agree with the antipolitics statement.
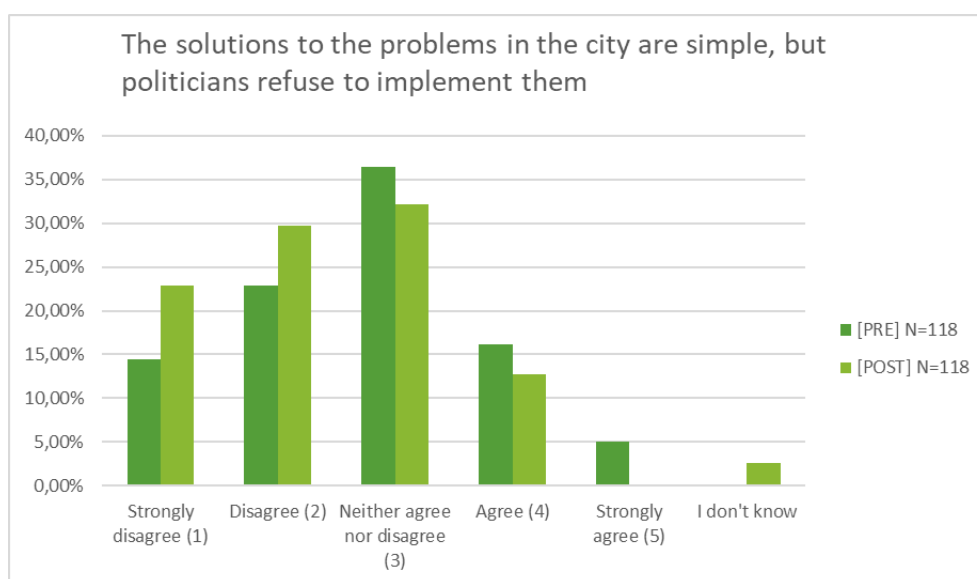

Figure 73 – Wuppertal Antipolitics question

Excluding the participants that answered I do not know, we conduct a paired t-test on the mean difference at the individual level. Figure 74 showcases a decrease in the level of agreement with the antipolitics statement, i.e. a decrease in the antipolitics sentiment, that is statistically significant at the 5% level $(Pr(|T| > |t|=0.02)$. The average of the individual difference is -0.31, and when we calculate the Cohen d effect size we obtain -0.21, i.e. the effect on antipolitics is small.

Participating in PB in Wuppertal reduced antipolitics sentiment by 1/5 of a standard deviation.
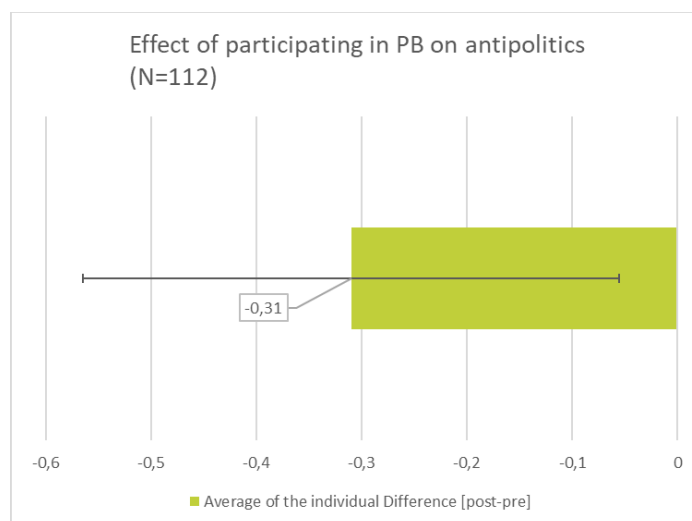
Figure 74 – Wuppertal impact on antipolitics

The second effect that is significant in the case of Wuppertal is the impact on trust on the city council members. While the impact on trust on other representative bodies is not significantly different from zero. Figure 75 shows the four questions we asked on trust in Wuppertal. In all question we can see that there is an increase in trust that occurs after the process is concluded.

Each question asked how much trust participants had in a specific category of public officials. Participants could signal their increasing level of trust by selecting a numeric value from 1 to 7, and they also had the possibility to declare they did not know the answer.

As we can see from Figure 76 the difference in trust on local council representatives is significantly different from zero, the other differences instead are not significant. In the case of trust in the local council the average of the individual difference between post and pre is +0.7, and this result is statistically significant at the 1% level $(Pr(|T| > |t|=0.0005) = $. Calculating Cohen d we find that the size effect is 0.38, i.e. the effect size is average. Participating in PB increase the trust in local institutions by 2/5 of a standard deviation.
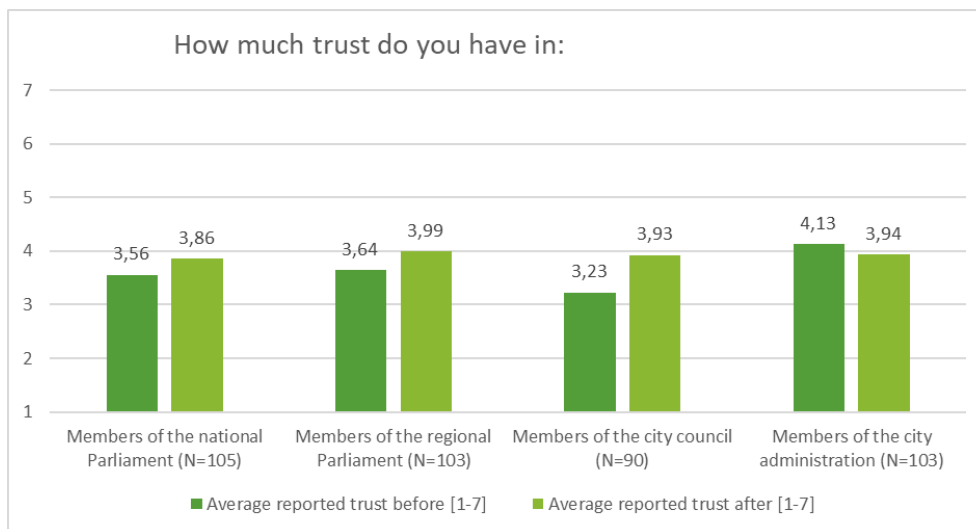
Figure 75 – Wuppertal trust questions
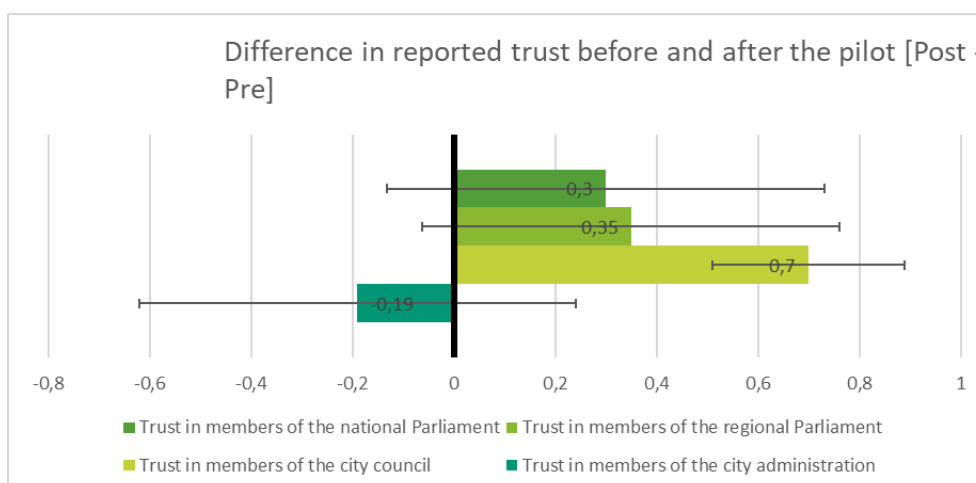
Figure 76 – Wuppertal testing the impact of participating on trust

Trust was coded on a scale from 1 to 7, where 1 was identified as no trust, and 7 as a great deal of trust. Therefore, our test detects a medium sized positive increase in trust in local institutions.

The fact that PB does not affect efficacy was quite surprising for us, particularly in Wuppertal that devoted a significant amount of resources to capacity building and promoting learning.

4.3.2 Lisbon

When analysing the case of Lisbon, we observe a pattern that is different from the pattern of all other pilots. The overall impact on interest in politics and in budgetary issue is negative, but not significant at the 5% level. The difference in attention to politics in all other pilots display positive or null impact on interest.

When we look at various metrics efficacy, internal, external, national and local, we observe the unique situation in which participants in the Lisbon pilot report lower efficacy levels after the pilot with respect

the one reported before. Most of these differences are not significantly different from zero, apart for the case of the feeling of internal efficacy with respect national issues.
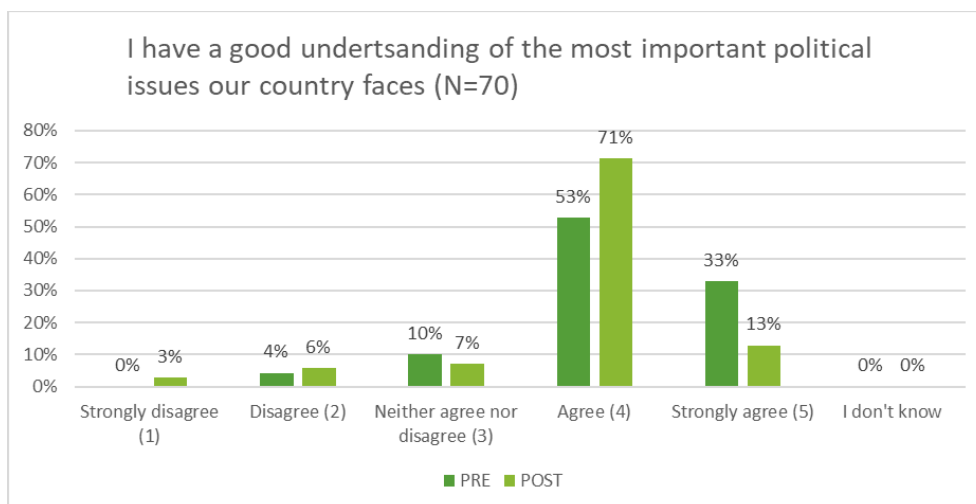
Figure 77 – Lisbon the impact of participating on internal efficacy

Observing Figure 77 it is already possible to see that after the pilot more respondent disagree with the statement than before. When we look at the overall impact of the change on the average we see in figure 47 that the effect is -0.28 and such effect is significant at the 1% level (Pr(|T| > |t|) = 0.0077).
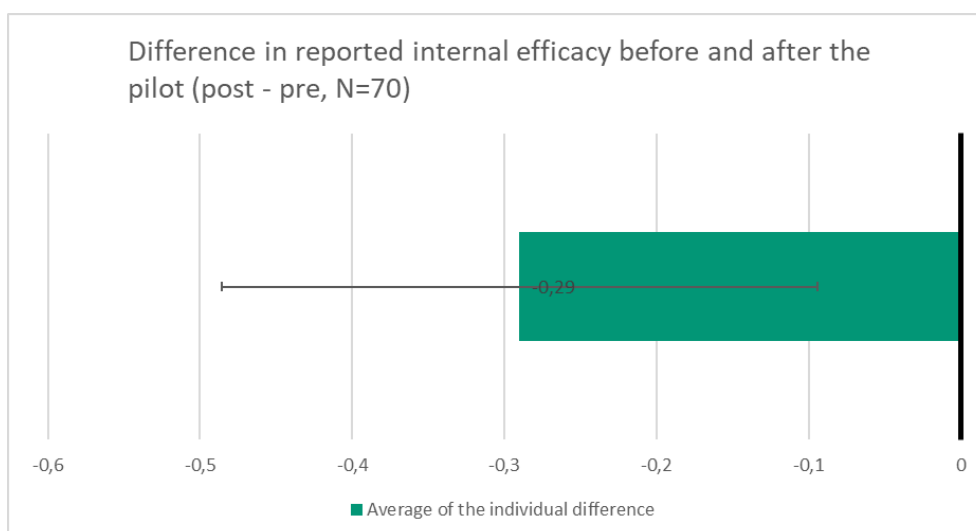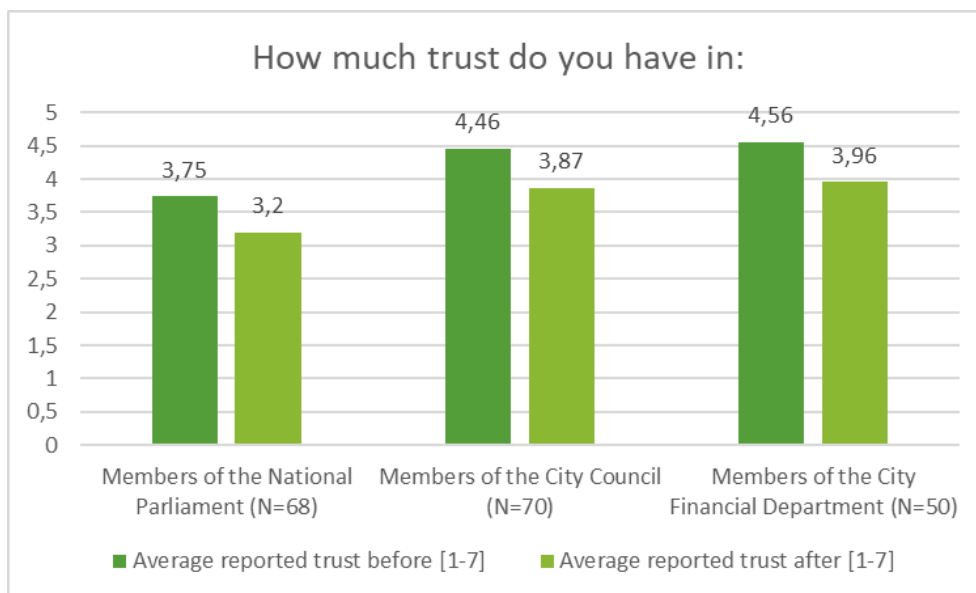
Our coding assigns a greater number to a greater degree in agreement, starting from 1 (strongly disagree) and arriving at 5 (strongly agree). Thus, finding that the average of the individual difference between the answer given in the post survey and the answer given in the presurvey is negative means that the presurvey has a greater numerical value than the postsurvey, and thus that on average the individual changes opinion toward disagreement (post<pre).

Calculating the Cohen d we obtain -0.33, i.e. participating in the pilot reduces the agreement with the statement indicating internal efficacy by one third of a standard deviation, the effect size is average.

Figure 78 - Lisbon impact on internal efficacy

When we investigate the impact on trust we find that citizens in Lisbon after participating in LisBOAIdeia report lower level of trust in the national parliament, in the local council, and in the city financial department.

Figure 79 – Lisbon trust questions

As anticipated this result contrast the finding of the literature on democratic innovations and signal that something was quite problematic in the management of the expectations of participants.

Figure 79 shows the results of the paired t-test on the average individual difference between the values in the post-survey and in the pre-survey. As we can see all the average differences are negative and all the test reject the null hypothesis and are significant. A negative difference, given the coding that assigns value 1 to no trust, and value 7 to a great deal of trust, implies that on average individual report less trust after the pilot.

More specifically when we test the impact on trust in the national parliament we calculate a Cohen d effect size of -0.39 that is statistically significant at the 1% level ($Pr(|T| > |t|) = 0.002$). When we test the impact on trust in the local council we find the largest effect size of 0.40, statistically significant at the 1% level ($Pr(|T| > |t|) = 0.0012$). Lastly when we test the impact on trust in the city bureaucracy we calculate an effect size of 0.39, again statistically significant at the 1% level ($Pr(|T| > |t|) = 0.009$). All effects sizes are average and correspond to 2/5 of a standard deviation.

Figure 80 – Lisbon testing the impact of participating on trust

4.3.3 Říčany

The case of Říčany is slightly different from the other cases due to the fact that D21 did not provide a dataset with a unique individual ID that could allow the implementation of a PRE/POST design that would trace the individual level change. This implies that in this chapter we will display t-test results of the difference in the entire sample average before the pilot and the entire sample average after the pilot. This type of test is problematic because it requires to be valid more stringent assumption than the one used in the other pilots that are more likely to be violated. To mitigate the difference in sample, we employ a t-test adjusted to compensate for the unequal variance of the two samples. We open with caveat to signal that the results we display should be interpreted with caution and they are not comparable with the results of the other two cases.

As we have seen from table 47 in section 4.4 in the case of Říčany our tests detect a significant impact of participation on internal efficacy with respect local politics, trust in the national parliament and satisfaction with the democracy. The other differences in averages instead are not significantly different from zero at the required 5% level.

The following graph describes the level of agreement before and after the pilot to the statement tracking internal efficacy with respect local politics.

Figure 81 – Říčany internal efficacy local

When we analyse the difference between the average before and after the pilot we find that the average post survey value (3.38) is smaller than the average pre-survey value (3.63), the difference displayed in figure 82 is negative (-0.25). Given the way we have coded the participants' answer this implies that the participants after the pilot agree less with the statement: "I am well enough informed to make recommendations on how the city is governed", i.e. we detect a decrease in the average internal efficacy at the local level.

Figure 82 – Říčany testing the impact on internal efficacy

Conducting an unpaired t-test with unequal variance we find that the result is significant at the 1% level ($\Pr(|T| > |t|) = 0.0000$), and calculating the Cohen's d for independent samples we find -0.32, an average size effect of one third of a standard deviation.

When we analyze the impact of trust we observe a significant positive impact on trust in the members of parliament. The average difference between post and pre is 0.3. When we conduct an unpaired t-test

with unequal variance we find that the result is statistically significant at the 1% level $(Pr(|T| > |t|) = 0.0023)$. When we calculate the Cohen's d for independent samples we find an effect size of 0.22, i.e. a small positive effect size.

Figure 83 – Říčany trust questions

Figure 84 – Říčany testing the impact of participation on trust

Lastly when we look at the impact of participation on democracy satisfaction we detect a positive but small impact of 0.14 on a scale from 0 to 10. The impact is significant at the 1% level $(Pr(|T| > |t|) = 0.0021)$ and we calculate the effect size we obtain a Cohen d equal to 0.22.

Figure 85 – Impact on democracy satisfaction

5 Conclusions

This deliverable presents the EMPATIA project evaluation performed in WP4, detailing the methodology, the results and the main conclusions.

The EMPATIA Platform was used in more than 22 events, achieved more than 43k users registered, received more than 2.4k proposals/projects/ideas and managed more than 40k votes. In the period of these events, there was a total of more than 180k unique visitors, 1M page views and 5 minutes average visit time. The defined technical KPIs were analysed in detailed and the EMPATIA Platform successfully achieved the expected results, despite the identification of some recommendations for technical improvements.

Based on the performance evaluation results, an exercise was done to be able to provide an estimate of the cost of hosting the EMPATIA Platform in a cloud environment (as a reference, the Amazon Web Services (AWS) was selected). This exercise can support municipalities or citizens communities to plan and predict the cost of using the EMPATIA Platform.

The EMPATIA Platform evaluation also includes a behavioural assessment, to indicate if this platform could attract usage, and a process evaluation, to indicate if this platform involves processes that are de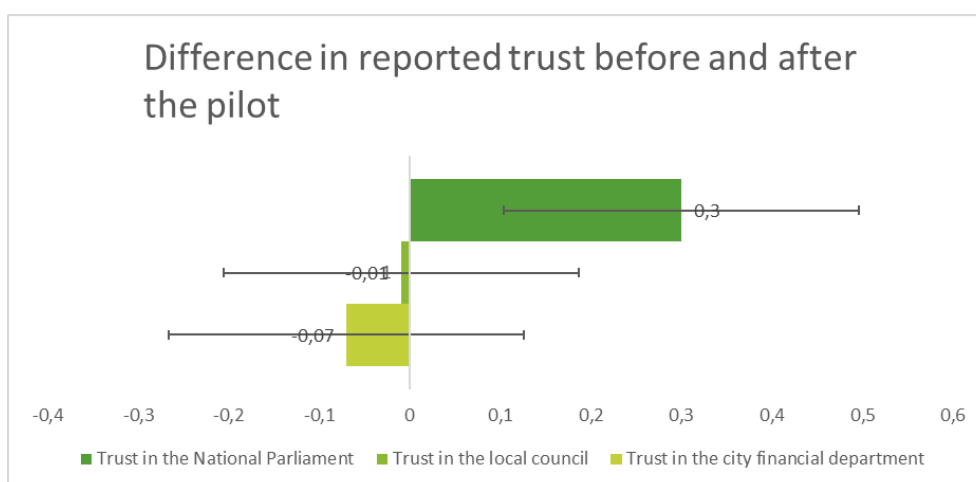sired by the users in relation to PB and its engagement through ICT. This assessment concluded that the EMPATIA Platform provides users with a satisfactory tool to participate in participation processes, identifying that the platform is easy to use, provide the necessary information, and have good functions and features.

Through the process assessment we have concluded that despite of general consensus among the four Pilot sites that EMPATIA's implementation was positive, many processes associated with its use need to be improved, including the followings:

- There is a need for politicians (i.e. municipal leaders) to be more involved in promoting the platform's use;

- There should be more collaboration between the politicians (i.e. municipal leaders), municipality staff and citizens in making EMPATIA a successful tool to enhance the quality of society's well-being through PB;

- More thought should be given to how authority of allocating financial resource for the projects can be given to the citizens, since they are the main stakeholders for PB;

- After the voting process, there is very little involvement of citizens in the implementation process of selected proposals;

- The voting procedures, i.e. the authentication process needs to be improved and simplified where less IT savvy users don't feel threatened or excluded;

- The provision of facility such as EMPATIA kiosks and computer at public places need to be improved to increase EMPATIA use;

- The municipality should consider training staff or agents among the citizens that could assists EMPATIA users.

The flexibility of the EMPATIA platform and its capacity to not constrain the local implementers in designing their own participatory processes implementing as many face-to-face and online participatory spaces they desired is clearly an objective that was achieved by EMPATIA.

The extreme variety and intensity of deployments show that EMPATIA at the moment is one of the most existing flexible tool on the market. However, this flexibility also comes with a cost that is exactly expressed by the patchwork adoption of the various modules of EMPATIA and the frustration that the consortium expressed when most pilots decided to adopt only few modules of EMPATIA, preferring trusted local technologies that had been tested for years in each city (OpenDCM in Milan, and D21 in Říčany), and when many of the advanced features we had developed for each module were not adopted due to various political or staff veto points.

Thus, it is important to understand that the flexibility of the EMPATIA platform cut both ways, on one hand it frees the local implementers to design whatever they want, overcoming the technological constraints that existing participatory platforms have, on the other hand this flexibility also allows to create problematic processes that the currently existing fixed process platforms do not allow. Thus, EMPATIA can be used to do greatly innovative processes, but can also be used to implement known failure models.

The social and political impact evaluation focused on the analysis of the data gathered from the four EMPATIA pilots. To our knowledge the impact evaluation framework implemented by EMPATIA has never been deployed to the scale that EMPATIA has achieved. We have comparable data across four large scale real life participatory processes and such data is scalable and comparable to other ongoing and past participatory processes.

This data shows poor inclusive capacity of EMPATIA's pilots towards weak societal groups, and a weak support for our initial hypothesis, i.e. the introduction of face to face channels of engagement would promote more inclusion and promote the participation of elderly people and people with lower education. These results reinforce the literature on digital divide and highlight how these innovations have difficulty not replicating inequalities that already exist in society.

The four EMPATIA pilots' data were extensively analysed and the main conclusions are:

Lisbon – multichannel analysis

In Lisbon we explored the engagement capability of multiple parallel channels of engagement and in particular the impact of adding a redundant channel of engagement to an existing participatory system. We showcased that multiplying the channel of engagement does not appear to promote significantly inclusion, and that adding redundant channels of engagement reduces trust in local institutions.

Milan – the potential of geolocation data

In Milan we showcased the potential of geolocated data. At the moment, without conducting secondary research collecting district level variable, we can draw the most interesting lesson from the comparison of the geolocation of proposers and the geolocation of proposals. This analysis shows that some of the legitimate fears that PB processes promote localism might not be significantly supported by the geolocated data. The geolocation of participants and proposals do not perfectly overlap. Additional exploration might be required to confirm this evidence. While this data is not extremely useful by itself it shows the incredible potential of the monitoring capabilities promoted by hybrid participatory processes.

Říčany – transferring technology

The case of Říčany does not offer specific lessons on inclusion, because the data that was collected does not offer the richness of the other dataset. However, this impact evaluation failure offers an important lesson with respect the difficulty of transferring technology and participatory processes across cultures and the difficulty of creating a transparent impact evaluation framework.

Wuppertal – the power of monitoring to improve on best practices

Wuppertal pilot inclusion results are comparable to more blazoned and famous PB such as Cascais and New York City. However, thanks to the monitoring capabilities of the EMPATIA platform we have identified a flaw that could be easily fixed to promote even better inclusion. Only 4% of participants in the ideation phase also continue to participate in the voting phase. Effectively, Wuppertal ran two separate processes. Enacting a dedicated communication strategy that would promote retention would increase participation significantly and would potentially promote even further inclusion.

From these we have identified three key lessons about the implementation of participatory processes:

1) Co-designing digital social innovations involves a bargaining process with stakeholders that in the case of EMPATIA has made more difficult the possibility of testing new and more complex feature of the digital platform;

2) Investment in communication is a crucial element that should be negotiated before the beginning of a pilot OR should receive a significant dedicated budget;

3) Cross-selling is a powerful tool, but it does not increase engagement, it simply allows participants of one process to experiment another.

Additionally, the investigation of the capacity of multichannel democratic innovations to promote participants efficacy, participants' trust and reduce antipolitics sentiment we concluded:

i. Participatory processes of the type promoted by EMPATIA have no effect (Wuppertal and Říčany), or even have a negative effect (Lisbon), on efficacy with respect national level politics, while when we go at the local level we observe no effect (Wuppertal and Lisbon) and a negative effect in Říčany. This result goes against the findings of the anecdotal literature that claims that democratic innovations promote efficacy (Geissel and Hess 2017).

ii. Participatory processes can both promote or hinder trust and political discontent. A significant decrease in antipolitics, and some increase in trust was identified both in Wuppertal and Říčany, while in Lisbon we observed a significant decrease in trust. Lisbon represents the failure that reinforces the design philosophy of EMPATIA. Lisbon is the pilot with the least integration between face to face and online channel of engagement, and the pilot that has invested the least in engaging minorities and in communication in general. The participatory budgeting process in Lisbon has completely obscured the continuous ideation process implemented by EMPATIA.

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Appendix A Behavioral Questionnaire

Answers for the given questions are to be rated in the scale of 1 to 5 as follow:

1 = Strongly Disagree;
2 = Disagree;
3 = Neutral / No Opinion;
4 = Agree;
5 = Strongly Agree

2.1 Performance Expectancy

1. I would find the EMPATIA platform useful in my job.
2. Using the EMPATIA platform enables me to accomplish tasks more quickly.
3. Using the EMPATIA platform increases my productivity.
4. If I use the EMPATIA platform, I will increase my chances of getting a pay rise or promotion.

2.3 Social Influence

1. People who influence my behaviour think I should use the EMPATIA platform.
2. People who are important to me think that I should use the EMPATIA platform.
3. The local authority official has been helpful in the use of the EMPATIA platform.
4. In general, my community has supported the use of the EMPATIA platform.

2.4 Facilitating Conditions

1. I have the resources necessary to use the EMPATIA platform.
2. I have the knowledge necessary to use the EMPATIA platform.
3. The EMPATIA platform is not compatible with the other platforms I use.
4. A specific person (or group) is available for assistance with difficulties when using EMPATIA.

2.5 System Quality

1. The EMPATIA platform is easy to use
2. The EMPATIA platform is user friendly
3. Compared with other software, the EMPATIA platform is easy to learn.
4. I find it easy to get the EMPATIA platform to do what I want to do.
5. It is easy for me to become skilled at using the EMPATIA platform.
6. I believed that the EMPATIA platform is cumbersome to use.
7. Using the EMPATIA platform requires a lot of mental effort.
8. Using the EMPATIA platform is often frustrating
9. It is difficult to navigate within the EMPATIA platform
10. It is easy to go back and forth between the EMPATIA platform
11. The EMPATIA platform is not always available
12. The EMPATIA platform loads all the text and graphics quickly
13. It only takes a few clicks to locate information on the EMPATIA platform

2.6 Information Quality

1. The information on the EMPATIA platform is free from errors; has no errors and covers all information needed
2. The information on the EMPATIA platform is outdated
3. The information presented in the EMPATIA platform is relative to my needs
4. The EMPATIA platform provides me with all the information I need.

2.7 Service Quality

1. The customer service support of EMPATIA platform is difficult to access.
2. The customer service support of EMPATIA platform has deliver their tasks accurately according to my need
3. The customer service support of "EMPATIA" platform takes time to respond to my enquiries
4. The customer service support of "EMPATIA" platform acts in my best interests
5. The customer service support makes me feel like I have a good relationship with your organisation

2.9 User Satisfaction

1. I am disappointed with the information gained from "EMPATIA" platform
2. I like the overall functions of EMPATIA platform
3. I feel that my concerns related to EMPATIA platform are unresolved.
4. I feel that the service provided by EMPATIA platform benefits me
5. I am satisfied with the complete services offered by EMPATIA platform, in terms of customer service, features and benefits.

2.10 Willingness to provide personal information to the e-service

1. Privacy of my personal data is a concern for me when using EMPATIA platform.
2. Security of my personal data is a concern for me when using EMPATIA platform.
3. I decided not to use the EMPATIA platform again for future transaction / reference
4. I will be likely to recommend others to use this service from EMPATIA platform
5. I will be likely to use your online platform in future, based on my experience with EMPATIA platform
6. I prefer EMPATIA platform better than other similar online platforms.

Appendix B Ethics Approval Letter

Brunel University London

College of Business, Arts and Social Sciences Research Ethics Committee
Brunel University London
Kingston Lane
Uxbridge
UB8 3PH
United Kingdom

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11 November 2016

LETTER OF APPROVAL

Applicant: Dr Sankar Sivarajah

Project Title: Participant Survey for Pilot Sites - EMPATIA

Reference: 4399-LR-Nov/2016- 4397-1

Dear Dr Sankar Sivarajah

The Research Ethics Committee has considered the above application recently submitted by you.

The Chair, acting under delegated authority has agreed that there is no objection on ethical grounds to the proposed study. Approval is given on the understanding that the conditions of approval set out below are followed:

- The agreed protocol must be followed. Any changes to the protocol will require prior approval from the Committee by way of an application for an amendment.

Please note that:

- Research Participant Information Sheets and (where relevant) flyers, posters, and consent forms should include a clear statement that research ethics approval has been obtained from the relevant Research Ethics Committee.
- The Research Participant Information Sheets should include a clear statement that queries should be directed, in the first instance, to the Supervisor (where relevant), or the researcher. Complaints, on the other hand, should be directed, in the first instance, to the Chair of the relevant Research Ethics Committee.
- Approval to proceed with the study is granted subject to receipt by the Committee of satisfactory responses to any conditions that may appear above, in addition to any subsequent changes to the protocol.
- The Research Ethics Committee reserves the right to sample and review documentation, including raw data, relevant to the study.
- [delete for staff applications] You may not undertake any research activity if you are not a registered student of Brunel University or if you cease to become registered, including abeyance or temporary withdrawal. As a deregistered student you would not be insured to undertake research activity. Research activity includes the recruitment of participants, undertaking consent procedures and collection of data. Breach of this requirement constitutes research misconduct and is a disciplinary offence.

Professor James Knowles

Chair

College of Business, Arts and Social Sciences Research Ethics Committee
Brunel University London

Appendix C
Focus Group Protocol

Materials for the focus group:
i.   Participant Information Sheet
ii.   Demographic Information Sheet
iii.   Consent Form

1. Introduction and Consent Process:

1.1   Script for the Facilitator

Good morning/afternoon ladies and gentlemen and thank you for being here today. My name is [full name of the facilitator] and this/there is/are [full names of any other participants] from [Name of your organisation]. We are part of a project consortium funded by the European Commission to develop an ICT based platform to facilitate the PB process. Please elaborate a bit about the project….

Through this focus group interview we hope to learn about your views about PB encapsulating both your experience of engaging in PB using different processes / systems and your thoughts about what features you would like to see in any potential ICT based platform for PB, such as the proposed EMPATIA platform. With this information, we expect to be able to design a more accessible, more user-friendly and more efficient PB process to empower citizens to participate in PB and the wider democratic process of contributing to decision making in government.

Before we get started, we want to draw your attention to the participation information sheet and the consent form. These documents provide you the important information about the research process, voluntary nature of this research and research confidentiality. We would like to highlight the following:

•   It is important to capture the thoughts, opinions, and ideas expressed within the group in the natural setting. This is the reason why we would like to ask your permission to record the focus group interview. No names will be attached to the recordings and the tapes will be destroyed as soon as they are transcribed.
•   The focus group is voluntary; you may refuse to answer any question or withdraw from the study at any time.
•   The information exchanged within the focus group is strictly private and confidential. We kindly ask participants to respect each other's confidentiality.
Please take a minute to read the provided documents, complete the consent form and return it to one of the interviewers. Moreover, please fill in the demographic information form; all demographic information is collected only for the purpose of research.

2. Explanation of the process

2.1   Previous participation

We would like to ask if any of the participants has previously participated to a focus group. If so, please share your experience.

2.2   Background on focus groups

Focus groups are a form of qualitative research in which a group of people are asked about their perceptions, opinions, beliefs, etc. towards a product, service, concept, advertisement, idea, and others. Focus groups have mainly been used in the health, social and marketing fields. The foundation of the focus group research is that the group discussions produce data and insights that would not be otherwise produced; they are generated by the interaction within the group members, such as listening to others' experiences, which stimulates memories, ideas, concerns etc.

2.3   Ground Rule

We would like to establish some commonly agreed ground rules for the focus group. Would the participants like to suggest any?

[The facilitator should make sure that after any brainstorming the following should be established:

•   Everyone should participate and express ideas
•   It is commonly agreed that information exchanged will be kept confidential
•   There will be no side conversations
•   Cell phones should be closed

In case the group is reluctant to propose ground rules, the facilitator should help the process. Any other suggested and agreed ground rules should be recorded and followed throughout the process.]

3. Focus Group Process

3.1   Initiation Process

Turning on recorder: The facilitator should remind to the participants that the focus group will be recorded and turn on the recorder.

Questions: The facilitator should ask the participants if they have any questions. If so, these questions should be addressed.

Introductions: The facilitator should ask everyone to introduce him or herself in a go around the table sequence. The participants would present information that they find relevant, such as name, job, residence, how often they have used video-to-video services, etc.

Scope of the focus group: Focus groups interviews are conducted in an unstructured and natural way and respondents are free to express naturally their views for the relevant issues. The facilitator should each time set the scope of the focus group and that people take their

time to think before answering to the questions. When repetitive information is exchanged, then the discussion should be the discussion should be moved forward.

3.2 Questions for the Facilitator

The facilitator should repeat the purpose of the research and try to convince the participants to reply thoughtfully.

3.3 Closure Process

The facilitator should thank the participants for their time and for sharing their opinions. The participants should be ensured that the information provided is going to be useful for the project and for designing more accessible, more user-friendly and more efficient video-to-video services within the project, with respect to their concerns. Contact information should be reminded in case the participants have more questions.

Appendix D
Forms

1   PARTICIPANT INFORMATION SHEET

Study title: Enabling Multichannel Participation through ICT Adaptations

Invitation Paragraph:

You are being invited to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask me/us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

What is the purpose of the study?

This survey/focusgroup is being conducted in the context of EMPATIA, an EC H2020 funded project, and will be delivered by the partners of the EMPATIA Consortium. The purpose of this survey/focusgroup is to investigate:

- the impact of Democratic Innovations on **inclusion and diversity** with a particular focus on exploring if these innovations engage already active citizens or engage previously inactive citizens.

- the impact of Democratic Innovations on **trust**
    - Trust on local institutions
    - Systemic trust in democracy and anti-politics sentiment

- the impact of Democratic Innovations on **efficacy**
    - Internal efficacy (knowledge production and transfer)
    - External efficacy (the perception of the participants of being able to influence politics)
    - the usability of the digital tools for the design and management of Democratic Innovations

For more information about the project and the consortium, please visit https://empatia-project.eu .

Why have been invited to participate?

We are asking for your help given your active engagement in one of the Pilots of the EMPATIA project where you have the chance to experience the methodology and tools developed within the framework of EMPATIA.

Do I have to take part?

As participation is voluntary, it is up to you to decide whether to take part. If you do decide to take part, you will be given access to this information sheet and be asked to sign a consent form. If you decide to take part, you are still free to withdraw at any time and without giving a reason.

What will happen to me if I take part?

We will need you to take part in a focus group session, which will not take more than 60-120 minutes at the most.

What do I have to do?

If you agree to take part, all you need to do is take part in the focus group session in person.

What are the possible benefits and risks of taking part?

There are no risks attached to this study. Benefits include some interesting information regarding research in your subject area via a report that will combine the results from all the institutions, which take part.

What if something goes wrong?

If you are harmed by taking part in this research project, there are no special compensation arrangements. If you are harmed due to someone's negligence, then you may have grounds for a legal action.

Will my taking part in this study be kept confidential?

All personally identifiable information collected about you during the course of the research will be kept strictly confidential by Data Processors, identified in the partners composing the EMPATIA Consortium. Hence, your personal data will not be transmitted to any other third party.

What will happen to the results of the research study?

We will combine the results from all the participants that take part in the study. In the first instance the information will be synthesised and a report will be compiled which will contain some interesting and useful information for you. Scientific articles based on the data collected could be published in specialized journals. The H2020 Program promotes an Open Access Strategy (http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/amga/h2020-amga_en.pdf#page=213). Accordingly, research data collected through EMPATIA will be made available as Open Data, only at the condition that your name and address will be anonymized so that you cannot be identified from it.

Who is organising and funding the research?

Organised by Brunel University London on behalf of the EMPATIA Consortium and Funded by European Commission H2020. The EMPATIA project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 687920.

Who has reviewed the study?

The College of Business, Arts and Social Sciences Research Ethics Committee have reviewed the study.

Brunel University is committed to compliance with the Universities UK Research Integrity Concordat. You are entitled to expect the highest level of integrity from our researchers during the course of their research.

Contact for further information and complaints

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Chair of the College of Business, Arts and Social Sciences Research Ethics Committee, Brunel University- james.knowles@brunel.ac.uk

Thank you for taking part in this study!

2   CONSENT FORM

Title   "EMPATIA"
Project Sponsor   Horizon 2020 – grant agreement 687920
Principal Investigators   Professor Giovanni Allegretti, Professor Vishanth Weerakkody
Ethics reference   [Approval number]

The participant should complete the whole of this sheet		
Please tick the appropriate box		
	YES	**NO**
Have you read the Research Participant Information Sheet?	☐	☐
Have you had an opportunity to ask questions and discuss this study?	☐	☐
Have you received satisfactory answers to all your questions?		☐
Who have you spoken to?		
Do you understand that you will not be referred to by name in any report concerning the study?		
Do you understand that you are free to withdraw from the study:		
• **at any time?**		
• **without having to give a reason for withdrawing?**		
Do you agree to take part in this study?		
Signature of Research Participant:		
Date:		
Name in capitals:		
Witness statement		
I am satisfied that the above-named has given informed consent.		
Witnessed by:		
Date:		
Name in capitals:		

Researcher name:	**Signature:**
Supervisor name:	**Signature:**

Appendix E
Wuppertal Focus Group Report

Report of Evaluation Workshop (focus group)

November 8, 2017; 6-8 pm

EMPATIA pilot project, City of Wuppertal

Participants

Ten members of the steering group, one moderator, two note-takers and one observer

Time and Place

November 8, 2017; 6-8 pm

Barmen town hall, room A-232

Welcome by Zebralog

The attendees are welcomed. Person 1 (f) is pleased that so many members of the steering group who have been involved in the project from the very beginning are attending the meeting, helping to improve the citizen budget in Wuppertal. She is looking forward to the evaluation workshop.

The moderator welcomes the participants as well. She explains that last September was the starting signal for the conception of a new type of participation process and that the evaluation of this process is now getting underway. Today's meeting has two goals: firstly, what can be improved in the future in case the city of Wuppertal wants to implement another citizen budget? And secondly, the evaluation of the EMPATIA project, i.e. the online platform. She then introduces person 11 (m) from Brunel University who will be observing the evaluation meeting to get a feel for the situation and the procedure. Everyone is welcome to speak to him if they have questions, but only in English. The records of the meeting will be emailed to the entire group later. The moderator asks if it is okay for everyone that pictures are taken during the meeting. The group members are okay with this. She again thanks everyone for their commitment to the citizen budget, be it by contributing ideas, being part of the steering group or in other functions. Person 1 (f) will also attend the meeting as a normal participant since she can present the perspective of the administration.

This is followed by a quick round of introductions.

Introduction of Participants

The introductions are guided by the question: "Which word comes to your mind when you think about the "citizen budget" project in Wuppertal?"

• Person 1 (f): works in the office of citizen participation, she is the sole employee, from January onwards she will get support from new staff. She has worked for the municipality since August and previously did an internship there. Her word is "direct" because the citizen budget is a very direct instrument of citizen participation that allows for the effective implementation of ideas.

• Person 2 (m): has been doing an internship in the office of citizen participation since September, he studies politics and administrative sciences in Konstanz. The citizen budget is an exciting experience for him. His word is "diversity of ideas".

• Person 3 (m): has been living in Wuppertal for 25 years, he already thought of a citizen budget in 2009. His word is "co-creation", because the project has been designed cooperatively.

• Person 4 (m): introduces himself as an interested citizen, he sees the citizen budget as a way to get involved, independently of party politics. "The divisiveness of party politics is not for me, this is a great thing to participate in". His word is "interesting".

• Person 5 (m): artist and director, has participated in the citizen budget with the project "Art Kiosk". His word is "disproportionate".

• Person 6 (m): likes being involved in the city budget and citizen budget and finds the process exciting. His word is "we can do more".

• Person 7 (m): followed the citizen budget's process through blogs and articles, submitted two proposals himself. His word is "comparison" because he is interested in how the project's focus shifted over time, e.g. which topics were most important at the beginning and then became less relevant.

• Person 8 (m): is attending today as a citizen and not as a local politician. He is a member of the steering group and his word is "complicated". A friend of his said, "This is not for the faint of heart." He agrees.

• Person 9 (m): is involved in the citizen budget since the beginning and his word is "interesting".

• Person 10 (f): employee of the city of Wuppertal, head of the e-government department, has already actively contributed to the guidelines. "I'm interested in what's happening here, it's exciting, but also controversial, that's perhaps the most exciting thing about it. I'm interested in how the will of the citizenship will be implemented. I'm skeptical, which ideas will be implemented and which won't? When it's over there will be lots of political discussions". Her word is "transparency", "because that's the most important thing for citizens".

• Person 11 (m): works at Brunel University and is part of the EMPATIA project, his main responsibility is the evaluation of the project.

The moderator adds that he is more in charge of the technical side of the project, he relays the technical details to the IT partner in Portugal.

• Person 12 (m): an interested citizen, involved in the citizen budget from the beginning. "I'm interested in how the will of the citizenship will be implemented."

• Person 13 (w): employee at Zebralog, involved in the process from the beginning, her word is "exciting".

The moderator explains the next steps: In the next 20 minutes, the steering group will evaluate the citizen budget with regard to the following categories: Organization/Other, Online Participation, Local Participation, Information on Budget/Processes, Public Relations/Mobilization). She suggests going over the entire process. There is no category for the project as a whole. It does not matter if pieces of information are mentioned in different categories. She asks everyone to use the next 20 minutes to reflect and write down their thoughts on small cards. The participants should be respectful, open and honest and respect the commitment and work of everyone involved.

Silent Reflection" with Pin Boards

Participants write down their thoughts in a quiet, focused manner, the married couple consult each other quietly. The moderator asks the participants to write with thick pens to guarantee that the notes are readable. The participants are then asked to pin their cards to a pin board.

Person 5 (m) asks a question about the overall framework, where the special funds come from, and whether the office of citizen participation has been specially set up for the citizen budget. Person 1 (f) replies that this is not the case, the office has been in existence since the beginning of 2016 and the citizen budget is the third or fourth participation project they have organized. Person 5 (m) wants to know how much money has been made available for the citizen budget by the EU. The moderator replies that she cannot give him the exact numbers on the spot and that the amount cannot be determined so easily since, in the case of EU projects, budgets are generally allocated to work packages that involve various tasks. However, the city of Wuppertal has paid nothing for the homepage or Zebralog because it is a pilot project. Person 3 (m) adds: The money that was distributed did not come from the EU, € 100,000 come from the city budget and € 50,000 from an external sponsor.

Results of the „Silent Reflection" and Discussion

The moderator presents the results of the silent reflection organized by topic and asks the participants to discuss the results.

Organization/Other/Overall Framework

The moderator initiates the discussion by pulling forward the "Organization/Other" pin board. It has the most cards.

Documentation of the board „Organization & Other"

What went well? What did you like? What should be kept the way it is?	What did you not like about the citizen budget? What could be improved?	Ideas for improvement & good methods to adopt
"Bürgerbegleitgruppe" (citizen support group), co-creation, co-production, co-evaluation well-organized "Bürgerwerkstätten" (citizen workshops) diverse formats	not enough time organization: increase interest through creative approaches process very long, less MS winning project is result of austerity (not enough money for playgrounds) administration did not check projects well enough (Sambatrasse, Luisenstraße) issue of old debts not being adequately presented manipulation relating to "Urban Gardening" projects because of "BuGa" (national garden exhibition)? Refinancing of the GWG was a big issue in politics but not in the citizen participation process Open Questions: Evaluation of the results? Who participated? Further development of projects? Results after political process?	in the future, the citizen budget should be extended transparent analysis of the process and the decisions -> open data TOP10 instead of TOP30 -> more clarity Development of project proposals should be possible on the online platform. And ideally as a continuous process! citizens should be involved in the city's optional spending

	"Gemeinwohlcheck" (evaluation of a project's benefit to the public): What is left after phase 3 ? City budget almost not considered at all getting citizen budget mixed up with city budget very unfortunate project is separated from city budget and politics no involvement from politics	

Discussion of „Organization & Other/ Overall Framework"

The moderator suggests starting with the overall framework of the project before getting into the specifics. At the same time, she reminds the participants that today's meeting is not about designing new procedures but focuses on the evaluation of past procedures while also taking into account what might be improved in the future. She asks the participants to identify the most important topics and to elaborate on them.

Person 7 (m) wrote on one of the cards pinned to the board that the citizen budget is not considered in connection with the city budget. He does not mean to criticize this but rather to make a general remark.

The moderator asks the group to share their thoughts on the citizen budget. Person 8 (m) thinks it is generally a good idea but that there is need for improvement. As to the winning project, it becomes clear that there is not enough money for playgrounds, this should be taken into account in the next city budget.

Person 5 (m) notes that, in his opinion, the citizen budget was supposed to be about innovative projects, not about supplementing the city budget, so the playground project should have been excluded from the beginning. Person 9 (m) adds that the playground project won in part because of the way it was promoted. "Getting the citizen budget mixed up with the city budget is very unfortunate." The citizen budget was actually intended to allow for civic engagement, it's important to keep the two separate. This was discussed from the beginning: "No matter how we conceive of the citizen budget, giving citizens money to spend, that's not democracy, because those parts of the city which get involved can achieve things, others don't". Not keeping citizen budget and city budget separate is bad, the citizen budget should not be used to improve infrastructure, otherwise every neighborhood uses the project to fund their playgrounds and the city budget no longer provides funding. The moderator remarks that this issue needs to be solved in the future.

Person 7 (m) asks how the winning project ranked in the "Gemeinwohlcheck" (evaluation of a project's benefit to the public) category. This information is provided in the "news" section on the homepage.

Person 3 (m) thinks that mixing city budget and citizen budget is not ideal but rather interesting if it can be used to politicize citizens and develop new projects for the city budget. In that case, the citizen budget would have to be brought forward in time so that input from citizens can be incorporated in the city budget. He thinks the playground project is marvelous. "The citizen budget is an exercise in democracy", the winning project is a good example of that and it's no coincidence that this particular project has won. Looking at the media reports, he felt happy because the people who promoted the project would probably not have been able to get an opportunity like this without the citizen budget.

They probably don't even have the right to vote because they are migrants. Therefore this was the best outcome, but these issues were not explained very well to the public, even though that's what made the project special. The moderator adds that the project events on site were a very good example of this, she

has rarely seen such a diverse group of participants. Even in other EU countries it's quite unusual to have events like that on such a small scale. She also thinks that there needs to be a discussion on how to proceed if the citizen budget should not get mixed up with the city budget. Person 1 (f) adds: This is very difficult because it is not clear what belongs to the city budget and what doesn't and there is also the issue of projects being very similar.

Person 3 (m) thinks that proposals for playgrounds should be evaluated carefully because some playgrounds would be modernized soon anyway while others would be waiting for funding for quite some time. He suggests that the next meeting could focus on projects that have nothing to do with the city budget.

Person 8 (m) reports that one of the people who submitted project ideas felt that merging the urban gardening projects was an act of manipulation by the city. Among other things, the BuGa (national garden exhibition) is said to have played a role in this.

Person 1 (f) knows nothing about this but was surprised that these projects were merged together. The moderator suggests that it is necessary to deal with this issue in a better, more focused way because merging projects also means that they are more likely to get chosen.

Merging projects before the "Gemeinwohlcheck" (evaluation of project's benefit to the public) could counteract this.

Person 7 (m) agrees but also notes that a decision needs to be made on when and how to do this. A voluntary merger after the registration phase would be a good idea.

Person 3 (m) adds that the merged projects were not as similar in regard to content and quality as it seemed. Person 7 (m) asks how the money will be distributed among the individual projects. Person 1 (f) replies that the large-scale project will receive the € 50,000. Not only the new project but also the existing gardens will benefit from this money.

Person 4 (m) stresses that the "Gemeinwohlcheck" (evaluation of a projects' benefit to the public) was very pleasant. Although people did not know each other there were no conflicts and "we went about the task completely unbiased".

As for the two cards reading "too little time" and "too much time", person 1 (f) adds that the administration did not have enough time to prepare. While the project is running, idea submissions and preliminary project checks need to be separated. Person 10 (f) adds that she found the process too lengthy: "Can't we make it more concise?" Person 1 (f) replied that the process was taking place during the summer holidays and it was difficult to get a hold of people during that time. Person 10 (f) replies that the evaluation criteria have to be improved and that all arguments need to be comprehensible. However, finding the right balance is difficult.

Person 6 (m) thinks that it must be possible to develop project proposals in cooperation on the platform. There already was a discussion at the beginning about how the citizen budget should work. Long-term collaboration (also during the process) is important. For this to work, the platform needs to be designed as a long-term project. A long-term and process-oriented approach that allows for discussion on the platform would be great. The citizen budget should be a continuous project. "We have seen: competent citizens can offer sound advice to the administration." He proposes to increase the citizen budget. Person 5 (m) questions the sustainability of the project, not only financially but also in view of the city's administrative personnel. He thinks the project is imbalanced.

Person 3 (m) would also appreciate extending the project indefinitely and points to suggestions that have been made to achieve this, such as the idea of a project database or comments made by both the mayor and the treasurer. In his opinion, these offer great starting points for cooperative procedures.

Person 7 (m) fears that turning the citizen budget into a permanent project will be overwhelming. For this reason, recurring project phases every year would be a better idea. Person 6 (m) agrees, there should always be a public discourse about the project and it should be developed continuously, but there should also be fixed dates.

Online Participation
Next the moderator pulls the pin board "Online Participation" forward.

Documentation of the pin board „Online Participation"

What went well? What did you like? What should be kept the way it is?	What did you not like about the citizen budget? What could be improved?	Ideas for improvement & good methods to adopt
-> functionality positive: mobilization of citizenship really only one vote per person Online: possibly only little-known, older people not very internet-savvy very good proposals show that citizens are competent advisors to the administration!	-> slow citizen budget – online voting (on platform) too complicated to access problematic: … not related to the city budget platform too difficult to access -> confusing disappointing participation, procedure much too complicated presentation nontransparent („Gemeinwohlcheck") difficult to get access to final vote … off-putting for users -> is „voting" the right tool? website is badly put together: confusing and far too slow	voting based on cash amounts instead of 5 votes? participation of council members must improve develop a process that enables participation and voting in public spaces while still being secure

Discussion of „Participation online"

The moderator asks the participants which aspects mentioned on the pin board display are most important to them, asking them to explain those aspects in greater detail.

Person 10 (f) and person 12 (m) registered on the homepage, but gave up afterwards and did not participate in the voting (error messages). The same applies to person 9 (m). Something prevented him from taking part, he cannot say what exactly, but there was no easy access.

Person 10 (f) also wondered why she was asked to supply information on her educational background and why certain pieces of information were requested. She decided to vote in person.

Person 8 (m) notes that this was probably in May when the system had not yet been improved, it got better later on. However, he found the SMS verification process impossible. He does not have a cell phone and thinks the process is unfair. Person 1 (f) agrees but with a budget of € 150,000, participation without registration is problematic. The SMS verification process was a test because email addresses are not secure, anyone can create as many as they want and vote as often as they like. Person 9 (m) adds that two-factor authentication is commonplace today. He suggests using e-identity cards for this.

Person 3 (m) mentions the concept of the "Bürgerkonto" (citizen account) which is expected to be introduced soon. It could also be used for this purpose.

The moderator explains that the SMS verification was a test and it is still not clear if it is suitable but it is more binding. The results may otherwise not be considered legitimate by politicians. It would be great if everyone could think about alternative methods. In other EU countries, the verification is often done with identity cards or codes, but this is often not very user-friendly because people have to go somewhere to pick up a code that they can then use to vote online. She asks if there are other important topics to discuss or if something relevant has not been mentioned on the pin board.

Person 1 (f) explains that before youth council elections in Wuppertal young people are sent electoral letters via mail. However, this procedure is not suitable for the citizen budget since it is very expensive. Online verification and authentication must also be coordinated with the in-person voting, otherwise people can vote more than once.

Person 4 (m) calls into question that the level of fraud is significant enough to justify these efforts and suggests a statistical solution to the problem. Person 6 (m) would like to know how other European countries deal with these issues. The moderator offers to email the deliverable of the other pilot projects to everyone (in 2018).

Another person remarks: "There is still need for improvement, but the basic set-up works." The features of the platform are generally well-received.

Person 7 (m) thinks the homepage of the online platform was cluttered. He suggests that instead of having users award 5 "votes" they should allocate different amounts of cash to the projects. Stadtwerke Wuppertal (public services provider of Wuppertal) has already done this. Such an approach would make people more likely to participate in the online process since they would think more carefully about how much money they want to give to whom.

Local Participation

This is followed by a discussion of the "Local Participation" display.

Documentation of the pin board „Local Participation"

What went well? What did you like? What should be kept the way it is?	What did you not like about the citizen budget? What could be improved?	Ideas for improvement & good methods to adopt

street events **moderators** **atmosphere at the "Gemeinwohlcheck" (evaluation of a project's benefit to the public) meeting** **"Gemeinwohlcheck", good set-up, pleasant atmosphere** **"Gemeinwohlcheck"** **on-site: events in Barmen were great, good interaction between strangers**	„Bürger-Botschafter" (citizen ambassadors) or mentors, following the example of Stuttgart more „voting points" in the city, e.g. in district libraries voting is <u>only</u> possible in the town hall, might result in very little voter turnout missing background information in "Gemeinwohlcheck" procedure (evaluation of a project's benefit to the public) forced consensus in "Gemeinwohlcheck"	offer more in-person voting in city districts (e.g. at larger events) incorporate opportunities for local participation into events

Discussion of „Local Participation"

The moderator asks who would like to briefly explain the most important points mentioned on the pin board and put them up for discussion.

Person 3 (m) remarks that the city of Stuttgart could serve as a role model. They have mentors and citizen ambassadors who are trained to help people with these kinds of processes. Participation is much higher for such supervised processes.

Person 7 (m) affirms this. He praises the "Bürgerwerkstatt" (citizen workshop), specifically its concept, moderator, time management and topics as well as the workshop's goal-oriented approach.

Information on Budget and Procedures

Next, the moderator moves on to the topic „Information".

Documentation of the pin board „Information on Budget and Procedures"

What went well? What did you like? What should be kept the way it is?	What did you not like about the citizen budget? What could be improved?	Ideas for improvement & good methods to adopt
videos by Younect	Current problem: numbers of city budget are already outdated (deficit 2018 - 5 million euros?) Was there any information? do not approve project proposals for voting which are within the city's area of responsibility (city budget) unfortunately, we could not incorporate data from the city budget into the citizen budget,	

	issue: visualization und presentation	

Discussion of „Information on Budget and Procedures"

The moderator asks the participants if they have found information about the budget on the homepage and if they have ever searched for this kind of information. Person 6 (m) did not look for the information and thinks that the people attending today's meeting might not be the right people to ask about this since those present today are "experts". Person 3 (m) wants to know if there even was any information about the budget on the homepage. The moderator is surprised about this and she asks if the feature #Ask the Treasurer has been used. Strangely enough there was a misunderstanding because person 3 (m) asked a question online and thought the treasurer would respond with a video. Originally this had been the plan, as Person 1 (f) explains, but due to the lack of questions and technical difficulties it was not implemented.

In regard to the budget of Wuppertal, person 8 (m) reports that the numbers change almost daily, the deficit fluctuates and individual budget items change as well.

Person 3 (m) notes that the city budget was not an issue in the citizen budget. The political discourse about the city budget was not taking place within the project but among the general population. He thinks this needs to be discussed.

The moderator comes back to the three pillars of the project (information, dialogue, participation) and asks if this is a reasonable framework. Person 8 (m) thinks there should be a section on the city's homepage where people can find information on the city budget - the citizen budget platform is not the right place for it.

Person 1 (f) asks the general question how citizens could then be made aware of this.

Person 7 (m) believes that due to its complexity the city budget is not relatable to the citizen budget.

Person 6 (m) agrees and reiterates that the citizen budget should be extended indefinitely since it is part of the overall budget of the city.

Person 3 (m) emphasizes that it is essential to have a political discussion about budgeting. However, in order to reach citizens it's important to pick specific topics and talk to experts and stakeholders about them. The moderator takes this as an opportunity to proceed to the next topic of discussion.

Public Relations and Mobilization

The moderator pulls the pin board forward and asks the participants which aspects they consider to be the most important. She then wants to know whether something important is missing.

Documentation of the pin board „Public Relations & Mobilization"

What went well? What did you like? What should be kept the way it is?	What did you not like about the citizen budget? What could be improved?	Ideas for improvement & good methods to adopt

Street campaigns **Social media work** **direct contact with citizens** **well-organized events with good moderators** **concentrated bursts of information** **Social media is important** **opportunity to follow the work of the city administration via social media** **participation of the press, participation via social media, participation in all project phases** **frequent press reports, articles on individual project proposals**	Online mobilization has lots of room for improvement Goals? Promotional film: „austerity management" problematic -> too focused on deficit #Ask the Treasurer: Sound and direction can be improved „Gemeinwohlcheck" (evaluation of a project's benefit to the public), too much ado about official speeches and movie inadequate public relations and mobilization press reporting after the end of the project too focused on supposedly low participation I didn't like that one political party was suddenly „afraid" of citizen participation	approaching people directly -> especially young people use successful project proposals as advertising for next citizen budget -> visualization public computers, in libraries, „Bürgerbüros" (citizens' centers), „Quartierbüros" (district offices), community centers „Gemeinwohlcheck" (evaluation of a project's benefit to the public), welcome more too-the-point and shorter, more room for discussion (in the panel and in smaller groups) citizen participation is an exercise in democracy train facilitators/mentors following the example of Stuttgart get young people involved via the student council

Discussion of „Public Relations & Mobilization"

In regard to public relations, person 4 (m) notes that the information stalls in the city were great because they reached more people, especially older people who are not internet-savvy. He heard a lot of creative ideas at a networking event on the topic of "citizen budgets" taking place in Jena and would like to implement those ideas. He wants a better public relation strategy for newspapers, aimed at older people specifically.

Person 6 (m) thinks that politicians, especially council members, should get more involved. There only was one press release by the SPD (Social Democratic Party), apart from that nothing happened. In addition, computers might be set up in public spaces to be used by citizens to register and vote.

Person 4 (m) adds that politicians are afraid of "parallel structures" which might restrict their power, this is why the cooperation does not work out.

The moderator asks the participants to bring up other important issues and then wants to know if anything should be added to the pin board.

Person 5 (m) praises the informative public relations work and how everyone involved "fought firmly established structures despite the limitations". This, too, he found disproportionate.

Conclusion

There is a final round. Each person is asked to give a concluding statement in two sentences: 1. What should stay the same? 2. What needs to be improved?

- "The citizen budget should be continued, the involvement of politics should be improved and the whole process should be extended."

- "I would like to see more cooperation between political officials and committed citizens."

- "The citizen budget should be continued and developed, with a fixed amount of funding, which should be increased annually by a certain percentage, up to € 500,000 for example."

- "Only citizens should make decisions since the project is called citizen budget. The citizens should have the financial resources."

- "There should be no project proposals which belong to the city's area of responsibility, such as playgrounds."

- "Important issues are the ongoing cooperation with citizens, the political debate as well as a focus on processes."

- "The general direction is set, now smaller adjustments must be made."

- "The citizen budget should be developed into an ongoing process."

- "Continuity is important. The process should always stay present in the public discourse. There should always be updates on next steps."

- "It's complicated and not all project proposals can be implemented exactly."

- "Voting procedures, budget increases and infrastructure need to be improved."

- "The central question for the next citizen budget will be: how can we guarantee an easy voting process while preventing people from voting multiple times? We will also try to improve our public relations work and possibly emulate the model of Stuttgart."

Person 1 (w) would like to have more topic-focused meetings to clarify open questions, like negative votes in the "Gemeinwohlcheck" (evaluation of a project's benefit to the public). The conception of a new citizen budget will probably begin next year.

Thanks, Outlook / Next Steps

The moderator thanks the participants. She thinks that Wuppertal is a very innovative city, perfect for implementing these kinds of projects. She hopes to see everyone again in the future.

Note regarding the online platform at the end of the meeting (from OpenDatal): The source code in GitHub was outdated from the beginning, that's why the attempt to set up the platform independently failed. That's a pity because this prevented the development of an online community. It would be great if there could be future collaborations with the open source community of Wuppertal. Documentation of the process by IT would be desirable.
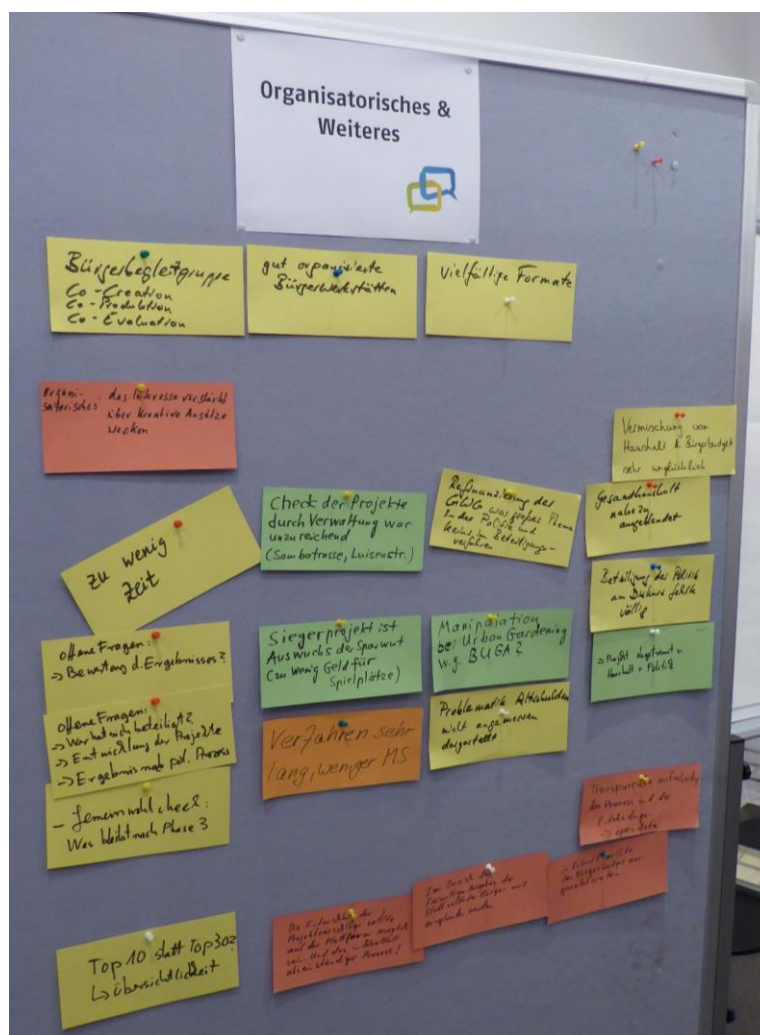
Figure 86 – Pin Board "Organization & Other"

Figure 87 – Pin Board "Online Participation" and "Local Participation"

Figure 88 – Pin Board "Public Relations & Mobilization" and "Information on Budget and Procedures"

Appendix F
EMPATIA Pilots Focus Group Workshops Photos

Wuppertal Focus Group (Nov 2017)

Ricany Focus Group (Jan 2018)

Lisbon Focus Group (Jan 2018)

Milan Focus Group (Feb 2018)