Reality Sensing, Mining and Augmentation
for Mobile Citizen–Government Dialogue

FP7-288815

D5.5

End results of trials and Live+Gov Methodology

Dissemination level:	Public
Contractual date of delivery:	Month 36, January 31st 2015
Actual date of delivery:	Month 36, January 30st 2015
Work package:	WP5 eParticipation Use Cases
Task:	T5.1 Development of Live+Gov Methodology T5.4 Field Trials
Type:	Report
Approval Status:	PMB Final Draft
Version:	1.1
Number of pages:	92
Filename:	D5.5_v1.1.docx

Abstract

In D5.5 we evaluated the second revised and customised prototypes as described in D5.2. For the evaluation, each Use Case executed another round of field trials: Mobility, Urban Maintenance, and Urban Planning. In these field settings, our applications have been actively used by our target audiences. In this deliverable, we present the overall evaluation strategy to measure the usability of our prototypes, check again our requirements as set out in D5.1 in field-settings, and report on the impact of our field trials. With the evaluations, the Live+Gov consortium has gathered a tremendous collection of information and is able to continue fortifying engagement and making impact. The document includes a handbook that summarizes the recommendations and best practices for future eGovernment initiatives

This work was supported by the EU 7th Framework Programme under grant number IST-FP7-288815 in project Live+Gov (www.liveandgov.eu)

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History

Version	Date	Reason	Revised by
0.1	10-08-14	Document structure set up	Julia Perl
0.2	10-13-14	Alpha version	Julia Perl
0.3	10-24-14	Handbook overview and executive summary	Julia Perl
0.4	12-10-14	Abstract, Section "Urban Maintenance Use Case"	P.A. Minnigh
0.5	12-10-14	Section "Mobility Use Case"	Laura Niittylä
0.6	12-15-14	Summary, Exec. Summary, editing	Matthias Thimm
0.7	01-19-15	Incorporation of internal reviews	Matthias Thimm
1.0	01-19-15	Incorporation of internal reviews	Matthias Thimm
1.1	01-22-15	Incorporation of internal reviews	Maite de Arana Agiretxa Matthias Thimm

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Executive Summary

In this deliverable we present the end-results and lessons learned of the second trial of the three Live+Gov use cases: Mobility, Urban Maintenance, and Urban Planning. For each of the three Use Cases, customized prototypes that have been used and re-evaluated after the first field trials were now used and finally evaluated in second field trials. The evaluation strategy consists of measurements of the user experience in the field-settings; in particular we divided the analysis into the following four parts:

- Usability aspects (Learnability, Utility, Memorability, Satisfaction, Efficiency, Feedback & Errors, and Reliability)
- Requirement evaluation
- Impact of the trials
- Lessons learned

The trial evaluations provide the consortium with very good final results. Each Use Case can report successful results: the re-evaluated applications were received well by citizens and received positive responses from the government. The specific conclusions for each individual Use Case are as follows.

Mobility Use Case

Out of the three aspects evaluated based on the user feedback, utility/impact is the most positively rated aspect of all. This gives a clear sign on the importance and the potential the applications have once the detected improvement needs have been solved. We are satisfied with the overall results in this trial and see that the evaluation has given us clear signs on how to continue the progress towards market ready product.

Urban Maintenance Use Case

The updated version of the application scores higher on each usability aspect compared to the public beta version. This indicates that the results of the first field trials have been efficiently implemented and lead to significant improvement. Positive feedback has been gathered that emphasizes the facilitation of citizen government dialogue. Stakeholders are convinced that the overall concept of visualisation of the events and initiatives in the city of Utrecht are successfully met. The web application has shown to be a production ready application, tested and used in a live environment. The stability of the application with considerable usage and data gives a very solid foundation for future SaaS-based exploitation possibilities.

Urban Planning Use Case

All aspects of evaluation that have been focused on during the field trials have given a positive outcome and have proved not only that the field trial has reached its goals but also that the project has demonstrated success in the proposals envisioned in the project plan.

This use case was ambitious from the political perspective due to the risks and the novelty of this type of initiative. As a result of the trials the experience has been evaluated as quite positive by both administrators and citizens. It has proved to trigger the change as it has created the desire in citizens to continue participating in the public life.

- Administrators and decision makers have shown their satisfaction about the outcomes of the project for the local administration. In fact the feedback collected has already had an impact as a real health park has been installed in the town in the location decided upon by participants.
- The general impression is that the great majority of citizens have received this initiative as a very positive experience and they are now demanding more opportunities for future participation in the local issues. This positive impact was also reflected by the important echo in the media, Although citizens have taken part in a moderate number due to different reasons, the number has been considered positive in terms of being representative for an initiative of its type.,
- The requirements for the development of this system have been more demanding than initially predicted, and therefore all of the technical issues related to network availability, device requirements, 3D model acquisition, etc., as detailed in this deliverable, will need to be given special attention.

Finally, a handbook encompasses this document to give practical recommendations to civil servants who want to initiate Open Government initiatives.

Table of Contents

1 Introduction

This document "End results of trials and Live+Gov Methodology" is the public report D5.5 as described in the Description of Work (DoW).

The Live+Gov project was set up in a cyclic way as illustrated in Figure 1, in which requirements were described, development took place, field trials have been run and evaluation has been done. This cycle was repeated with adjusted requirements and development in a second field trial, which has been evaluated as well. For the three Use Cases Mobility, Urban Maintenance and Urban Planning the requirements for the first prototypes were described in D5.1. Given this initial set of requirements, a prototype for the first trials was implemented and reported in D5.2. Given the results of the first field trials (D5.3) the initial prototypes were revised and the results of the second version of the prototype were described in D5.4.

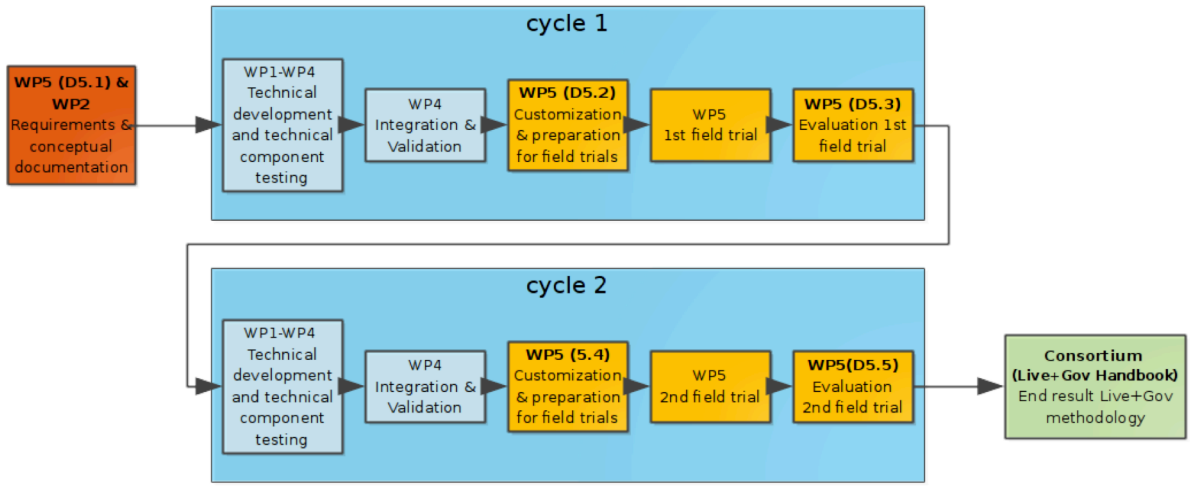

Figure 1: Cyclic Approach of the Live+Gov project

This document describes the end-results after the second field trials were executed and reports on the final Live+Gov methodology. The *Live+Gov Handbook* summarizes the overall Live+Gov methodology and gives practical recommendations for civil servants and public authorities that want to implement eGovernment initiatives.

This document is structured as follows. After the introduction in Chapter 1, each Use Case will have its own chapter: *Mobility Use Case* in Chapter 2, *Urban Maintenance Use Case* in Chapter 3, and *Urban Planning* in Chapter 4. These Use Case chapters 2-4 will be structured similarly to come to a detailed and unified Use Case description: x.1 Description of the Use Case; x.2 Set up of trials; x.3 Execution of trials; x.4 Results of trials; x.5 Lessons learned and x.6 Summary of the Evaluation of the Use Case.

Chapter 5 gives a short overview over the content of the Live+Gov Handbook and Chapter 6 summarizes Deliverable 5.5.

2 Mobility Use Case

2.1 Use Case Description

The mobility use case aims to provide a comprehensive understanding of the issues citizens face while travelling with public transport. To understand the needs and preferences of the citizens, the authorities need to be able to understand the travel tendencies of the citizens, as well as to be aware of the issues raised during their travels.

The mobility application helps citizens to express their opinions on the travel services as well as to receive important and real-time information that helps them before and during their journeys. With knowledge of the real-time status, planning the journey and reacting to exceptions are easier and travelling will become smoother. By expressing their opinions and sharing the travel tendencies, citizens also get the possibility to make an impact on the planning of new public transport services and also on improving the existing ones. With constant interaction it is also possible to react on the exceptions and problems faster and more efficiently and to make the development activities a continuous process.

In this second mobility trial, we have provided an improved prototype of both, the reporting application for the authorities, as well as of the mobile application for the citizens with new and improved features since the first trial prototype. For the second trial the main features of the prototype are listed below.

Mobile application features:

- Detection of travel related activities (HAR, SLD)
- Personalized content delivery
- Issue reporting
- Alert distribution of user reports
- Stop information by using augmented reality feature
- Traffic exceptions (TJD, Disruption info)

Web application features:

- Tracked routes visualization on a map with filtering options
- Issue report information (time, location, category, image)
- Feedback to the citizen on their issue reports, information on the report processing status
- Sending alerts to the mobile application
- Record of the messages sent to the mobile application

The prototype and the improved features used in this trial have been described in more detail in D5.4, Section 2.1.

In the evaluation of the trial we have had the main focus on the following aspects:

- Usability
- Quality
- Impact

When compared to the first trial evaluation we have now moved the focus slightly more from usability and quality to the impact, aiming to see the potential of the application in its

targeted environment from both the citizen and authority perspective. However, as many technical improvements have been made since the first trial, also verification on the success of the improvements needs to be included in the evaluation process.

2.2 Set Up of Trials

The trial plan was updated in early 2014 based on the evaluation results of the first trial. After the evaluation, final plans for the second mobility trial were defined and development of the prototype for the second trial started. For the second trial the aim was to have more users involved, both from the authority and citizen side and to provide more detailed, more personalized information and increase the interaction between citizens and authorities, as well as to enhance the mobile application use as a social medium between the citizens.

For the trial, a target of 100 users was set. The targeted number was identified as a limit for gathering a sufficient amount of data for a reliable evaluation. When defining the targeted number it was detected that major efforts would be required during the recruitment. It was also discovered that another FP7-project was starting its public transport information system trial at Helsinki Region, targeting large numbers of Android users for the trial for nearly the same period of time, resulting in two projects competing for the same users. Before setting the exact time for the mobility trial, we searched possibilities to change timing of the trials in order to avoid overlap with the two trials but eventually were forced to have some overlap in the trial periods.

Therefore, planning of the user recruitment started in co-operation with HSL well before the trial, in the beginning of June 2014, over 3 months before the actual trial start. Once the recruitment process started, major efforts for reaching potential users were given in order to achieve anticipated number of users.

The media coverage for the trial was searched extensively. A press release of the trial was sent out by HSL during the user recruitment process, reaching 7 media lists, 103 reporters, 203 newspapers and radio channels, thus reaching basically every major newspaper/radio channel in Finland. The article was also found on the first page of HSL's own website for several weeks. On social media information on the trial was posted on HSL's Facebook pages, reaching over 15 000 followers and tweets of the trial were made in Twitter, where the most publicity received the tweet by Deputy Mayor of Helsinki, who solely has more than 18 000 followers.

As a result of the campaign 120 potential users expressed their interest towards the pilot and enrolled as a test user. However, some enrolled users had neglected the pre-requisites when enrolling (3G, Android) and not all users started the application. The dropout of less than 20 of the enrolled citizens was expected already when defining the number of users needed and this had no major impact on the execution of the trial.

For the technical preparations we had defined specific tasks to be carried out based on the first trial evaluations. The most significant improvements on the mobile application included improved sensor data collector, the implementation of AR-based bus stop information and the use of improved personalized content delivery for the distribution of alerts and information based on user preferences. For the sensor collector improvement, more accurate detection of the HAR and great attention was paid to well as the reduction of the battery consumption. Besides these, stability and reliability improvements were also made.

For the web-application, the most significant improvement was made with the inclusion of the route analysis tool where advanced filtering algorithms have been included to extract usable information out of the data for the public transport planners. Also minor improvements in the issue reporting view were made. The requirements and improvement needs have been described in more detail in D5.2, Sections 3.2 and 3.3, and the improvements made to the prototype are described in in D5.4, Section 2.1.

Before the trial also a kick-off meeting was organized with HSL in order to go through the setup and tasks that were expected to be conducted during the trial. Also instructions on the use of the prototype was created for both the authority and the citizen applications and distributed to the users before the trial.

2.3 Execution of Trials

The pilot started on 12th September 2014 when both the enrolled citizens and HSL trial members were provided the instructions on the application download and usage and they were encouraged to start using the application in their daily activities. The trial duration was in total 4 weeks, during which time the users were regularly contacted to provide more instructions and helpful insights on the use of the application. Also constant support was provided to the users via e-mail for questions and help when problems occurred.

The planned end date was originally set to 3rd October, but due to some technical problems in the beginning of the trial, the users were asked to continue the use of the application for an additional week if only possible to ensure sufficient amount of data to be gathered. The evaluation questionnaire was sent out to the users on the 12th October and the users were instructed to continue the use of the application until they had answered the questionnaire.

The trial started with the version 1.3.9 of the mobile application. During the trial it was noticed that small group of users experienced problems related to data transfer on recorded journeys, as well as some problems in the responsiveness of different buttons in the application. Most issues were solved shortly after they occurred, leading to new version launches during the trial. In total there were 4 significant new version launches made for improvements and bug-fixes during the trial as follows:

Table 1 Changes in the mobile application during trial

Version	Launch date	Changes to previous version
1.3.10.	15th September	Bug fix regarding displaying Finnish alphabets in issue reports
1.3.11. & 1.3.12.	18th September	Bug fixes for alerts-view Implementation of reports transfer status and error message in Google Analytics
1.3.14.	22nd September	Implementation of additional error logs related to recordings
1.3.16.	30th September	Bug-fixes for recordings

As seen in Table 1, the first version updates dealt with bug fixes and later updates focused on solving problems related to submission of recordings. The new versions were updated to

Google Play, from where automatic notifications were provided to the users or in case user had accepted automatic updates, the new version was updated instantly.

During the trial also regular contact was kept with the users to ensure sufficient support and also to remind them to actively continue the usage of the application. With the help of regular contact, the usage rates did remain stable throughout the trial and natural dropout or reduced amount of usage were avoided in larger scales.

2.4 Results of Trials

The evaluation of the trial has been made based on three aspects: internal evaluation, citizen evaluation questionnaire results and the evaluation results of the meeting with HSL. In the internal evaluation we have evaluated how the goals set for the trial have been achieved both in technical, as well as the trial setup parts. Major parts of the internal evaluation deal with data analysis and requirement analysis.

Citizen evaluation questionnaire results provide us insight on the usability and utility of the application and help us define how well the prototype meets the needs of the citizens and what level of demand is there for this type of application in the market. The evaluation results with the authority side on the other hand helps us define if the information available through the system is usable for authorities as such and if there would be need for this type of system among the public transport authorities.

In the internal evaluation, we have defined the level of completion of the requirements through the improvements mentioned in Section 2.2. Based on the observations during the trial, and supported by the observations made by users, we have come to conclusion that the technical requirements have been met in satisfactory level. The improvements made have been found to function as anticipated, with only minor modification needs still existing.

In the following table we have identified the main focus areas in the evaluation together with specifying questions for supporting the evaluation process.

Table 2 Mobility prototype evaluation aspects

Protoype evaluation				
Aspect	Criteria	Specifications	Targeted WP	Methods used
User activity	Quantity of data	Was enough data collected?	WP1 & WP5	Data analysis
	Interest	Did enough users continue regular use throughout the trial?	WP5	Data analysis, questionnaires, personal contact
	Coverage	Did enough users take part?	WP1 & WP5	Data analysis, questionnaires, personal contact
Usability	Learnability and efficiency	How easy is it for users to accomplish basic tasks the first time they encounter the design?	WP5	Questionnaires, personal contact
		Once users have learned the design, how quickly can they perform tasks?	WP5	Questionnaires, personal contact
	Satisfaction	How pleasant is it to use the system in general?	WP5	Questionnaires, personal contact
		Would new features improve satisfaction?	WP5	Questionnaires, personal contact
		Did errors occur?	WP5	Questionnaires, personal contact
	Feedback & Errors	How many errors do users make, how severe are these errors, and how easily can they recover from the errors?	WP5 & WP4	Questionnaires, personal contact, data analysis
		Is feedback from the system to user sufficient?	WP5	Questionnaires, personal contact, data analysis
	Reliability	Does the software runs	WP5 &	Questionnaires,

		consistently without crashing?	WP4	personal contact, data analysis
Quality	Data	Is the data quality satisfying?	WP1 & WP5	Data analysis
	Traffic jam detection	Does traffic jam detection deliver accurate warnings?	WP1	Questionnaires, personal contact, data analysis
	HAR	Does human activity recognition deliver accurate information?	WP1	Questionnaires, personal contact, data analysis
	Service line detection	Does service line detection deliver accurate information?	WP1	Questionnaires, personal contact, data analysis
Impact	General	User numbers	WP5	Data analysis
		Usage numbers	WP5	Data analysis
		Media coverage	WP5	Internal review
	Authority	Does the application provide a useful tool for planning?	WP5	Interview, comparison to existing tools
	Interaction	Does the application provide a useful tool for interaction?	WP5	Questionnaires, personal contact
	Citizen	Does the prototype meet the given requirements?	WP5	Internal review
		Does it provide useful information?	WP5	Questionnaires, personal contact,
		Is the personalized information useful?	WP3 & WP5	Questionnaires, data analysis
		Does it do what users need?	WP5	Questionnaires, personal contact

In the tables presented in the following sections, we have provided detailed results to the main questions used in the mobile application evaluation. The results are given as percentages of total answers and the following scaling is used unless otherwise stated:

0 = no opinion

1 = strongly disagree

2 = moderately disagree

3 = moderately agree

4 = strongly agree

User activity

In total there were 102 individual users who used the app within Helsinki region during the trial time. Out of these, 45 users took part in the evaluation questionnaire. In terms of interest we are pleased to notice the interest remained stable throughout the trial. On average there were between 30 and 50 active users daily, with only exception on the first weekend of the trial when only 10 users were active. In Figure 2 we have presented the daily activity of users through the trial period.

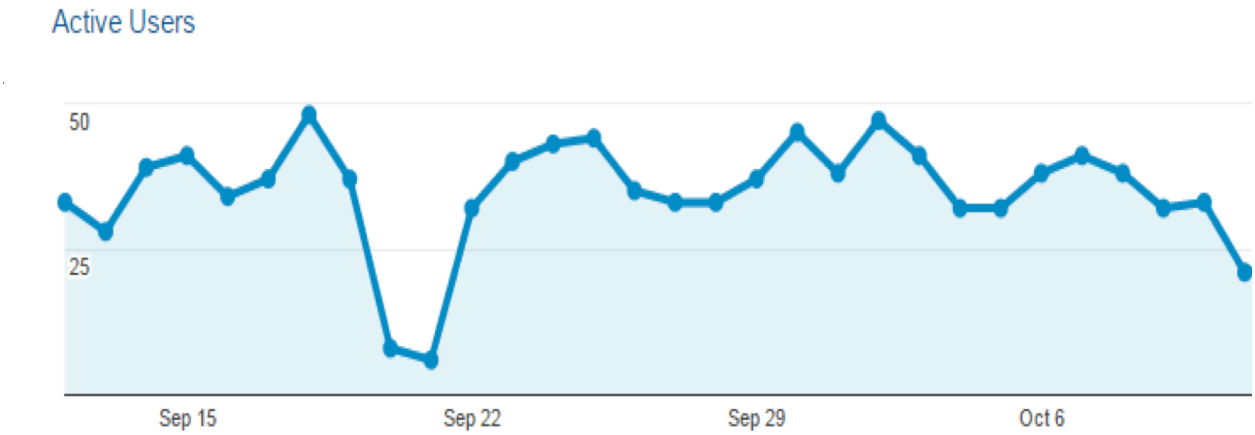

Figure 2: User activity during the trial

	W 1	W 2	W 3	W 4
Active users	63	58	67	52
Sessions	1770	1740	1640	1360
Average views/session	2,6	2,4	2,4	2,2

Table 3. Weekly user activity

As detected, the usage rates were stable and sufficient throughout the trial, only the number of tracked routes and sent issue reports is lower than anticipated. This is partly explained by the technical issues some users faced during the trial and also partly based on the memory

issues by the users while travelling, as many users stated it being difficult to remember to start recording. However, the data collected during the trial is sufficient for the evaluation purposes and therefore user activity during the trial is on satisfactory level.

Usability

Mobile application

The mobile application usability has been evaluated mainly based on the 45 evaluation questionnaire results provided by the trial users, but also based on the internal remarks based on the messages received from the users during the trial and also the remarks made based on the user behaviour during the trial.

As for the usability in general, the feedback was twofold, those users who experienced regular technical problems generally gave less positive feedback in all aspects, whereas those users who experienced none or only few issues in the beginning of the trial were extremely positive on their feedback on the usability. The main issues that were detected in the first trial regarding usability – battery consumption, feedback from the application, and reliability mainly improved from previous evaluation.

Regarding the battery consumption, slightly more users experienced that the battery consumption was increased, but with the improved and additional location-based services included in the prototype this was expected. However, only two users mentioned the increase being disturbingly high in their comments. Also, regarding the satisfaction of the application during the trial, the answers highly correlated with the number of technical problems faced and the average rating for the application was 5,1 on a scale from 1 to 10, meaning on average users were slightly more satisfied than unsatisfied with the application during the trial. Based on these findings, we can come to the conclusion that both the battery consumption and the appearance of technical problems related to certain devices still need to be improved when the application is aimed for the markets.

Table 4 Satisfaction towards the application

	Question	Average	0	1	2	3	4
Satisfaction	I'm satisfied with the battery usage of the application	2,2	0%	22%	44%	22%	11%
	How satisfied were you with the application in the trial (1=not satisfied, 10=extremely satisfied)	5,1					

As for the feedback provided by the application, several notifications were included in the second trial prototype based on the user feedback on the first trial. In this, the general opinion was more positive on the feedback from the application and based on the feedback received, they were also better able to define problems they faced while using the application. Some users who gave negative feedback on the amount of feedback mentioned that more detailed information would be needed, or that the feedback was given related to

features they did not like in the application (e.g. the need for WiFi-sensor being enabled when using the application), thus the negative feedback in this matter not always was on the amount of feedback, but more on the contents of it.

Table 5 User opinions on feedback from the application

	Question	Average	0	1	2	3	4
Feedback & Errors	The application provided enough warnings if it did not function properly (e.g. due to disabled sensors)	2,6	9 %	11 %	22 %	33 %	24 %
	The application informed clearly if different actions failed	2,8	9 %	11 %	22 %	33 %	24 %

In this trial, the users were moderately satisfied with the navigation of the application but no specific comments or improvement needs were defined based on the feedback received. Even though no major changes to the navigation or the paths in the application were made since the first trial, the rating for both the learnability and efficiency slightly dropped from the rating of the first application. For the rate dropping there is no clear technical reason other than different user group and possible less experience with similar applications.

Table 6 User opinions on learnability and efficiency

	Question	Average	0	1	2	3	4
Learnability and efficiency	Navigation is logical	2,4	0%	16%	31%	40%	13%
	I was able to avoid making the same errors again	3,2	9%	2%	18%	33%	38%
	After I learned to use the application, using it was efficient	2,5	0%	18%	29%	40%	13%

When evaluating the reliability of the application we noticed that the average opinion was slightly better than in the first trial. When asking more specifically about the reliability, many users said the crashes and technical problems mainly occurred during the first 1-2 weeks and in general the reliability improved towards the end of the trial along the new version updates of the application. Also, one version of the application included a minor bug that caused crashes in some devices, but this version was quickly updated and the crashes occurred mainly during a period of few days during the trial. The main issue in the reliability clearly was about the technical problems faced by some users.

As can be seen in the table below, 50% of the users did not experience any problems or only experienced technical problems in the beginning of the trial, whereas 28% of the users experienced them almost daily. Therefore, when looking at the future possibilities of the application, the technical problems faced during the trial are the main focus point for improvements based on the evaluation. However, with this statement it must be noted that

improvements were made already during the trial and the results partly emphasize the situation in the beginning of the trial.

Table 7 User opinions on reliability

	Question	Average	0	1	2	3	4
Reliability	Application was reliable and did not crash disturbingly often	2,3	0%	27%	36%	31%	7%
	Did you experience technical problems during the trial (Yes =1, No =0)	0,89	11%	89%			
	If you experienced technical problems or crashes, how often? (Almost daily throughout the trial = 1, Maximum once or twice in the first days = 4)	2,0	0%	28%	23%	40%	10%

Web application usability

The web application for public transport authorities was evaluated based on the opinions of HSL personnel in the user evaluation meeting. The meeting was organized after the trial period together with Mattersoft and HSL with 8 participants attending the meeting. In the meeting the main focus was on the utility and impact of the services and usability was only evaluated on a general level.

The layout of the web application was stated to be clear and to present all the necessary information in good and informative format. Also the navigation and filtering options were considered good and the design was well in line with the intuitive usage paths. One feature the representatives mentioned being useful addition would be the possibility to inform the responsible person automatically when feedback to the issue category they are responsible for is received. Other than that, the issue reporting information was considered well-structured for their needs.

For the routes view more filtering options would be wanted and the possibility to include several filters for one query was found useful in daily use. Therefore no major improvement needs of problems related to the usability of the web application were found during the evaluation.

Quality

For the second trial we have provided improved versions of the human activity recognition and jam detection. Statistics about the captured data show us that only 61 users did record and transfer recording to the server with the following details:

- 398 trips
- 229 h of total recording time
- 43.674.007 accelerometer samples
- 20.455.798 magnetometer samples
- 141.455 GPS samples
- 758.109 activity results
- 1.759 SLD requests

- 372 tags (manual selection of service line or activity)

When looking more closely to the SLD we find 195 distinct trips where a service line was manually tagged by a field trial participant. Out of these 195 trips there was an intersection of 147 trips where at least 1 request to the SLD API was logged and from 147 requests 54 responses coincides with the service line tag given by the participant. This means that 54 of 147 (=36.73%) service line detection requests were answered correctly.

For the HAR-samples we have 132 occasions on which a field trial participant manually selected an activity. From these, in 74 occasions there was at least one activity recognized in the 2 minutes before the manually selected trip. Out of this 74 occasions there were 42 cases (56%), where the correct activity was among those detected in the previous 2 minutes, and 26 cases (37%), where the tagged activity was the most common activity during the prior 2 minutes.

In both cases the measured precision is quite low (<40%). This result is largely caused to the effect that field trail participants mainly use manual tagging if they want to correct the recognized activity or service line. It is unusual to add a manual tag when the correct activity/service line was already shown in the display. If we make an assumption that in every recorded trip the user has corrected the suggestion if it is false, we would have the precision of 65% for the service line detection, resulting in the exact same precision as in the first trial and 85% for the HAR, resulting in much improved precision since the first trial.

When asked from the users about their observations on the detection, we can see that the impressions have been slightly more positive than based on the data inspection without the previously presented assumption. Based on the questionnaire 44% of the users stated the HAR-results being always or mainly reliable whereas 11% of the users had no opinion. Based on the comments some users who criticized the accuracy had misunderstood the functionality and the contents of HAR, which partly explains the number of lower ratings.

As for the service line detection, there is still need for improvement of the accuracy in the areas with several lines operating on a frequent basis. Those users who stated the accuracy not being reliable enough mentioned filling in the used line even before the detection gave results and criticized the detection automatically changing the line afterwards. According to user feedback, much false detection was done on the train routes or on journeys where two or more lines operate frequently on the same route and the detection was done on the alternative line. Despite the negative comments, there were several users who claimed both the HAR- and SLD- results being extremely precise in many ways, so also in this case the results of the detection accuracy are twofold.

For the traffic jam detection, in general the detection was relatively accurate according to those who had travelled in the affected areas during the alerts. Out of the users who were given jam alerts regarding the areas they currently were at, over 50% stated the detection being moderately accurate, whereas over 50% of the users did not travel on the areas where warnings were given and could not form an opinion on the accuracy.

As for the quality of the gathered data from the travelled routes we have noticed occasional jumps occurring in the GPS data, causing the travelled routes to be drawn falsely, thus making the analysis based on the routes to be challenging. Fortunately, this problem can be solved by implementing a filter on the application to ignore samples where sudden direction and speed changes occur.

Based on these results we can say the data quality and accuracy having improved from the first trial. However, there is still improvement needs in the accuracy of the data that is needed to be addressed if future use is planned. Additionally, filtering of the jumps in the coordinates should be addressed for better use of the data when inspecting the travelled routes.

Impact

Mobile Application Impact

When asking the users about the impact and utility of the application and the information it provided, the opinions varied greatly. Those users who experienced technical problems were more against the idea of using the application in the future whereas those who did not experience technical problems were satisfied with the application and found it somewhat useful.

When asked about the users' opinion on the features the application did not include, the general opinion was that there should also be journey planner and real-time timetable information available through the application. With these information, there would not be need to use several applications providing public transport information simultaneously. The users also stated that there should be better possibility to filter the incoming information manually so that general alerts and messages would not block the feed and take focus out of the important messages. With more information sources this aspect becomes even more important. However, the filtering of the messages was already provided in the prototype, but with the trial implementation all messages would appear as default and the filtered/personalized messages needed to be viewed from a separate view whereas user would get alerts of all messages. This is something that when turned the opposite way – user receiving alerts of only the personalized messages and having to search for all messages, would significantly improve the user experience regarding the information received.

The interaction with the authorities and other users is also considered useful. Users generally had positive impressions on the possibility to see other users issue reports, which increased the role of the application acting as a social medium. Also the possibility to get feedback on one's issue reports was considered important and positive comments on the meaning were given. With feedback, some users stated that it made them feel valued and that they had an impact on resolving the issue. However, as seen in the results, many users stated that they did not receive feedback from the authorities, even though 90% of the issues were given feedback. This means the feedback was not clear enough so that users would have detected it.

Table 8 User experience on utility and impact

	Question	Average	0	1	2	3	4
Utility	The application provides useful information and features	2,4	0%	13%	31%	44%	11%
	I would have been very satisfied with the application if I had not experienced technical problems	2,9	0%	4%	24%	47%	24%
	Personalized traffic information is useful	2,4	0%	24%	27%	38%	11%
	The application provides useful information for public transport user	2,7	0%	9%	29%	38%	24%
	The application provides a useful tool for interaction	3,3	0%	7%	13%	24%	56%
	Do you think the application at its current state brings enough value to use it continuously? (Yes = 1, No= 0)	0,3	69%	31%			
	It was useful to see the status of my issue report through the application	3,2	0%	4%	16%	40%	40%
	It was useful to see the feedback on my issue report through the application	3,6	50%	0%	2%	16%	31%
	It was useful to see issue reports of other users through the application	3,0	0%	9%	22%	31%	38%
	Augmented reality-based information brought additional value to stop information	2,5	0%	18%	31%	33%	18%

When asking about the opinion on the usefulness and interest to use the application, 24% of the users would be extremely satisfied and 48% somewhat satisfied with the application at its current status, whereas only 4% of the participants would not be satisfied with the application at all.

When summarizing the impressions regarding utility and impact we can clearly see that there is a need for this type of information source and services amongst the public transport users. Many users regarded the application useful either at its current state or after some improvements that are mentioned in this document. However, it is clear that the more information sources can be integrated, thus providing more widespread information regarding public transport, the more useful and meaningful the application is considered by the citizens.

In general, when comparing the three aspects evaluated based on the user experiences, utility/impact is by far the most positively rated aspect of them all. This outcome of the

evaluation process is by far the most valuable and important one as it clearly signals the importance and significant potential of the system once the detected issues are solved.

Web Application Impact

In the web application utility and impact analysis we have divided the evaluation into four categories based on the features provided in the web application: Issue reports, Alert tool, Routes view and general impression.

Issue reporting tools were considered efficient and to provide valuable information, many features such as possibility to view attached images and to include exact addresses were considered to bring much additional value when compared to existing feedback tools used by HSL. The general impression was positively surprised that the reports received during the trial and the quality of the reports provided extremely valuable information to authorities' attention.

The HSL representatives mentioned many of the issue reports to lead to actions more efficiently and faster than based on the reports received through existing channels. The general opinion was that it would be much more likely to receive more feedback and issue reports with the use of this type of application, if used by a large number of citizens.

Alerting tool and the possibility to contact users in real-time was seen excellent. Even though this feature was not actively used during trial, multiple potential situations where this feature would be valuable were easily identified. The impression was that with this feature interaction with the citizens increases significantly and also enables citizen participation also in other ways than traditional feedback systems and information channels currently used.

Regarding the routes view the feedback was also positive. The information is seen valuable and highly needed. It was stated that the data can provide significant advantages to the planning processes if enough users provide their movement data. It was, however stressed that with only a small number of users there is only possible to use the data on supportive role. For making changes or forming plans based on the data, there is a need to have thousands of users. For this reason it is important that the mobile application is well accepted by the citizens. Naturally also the accuracy of the information is of high priority and the detection algorithms must perform reliably.

It was seen that if enough data can be received, the value of the tools are enormous for constant monitoring of the usage services and also for long-term planning. Currently there are hundreds of thousands of euros spent every few years in surveys where mobility habits of citizens are defined. The results of these surveys are not only used for public transport planning but also as a basis for general traffic and city planning. With this type of information that is provided by the trial applications, most information could be reached automatically without separate surveys.

Generally the web application and the information provided was seen to bring much additional value to planners. The main improvement needs for the web application were considered to include integration between new and existing web based systems and more filtering options for the routes view. The integration to other systems would be strongly preferred if the services would come to daily use to avoid the need of having to use separate systems simultaneously. This aspect was identified already in the first trial evaluation but

due to the short-term trial it was agreed that no further integration would be done for the second trial.

2.5 Lessons Learned

During and after the trial we have received positive feedback from both citizens and authorities. It is clear that many parts and features need only minor adjusting before the service will be ready for market but it is clear that after these improvements the application has significant potential. Also it was noticed that the basis of the services seems to be well formed and generally in line with the current requirements of the end users. When evaluating in broader perspective the mobile application is seen to have met the requirements set in all aspects in a satisfying level. Also, as for the web application, the results are clearly in favour of the application meeting the requirements in all levels.

During the trial preparations it was discovered several times that within the three years of the project, many requirements have changed in the trial environment as new services and competing applications have emerged the markets. This naturally means there truly is potential and demand for this type of services, but also means the end users are better aware of different potential additions to the already defined features.

The technical issues of the mobile application faced during the trial are seen to be most critical issues during the pilot and can be overcome with some effort. It is clear that with a product brought to the markets, the users should not face the technical problems occurred in this trial. Possibility to use the tracking constantly needs to be further studied and solutions searched for this type of feature without risking the user friendliness with increased battery consumption. Preliminary studies for this solution have already started but reliable solution was not yet discovered before the trial started. Also, fine tuning in the detection algorithms and message distribution methods need to be made, and the possibility for user to manually define message settings.

It is clear that with the developed algorithms and information services included in the prototype, significant impact can be created for both authorities and citizens. The relevance of the success of the application is highly dependent on the acceptance rate of the citizens and high number of users needs to be gathered before the information extracted from the data has significant meaning in planning. Therefore, it is crucial to take into notice the obstacles and improvement needs defined by the citizens.

As stated in previous sections one major need for the citizens is to have a general public transport application that would provide them all possible information regarding public transport to make the application as attractive as possible. It is clear that including all possible information might become a too ambitious aim, but it must be noted that many information sources in this case have already been integrated and the most important sources still missing are only the real-time timetables and journey planner from the current prototype. With these features included, significant increase in utility can be reached already.

Also from the authority perspective, the more integration to the existing services and tools is done in the web-application, the more effective it is to use the application.

When looking at the trial we must also take into notice the general user engagement success in which there was some weaknesses. In the evaluation it was clearly noted that with the

problems that appeared during the trial with some of the users, the focus was easily taken away from the potential and the value brought to the user by the application. Unfortunately these issues did not occur in the testing phase as all mobile device models could not be tested and the true impact analysis was partially affected by this.

Another aspect is the interest towards the use of the application. We had total of 120 enrolled test users, but only 102 of them downloaded the application. Out of 102 users 61 users recorded trips with the application and we had around 60 active users per week during the trial. When taking into notice that the trial was extensively marketed before the start, we need to ask us why there was no more interest to take part in the trial? For this question there were three major reasons identified.

First of all, it must be noted that the trial was marketed as a trial with limited user group, not as a final and completely ready product that is launched to the market. This type of trials often are attracted by only the most enthusiastic citizens who are interested to find out about the new developments and willing to test new services without the recommendation made by a friend/peer or a significant price or reward.

Secondly, as we already have identified, the share of Android users amongst all smartphone users in Finland is much smaller than in many other countries and the share of Windows phones is much higher than elsewhere, so the number of potential users is also smaller. Last, we must also mention the competition of the same group of test users with another FP7 project trial organized in Helsinki almost simultaneously.

Based on these findings it is clear that the engagement of potential users was a challenging task and when taking into notice these challenges, we must come to the conclusion that the amount of users was, after all, rather satisfactory.

2.6 Summary of the Evaluation of Mobility

As a result of the evaluation we can state the trial having met the set goals and requirements on a satisfactory level and that the results of the trial were as anticipated. The evaluation has given us many valuable insights on the end user opinions and impressions regarding trial application, and also provided us great assurance on the importance of the developed information services provided through the prototype.

As anticipated, there are still a number of aspects to be looked more closely and some features that need to be adjusted based on the findings but the basis of the system and the developments made are well in line with the demand there is on the markets.

In the evaluation we have identified the following functions to still need some improvements to satisfy the end users on a higher level. Based on the findings in the evaluation, we identified that both the battery consumption and the appearance of technical problems related to certain devices still need to be more improved if the application is aimed for the markets.

For the route tracking, the accuracy of the algorithms has already improved but based on the results there are still some inaccuracies existing that need attention. Also, for the route tracking, the issue of GPS jumps needs to be addressed when developing the product further. When aiming for constant and active use of the application, there is also a significant demand for the possibility to track user movements constantly so that no

separate recording is needed. This is another important and interesting future development possibility that would increase the usability and also provide more data of the citizen movements if the tracking does not rely on users' memory.

The importance of integration with existing systems was also highly stressed in the evaluation by both user groups. During the project ever more information sources are available and with the popularity of open data, easily accessible to be used as additional information in the mobile application. The impressions were that there is truly a need for the services provided but the more information sources are used, the more users the application is likely to get. For authorities on the other hand, usability is greatly improved if there is more integration with the existing web-based systems and there is no need to use multiple systems or services simultaneously but most information and tools can be found under same address.

Finally, we must emphasize the overall result of the evaluation out of the three aspects evaluated based on the user feedback, utility/impact is the most positively rated aspect of all. This gives a clear sign on the importance and the potential the applications have once the above-mentioned improvements have been solved. When taken into consideration everything we have discovered during the evaluation period we are satisfied with the overall results in this trial and see that the evaluation has given us clear signs on how to continue the progress towards market ready product.

3 Urban Maintenance Use Case

3.1 Use Case Description

The Urban Maintenance Use Case aims to facilitate and extend the citizen-government dialogue regarding urban place and its maintenance. We have a mobile application for Windows Mobile, Windows Phone, Android, iPhone, BlackBerry and Symbian enabling citizens to report issues to the (local) government in an extensive and easy way. The application works in the entire Netherlands. Municipalities receive informative reports (with for example locations and photographs) containing a user-centric experience report of citizens about urban space. The application is extended with an advanced feedback mechanism. The connected municipalities can provide the user with status updates and textual feedback. Via this mechanism it is possible for municipalities to directly inform citizens through the mobile application. In sum this is a citizen experience mining application creating informative reports for municipalities. The reports enable municipalities to efficiently maintain urban space. This is facilitating the dialogue and active participation of citizens in their urban space.

Furthermore, a web platform is created in order to visualise and facilitate participation, collaboration and transparency for citizens and the municipality. The platform *Jij Maakt Utrecht* (JMU) visualises the city Utrecht on a map, showing the initiatives of citizens, professionals, entrepreneurs and other stakeholders. The topics of initiatives range from participation co-maintenance and liveability. Besides the mere visualisation of these topics, the platform offers possibilities to offer help to neighbours, to inspire and to share experiences. Overall, JMU is a platform for eGovernment dialogue and visualisation.

During the first field trial the focus was mainly on usability aspects and the offered functionalities, in comparison throughout the second field trial we collected and evaluated the data with a more holistic approach. The first field trial demonstrated that the usability and functionalities offered by Urban Maintenance are positively received by the involved stakeholders. The improvements of JMU are based on the analysis in D5.3. Furthermore we extended the field trial scope of Issue Reporting with new connected municipalities. These changes have been reported in great detail in D5.4. The approach of the second trial is mainly targeted to validate the goals and purposes of JMU and analysing the challenges to implement eParticipation from an organisational point of view.

Thus, with the different prototypes, the Urban Maintenance Use Case offers a variety of options and tools that provide citizens and officials options to communicate, share, and (re)-act upon essential information about their environment. This information encompasses a wide variety of input: ranging from citizen reports, experiences and citizen initiatives, to co-maintenance spots and government-initiated participation projects. All this mined information has potential to describe and grasp the ongoing events in urban space. The prototypes reinforce the citizen-government dialogue regarding public space.

3.2 Set Up of Trials

Urban Maintenance field trials

Our update of *Jij Maakt Utrecht* (JMU) is prefaced by the successful trial as reported in D5.3. Several insights were gathered and we fine-tuned and adjusted the requirements on multiple aspect. For the second field trial of JMU we realised 13 changes aiming to strengthen the web application. This update has been reported in D5.4. Furthermore, the Issue Reporting web prototype has been developed, which is used in an Urban Maintenance trial event and in the Mobility field trial. The developed features of the module have been reported in D5.4 as well.

During the second field trial run, we evaluate the changes for JMU and their effect on the user experience. Apart from this usability evaluation (reported on below), we specifically put efforts in exploring the embedding of JMU in the organisation of the municipality of Utrecht and leveraging the engagement for the participation domain within Utrecht. This organisational dimension is one of the more difficult challenges to tackle, especially since we are working in a changing, new and innovative age of we-government. Particularly challenging is the organisation of the accompanying changes in roles and responsibilities that result from participatory we-government. In this context, a trial is not as simple as it could be for an existing market for which a new software system is built. The difficulties and challenges were explored during the trial. In addition we created a model composed by the following elements; Attention, Interest, Desire, and Action (following the AIDA marketing model) in order to maintain and extend the impact that has been set in motion with JMU (see below).

After the results of the first field trial were processed (reported in D5.3, February 2014), the plans for the software updates and the planning of the second field trials have been set up. The public launch of JMU was planned in close cooperation with Utrecht for the 1st of June 2014. This launch event is described in great detail in the execution of the trial in section "Public launch of second field trial – 1 June 2014" below. In preparation for the public launch extensive data gathering has been done in order to create the best possible experience for the usage of JMU. This data gathering and content update has been done in consultation with Utrecht and the users of JMU. A detailed described is provided in section "Data gathering and content update" below. From the launch at the first of June, the evaluation of the results covers over 5 months of a public production environment. JMU is currently still live in production. In section "Overall summary of Jij Maakt Utrecht" below we report on the usability and user experience of JMU, and share the numerical impact. In section "Specific evaluation and engagement for participation on an organisational level" below, we report on evaluation efforts that have been taken for a specific and important aspect of JMU: the organisation of participation in the administration of Utrecht.

JMU ran for more than 5 months, the time-span of Issue reporting is even longer. The Issue Reporting has been trialled at large scale during the Live+Gov project. The first results have been reported in D5.3. Since the first trials, the following trials have been extended, meaning that we have data from spring 2013 until October 2014. The update of these results for the entire period is provided in section "Overall summary of Issue Reporting" below. Section "Added value of feedback and citizen-government dialogue", describes in more detail a particularly important aspect of issue reporting. The overall insights will be

strengthened with a qualitative impression regarding the value and importance of the advanced feedback mechanism, which opens the mobile citizen-eGovernment dialogue. In section “Issue Reporting Web module” the evaluation insights about the web prototype, gathered in both the Urban Maintenance Use Case as well as the Mobility Use Case, are reported. As reported before in D5.3, the trial is running in a production environment therefore we have to act carefully with functional and technical innovations for obvious socio-political reasons. The upside, this enables the possibility exploit the large existing user-group on a running system that is well known. In order to trial in a small and more safe environment with the newly developed Web Module, we held a specific event in Maastricht and the module is also tested in the closed environment of the Mobility Use Case.

The Urban Maintenance Use Case has taken many and various efforts to engage users and stakeholders. Most of these different sessions and methods serve several goals:

- disseminate our use case
- engage people using the use case prototypes
- as source of information for the evaluation

These efforts are described in more detail in section , which reports on the execution of the field trial.

Evaluation

The evaluation of the Urban Maintenance Use Case takes into considering multiple aspects. First, the applications are evaluated from a functional perspective. This encompasses the overall usability and functionalities delivered with the applications. Second, the overall impact of the use case is described. This involves the total number of users and the overall usage numbers of the applications. Third, we identified and researched the key facets of the use case, based on the outcomes from the field trials for both JMU and Issue Reporting. Specific for JMU, the topic consists of participation and organisational challenges for the target groups.

Participation is assessed as particularly important because it is a trending topic among municipalities in the Netherlands; each municipality is in the process of embedding participation in their organisation. JMU is a great tool to support municipalities following this trend. In order to gain insights in the obstacles for municipalities, we undertook specific evaluation and engagement sessions. The specific topic of interest for Issue reporting is to explore the added value of feedback and dialogue options (the core of the use case) for the involved stakeholders. These efforts focussing on specific topics of the use case are particularly important for the viability of future exploitation efforts. Besides, the use case is covered with these three evaluation aspects: we present the functional user experience and usability of the Live+Gov prototypes, we are able to describe the impact of the use case and we have specific insights on important topics of the use case that help with future exploitation efforts.

For the evaluation we have sent out more than 200 questionnaires, for which we have a response of 45. We have analysed more than 7,500 twitters and more than 600 appstore reviews. More than 50 evaluation and engagements interviews and events took place. Furthermore, we have the insights from issue reporting as it is trailed in Finland. Lastly, we

have over 48,000 issue reports that have been sent during the trial, for which more than 36,000 are provided with feedback from the municipalities.

Data gathering and content update for Jij Maakt Utrecht

In preparation for the public launch data was gathered in order to have the best possible experience for the usage of JMU. This process of data gathering and content updates were performed in close consultation with members of the municipality of Utrecht and the users of JMU.

Updated data for "Liveability initiatives"

For the updated version of JMU we updated data of the municipality of Utrecht in JMU. In the first trial it was planned to have direct input in JMU with administrative data. As described in D5.3, no data was available. This was solved by organising a data collection event. For the second trial, we wanted to update the data for Liveability initiatives. The liveability data shows initiatives of citizens, which can be financially supported by the government from Liveability Budgets. By nature, this is historical data and for the first trial we had the data for 2012. For the second trial we wanted to update this with the 2013 information. The municipality of Utrecht is able to provide this data, however it takes roughly 3 to 6 months to process this data. The data was available for the updated version of JMU, which we managed to collect and visualise in JMU. The municipality of Utrecht provided raw data, which we had to process in order to import. This involved setting start and end dates, giving each initiative a title, converting the raw data to fit the JMU data model and mapping all initiatives on associated themes. Overall, the data contains 900 liveability initiatives. At the moment of publication the 2013 data, the 2012 data was deactivated.

One of the major improvements that we realised in collaboration with the municipality of Utrecht is the publication of the actual budgets for the majority of initiatives. The publication of this data is highly unique and adding transparency. An example of a liveability initiative with the actual budget is shown in Figure 3.

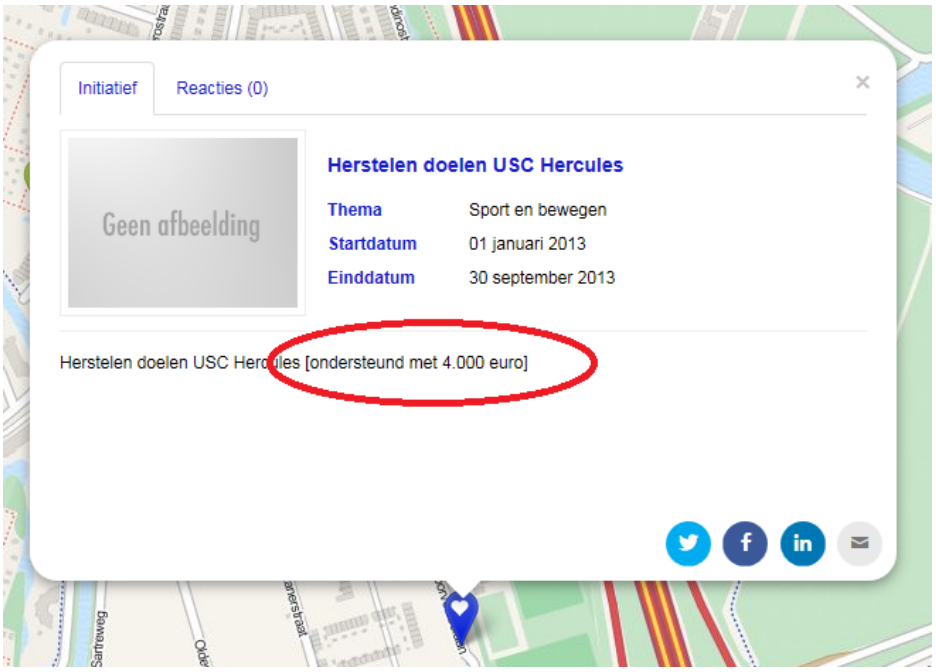

Figure 3: Liveability initiative with budget in JMU

Data checks and content consistency updates

Existing data has been checked and aligned with the initiative owners. Each owner of an initiative has been contacted to maintain their initiative on JMU and set the correct start and end-date of the initiative. This data was needed in order to be able to present the dynamic character of the JMU information. This improvement was analysed in the first trial. Apart from the start and end-dates, each owner has been asked to check the links to external information, update descriptions and to add pictures to the initiative in situations where data was outdated. This resulted in the addition of 37 pictures to the total of 65 participation projects and the update of 10 links. Lastly, we have performed a check on the length of titles of initiatives because in some screens an extensive length of the title was not presented correctly. It turned out that this was a theoretical issue: in all production data the length of the title was below the cap of 50 characters. In the current JMU version this cap is also enforced when adding an initiative.

3.3 Execution of Trials

Public launch of second field trial – 1 June 2014

One of the first public appearances made by the new installed alderman of Participation, Margriet Jongerius, was the public launch of the second field trial of *Jij Maakt Utrecht*. At the same time, the city of Utrecht celebrated its 395th birthday. On 1 June 2014, the alderman, active citizens and other stakeholders gathered to celebrate this and publicly launched the renewed version of *Jij Maakt Utrecht* (see Figure 4). The speech of the alderman, during which she praises the flowing energy and initiatives in the city Utrecht, was followed by the presentation of six initiatives by active citizens. These initiatives are published on *Jij Maakt Utrecht*.

Figure 4: Impression of the public (re)launch of *Jij Maakt Utrecht* on 1 June 2014

With this (re)launch, the webapplication is no longer referred to as a public beta version, but is taken to the next level and named a real-life public testbed. To communicate this clearly to the stakeholders, the application is renamed from *Jij Maakt Utrecht: public beta* to *Jij Maakt Utrecht: maken we samen* (*Jij Maakt Utrecht:* we make it together), see Figure 5.

Gemeente Utrecht Jij maakt Utrecht maken we samen!

Figure 5: New logo: *Jij Maakt Utrecht*: we make it together

The City Council coalition programme between the different political parties was published recently, titled "*Utrecht maken we samen*" (We make Utrecht together). This is no coincidence: *Jij Maakt Utrecht* has great political support and during the field trial period, steps are taken to further embed *Jij Maakt Utrecht* into the organisation. An important milestone is that the webapplication is included in the municipality's program for 2015.[1]

Updates of data during the field trial

As described above, before the start of the trial we updated all published initiatives and projects on *Jij Maakt Utrecht*, for two reasons:

To add a start- and end date for all initiatives and projects, ensuring that the project was published in the right actuality-filter.

[1] The program can be downloaded at (in Dutch):
http://www.utrecht.nl/fileadmin/uploads/documenten/2.concern-bestuur-uitvoering/Financien/2014/Begroting/Programmabegroting_2015.pdf?osadcampaign=bgt

To add photos for a more attractive and informative overview in the Gallery-view of *Jij Maakt Utrecht.*

During the field trial period, an update of Open Data has been executed for the budget information of the municipality of Utrecht.

Information sources for evaluation and engagement

During the field trial period several evaluation meetings are set up to collect qualitative information. The second field trial is focusing on the organisational aspect. During summer 2014 we organized a campaign in the municipality of Utrecht during which we interviewed several people across the organisation about challenges of participation on an organisational level (interviews of over 1 hour). In Table 9 below, the evaluation information sources are listed.

Date	***Methodology***
14 March 2014	Evaluation session with key stakeholders municipality Utrecht about second field trial
18 April 2014	Evaluation session about Participation projects
22 April 2014	Evaluation session about Liveability Initiatives
25 April 2014	Prototype evaluation session with key stakeholders municipality Utrecht
28 April 2014	Evaluation Session about Initiatives
12 May 2014	Interview with key stakeholder in evaluation of participation projects and benchmarking municipality Utrecht
19 May 2014	Evaluation acceptance meeting for public launch of improved version of *Jij Maakt Utrecht*
1 June 2014	Public launch of second field trial *Jij Maakt Utrecht*
2 July 2014	Attending citizen information evening for participation project municipality Utrecht
24 July 2014	Interview with key stakeholders in *wijkambities* and *wijkactieprogramma's* (plans and action programmes for district ambitions) municipality Utrecht
25 July 2014	Telephone interview with participation project leader
28 July 2014	Interview with participation project assistant
28 July 2014	Telephone interview with district advisor
28 July 2014	Interview with participation project leader
28 July 2014	Interview with participation project leader
29 July 2014	Interview with participation project leader
29 July 2014	Interview with participation project leader

30 July 2014	Interview with district manager
31 July 2014	Interview with participation project leader
31 July 2014	Interview with participation project leader
4 August 2014	Interview with participation project leader
5 August 2014	Interview with participation project leader
5 August 2014	Interview with participation project leader
5 August 2014	Interview with counsellor of Nature & Environment Communication Department
7 August 2014	Interview with participation project leader
18 August 2014	Interview with participation project leader
19 August 2014	Interview with participation project leader
21 August 2014	Interview with participation project leader
21 August 2014	Interview with participation quartermaster for 25 projects in Utrecht
25 August 2014	Interview with participation project leader
25 August 2014	Interview with participation project leader
26 August 2014	Interview with participation project leader
27 August 2014	Evaluation of summer campaign results with key stakeholder municipality Utrecht
28 August 2014	Interview with participation project leader
28 August 2014	Interview with participation project leader
4 September 2014	Telephone interview with key stakeholder in *wijkambities* and *wijkactieprogramma's* (plans and action programmes for district ambitions) municipality Utrecht
9 September 2014	Interview with Manager of Project Management Department municipality Utrecht

Table 9: Evaluation information sources for *Jij Maakt Utrecht*

Furthermore, we have gathered data by quantitative methods:

- Distributed surveys to registered users:
  - Public officials
  - Citizens – initiators
- Data about usage of *Jij Maakt Utrecht* from the database and web analytics.
- The evaluation aspects in these quantitative methods are based on the evaluation aspects presented in Section 4.1.3.1 of D5.3 (pp. 55-57). The reason for this is that results of the second field trial can be easily compared with results of the first field trial.

Events

Next to specific evaluation meetings, we have organised and participated in several events during the field trial with *Jij Maakt Utrecht*. An impression of these events can be found in Table 10, Figure 6, Figure 7, and Figure 8.

Date	***Event***	***Location***
9 April 2014	Annual national conference Government & ICT	Utrecht, NL
17 April 2014	A small bite for Initiatives	Utrecht, NL
1 May 2014	The value of neighbourhood websites	Utrecht, NL
26 May 2014	Exploitation meeting with societal organisation 'De Slinger'	Utrecht, NL
1 June 2014	Launch of the improves version of JMU	Utrecht, NL
11 June 2014	National conference on Open Data	Amersfoort, NL
17 June 2014	National Conference of Association of Dutch Municipalities	Hendrik-Ido-Ambacht, NL
21 June 2014	Day of the Architecture	Utrecht, NL
2 July 2014	Citizen participation evening	Utrecht, NL
10 September 2014	Pre-party of festival We Make Utrecht	Utrecht, NL
8-9 October 2014	Day of the public space conference	Houten, NL
23 October 2014	Publication in Digital Dialogue Almanac	Nationwide
5 November 2014	Congress National Public Space	Almere, NL
1 December 2014	Festival 'We Make Utrecht'	Utrecht, NL

Table 10: Events for *Jij Maakt Utrecht*

At these events, we have gathered many real-life experiences from citizens with *Jij Maakt Utrecht,* whilst meeting the goals for dissemination and exploitation. The results from these events are incorporated in the next section 3.4.

Figure 6: Event: the value of neighbourhood web sites

Figure 7: Event: Publication in Digital Dialogue Almanac sent to all municipalities and book launch event

Figure 8: Event: Pre-party for Festival 'We Make Utrecht'

3.4 Results of Trials *Jij Maakt Utrecht*

For the second field trials we have done major changes to *Jij Maakt Utrecht*. These changes are described in D5.4. The new version of *Jij Maakt Utrecht: We make together* has been presented at the city's 892nd birthday by the alderman of participation. The changes in the application for the second field trials are based on the evaluation results from the first field trials. They are supposed to improve the application significantly. This is measured by comparing the evaluation results of the first field trials with the evaluation results of the second field trials.

Evaluation results are gathered in both quantitative and qualitative ways. Below, we present the quantitative and qualitative results on usability, user experience and impact. The results are based on questionnaires, web statistics from *Jij Maakt Utrecht*, interviews and meetings specifically for evaluation and events. Afterwards, we present qualitative results, specifically gathered in 21 interviews with project leaders from the municipality of Utrecht.

Overall summary of Jij Maakt Utrecht

Usability and user experience

Our goal with the second field trial is to improve *Jij Maakt Utrecht* substantially on many aspects. One of these aspects is the usability of the application. The changes that are made to improve usability further described in D5.4. In Table 11, the changes for the second prototype of *Jij Maakt Utrecht* are described and linked to the usability aspects.

Usability aspect	Change name
Efficiency	Change 4 – Better presentation of the dynamic character of JMU information / what is new
	Change 5 – On-hover tooltip information
	Change 6 – Free text filter search functionality
	Change 9 – Notifications on reactions
	Change 11 – Considering Satellite map
Feedback & Errors	Change 13 – Browser check
	Change 3 – Clarity of the concept and goals of JMU
Learnability	Change 3 – Clarity of the concept and goals of JMU
Memorability	Change 10 – Investigation of support of Mobile (tablet) devices
Reliability	Change 13 – Browser check
	Change 7 – New 'style' of the webapplication
Satisfaction	Change 9 – Notifications on reactions
	Change 1 – Deeplink possibilities
Utility	Change 3 – Clarity of the concept and goals of JMU

	Change 4 – Better presentation of the dynamic character of JMU information / what is new
	Change 6 – Free text filter search functionality
	Change 10 – Investigation of support of Mobile (tablet) devices
	Change 11 – Considering Satellite map

Table 11: Usability aspects and the related changes for the updated version of JMU (D5.4)

Usability is measured by a total of 18 questions in a user survey, divided over seven topics. The questions about usability are exactly the same as for the first field trial, to ensure the comparability of the results and to check whether usability has improved. This survey has been sent to over 200 users; from these, 48 completed the survey. This is a response rate of nearly 25%, which is generally seen as very high for a survey. The description on the method and the exact scores on usability in the first field trial, can be found in D5.3. The results for the second field trial are presented below in Figure 9.

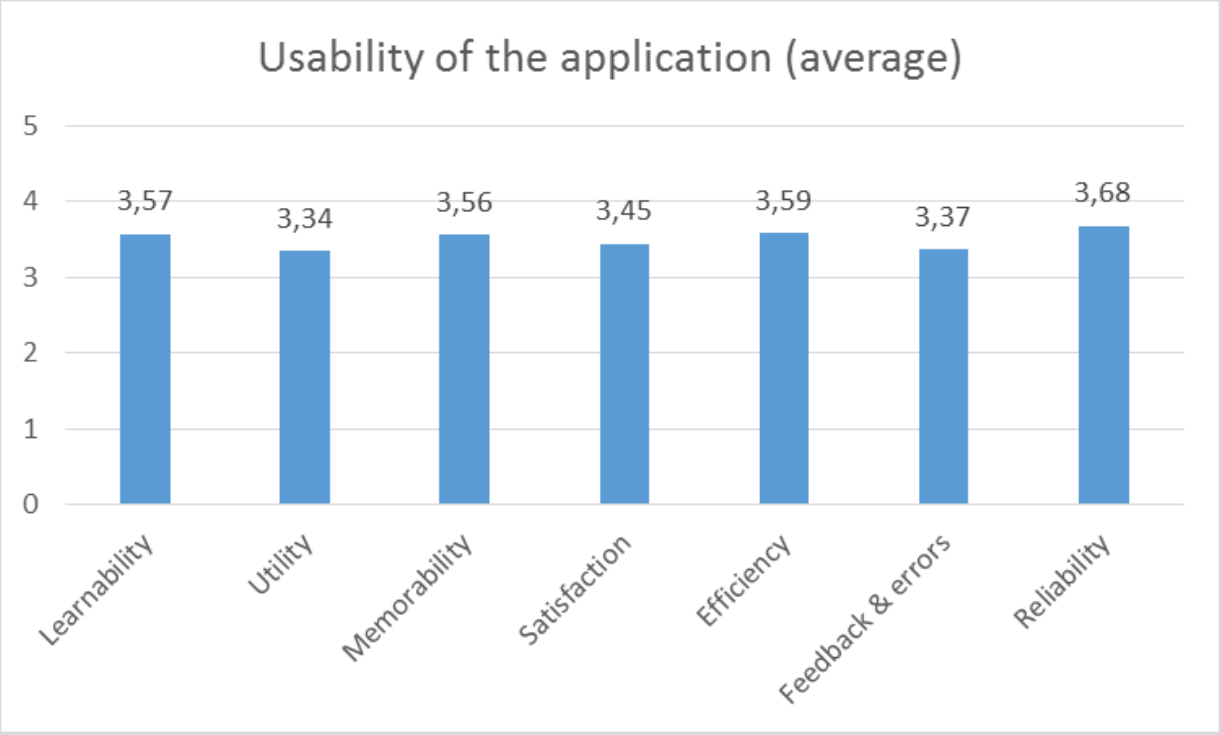

Figure 9: Average score on usability topics for *Jij Maakt Utrecht* in the second field trial (scale 0-5, 5 is maximum)

The average score on usability has improved from 3.33 in the first field trial to 3.51 in this field trial. Furthermore, all individual scores on the seven usability topics have significantly improved since the first field trial. This is a very positive result, meaning that on average the users of JMU experience all changes (on every usability topic) as an improvement.

Additionally, we asked people's opinion about the new version by conducting interviews, attending events and evaluation meetings. The user experiences gathered from these activities provide interesting insights, described below.

Accessibility and clearness of the application

When people are visiting *Jij Maakt Utrecht* for the first time, they are in doubt about the meaning and purpose of the application. Some feedback is provided suggesting to start with a *'first time visit'* pop-up where we explain the application. On the other hand, other visitors are glad that we are not tiring them with textual explanations and give them the opportunity to start directly on the map. Most people consider the clearness and accessibility improved:

- "It looks good and accessible! Compliments"
- "Easy to use"
- "It is a bit more intuitive"
- "JMU is a nice, inviting website. As a visitor you see lots of actual things that are happening. Very positive! Although, I feel not invited to look at it every day or to use it actively. For me, it stays passive thus."

Further feedback about adding an initiative is positive at first: many citizens describe the first steps to place an initiative as very easy. The possibility to add photos and links is not always easily found. However, when citizens are familiar with this option, they really appreciate it.

Published information on Jij Maakt Utrecht

However, there is room for improvement in the information that is published. The overview is not complete and many people expect an improved value of JMU if the overview of information is more complete.

- "The overview is not complete."
- "There is not enough information published on JMU: no enough projects, but also not enough information per project to do something with it."
- Furthermore, people mention that they are interested in what initiatives are added since their last visit. We have improved this by adding filter options, however this feedback is still given.
- "The platform is there, however it feels a bit passive. The layout and photos are very inviting, but I do not feel the call to react…"
- "Publishing the dates is nice, however in many cases quite general."

Even though the information overview is not complete – and does not claim to be – some respondents are convinced about the value of *Jij Maakt Utrecht* in seeing what is going on in Utrecht:

- "I am interested in what other people do. That is how I found JMU. JMU has created a nice search engine for this."

In general people are positive about publishing their initiatives on JMU when asked. This is further substantiated by the questionnaire. The average score on this question is 3.7 on a scale from 1 to 5. This is well above average.

Goal of the application

On the question if JMU succeeds in its goal, the average score is 3.2 on the scale from 1 to 5. This is slightly towards the level "Agree", nevertheless there is room for improvement. When examining the qualitative results, it seems that improvements are mainly to be made in telling people what they can achieve when they publish their initiative on *Jij Maakt Utrecht*.

Next to that, the website is not yet known by the general public. This shows substantial possibilities for improvement.

- "It is not clear to me what I can do next when I publish my initiative."
- "The website is not yet known to the great public."

Opinion about other functional changes

The new and fresh layout of *Jij Maakt Utrecht* is also greatly appreciated by many users. In fact, it is one of the things people mention as most appreciated change.

- Layout
  - "Nice that it starts directly with the map and no textual information in which you are not interested as a visitor"
  - "Nice overview to make contact with each other."
- Improvements can still be made on the gallery. One user states it is a bit hidden, while it is a key feature of *Jij Maakt Utrecht*.
  - "The gallery is a bit hidden. Can't the website open with the gallery?"

Impact

During the field trial period, citizens and public officers added new initiatives/projects and/or updated their existing initiative or project. These updates were all done by citizens and/or public officers themselves. In total this contains 74 projects (see Table 12).

Type (Initiative, Co-maintenance, Participation)	***Number of initiatives added/updated during the field trial***
Initiative	46
Co-maintenance	13
Participation	15
Total	74

Table 12: Number of updates in the initiatives and projects published on *Jij Maakt Utrecht*

Number of participants and other indicators for impact

Next to the number of visits, other indicators for the impact of the field trial are presented in Table 13.

Indicator	Value
Number of registered users	208
Number of reactions	60

Table 13: Other indicators for impact of *Jij Maakt Utrecht*

As can be seen from Table 13, at the end of the second field trial the application has 208 registered users. Of these 208, 11 did not confirm their email. Thus, *Jij Maakt Utrecht* has 197 active registered users. At the end of the first field trial, there were 112 active registered users. This means an absolute growth of 85 users and a relative growth of 76 percent.

With every initiative and project published on *Jij Maakt Utrecht*, there is a possibility to place a reaction. A total of 60 reactions to 32 different initiatives have been placed by users on the webapplication. To keep this accessible, it is not necessary to register if one wants to place a reaction.

Furthermore, the total number of initiatives published on *Jij Maakt Utrecht* is 1,562 (see Table 14

).

Type of information on JMU	Number of initiatives
Initiative	117
Co-maintenance	469
Participation	76
Liveability initiative	900
Total	1,562

Table 14: Number of initiatives published on *Jij Maakt Utrecht*

Unique visitors for the updated version of JMU are summarized in Figure 10.

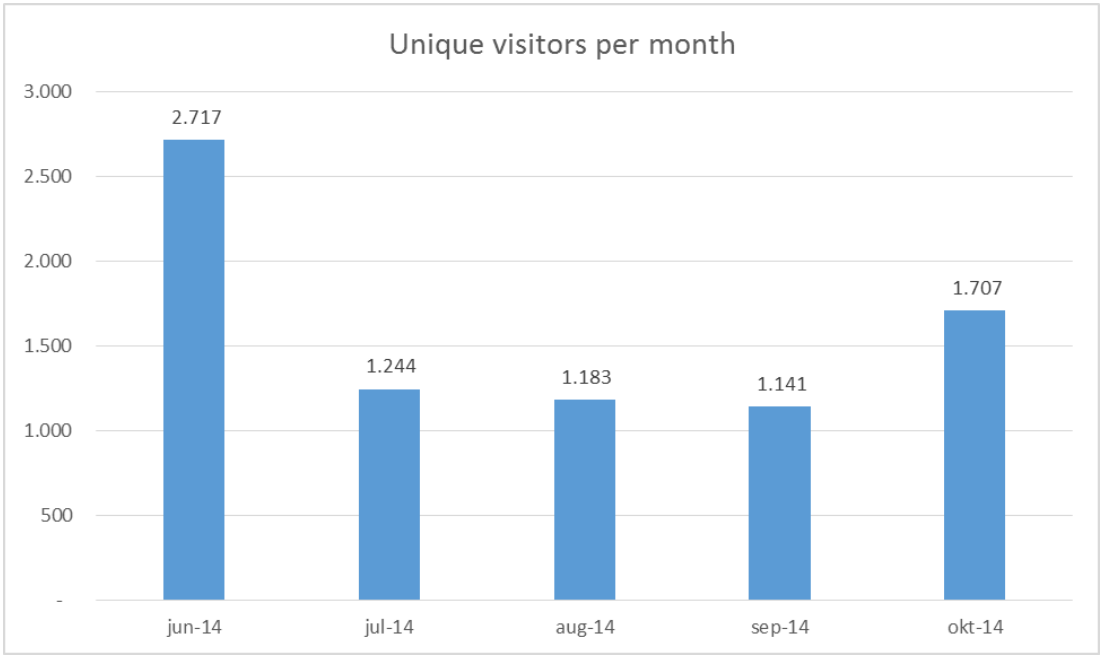

Figure 10: Unique visitors for the new version of *Jij Maakt Utrecht*

From Figure 10, it clearly follows that a peak in visitors is in the month June. Further examination of the statistics shows that this peak is a direct effect from the communication moment of the public launch on June 1, 2014. In the days after this moment, *Jij Maakt Utrecht* has been visited significantly more often than average in the period.

Specific evaluation and engagement for participation on an organisational level

In several evaluation meetings with the municipality of Utrecht, key persons lay emphasis on the fact that they see participation as a core business for their municipality. Therefore, we have done specific evaluation and engagement for participation on an organisational level, by interviewing 27 key stakeholders and project leaders within the municipality of Utrecht. The results of these interviews are presented in this section.

Goal and purpose of Jij Maakt Utrecht

The project leaders were interviewed to capture their opinion of the application, their recognition of the brand, scope and purpose of JMU. In this section, their opinion about the goal and purpose of JMU is described. Furthermore project leaders evaluated the usability of the application. These results are described in section "*Usability and user experience*" below.

Opinion about goal and purpose of Jij Maakt Utrecht

The reactions on the goal and purpose of JMU are positive-critical. Positive, because they clearly recognise the need of the application: publishing *'what is going on in Utrecht'* based on different types of information. They describe the application as highly valuable for the city, mainly its inhabitants and the City Council. Critical, because they wonder whether they (the project leaders) are the right persons within the municipality to add content. Also, the exact value of their role for JMU is not completely clear.

The project leaders question their leading position to publish the project, due to the current organisation of participation in the municipality (see also section "*Organisation of participation within the municipality*" below on organisation of participation in Utrecht). There are multiple reasons for this questioning:

1. Other persons obtain more leading roles in publishing the project:
    a. Neighbourhood department/office, because they have a clear idea about what is going on in the neighbourhoods
    b. Professional department, because that is where policy is developed and projects are defined. Project leaders are passers-by and sometimes project leaders succeed each other. To ensure continuity of the information-flow it is necessary to have a direct interaction with the client – i.e. the professional department.
    c. However, the director of one of the neighbourhood departments is convinced that project leaders should publish the projects. "They have the most actual information about their project."
2. The role of the project leader is to finish a project according to the project plan – which is agreed upon by the professional department that defined the project.

a. "Publishing your project on *Jij Maakt Utrecht* should actually be part of the assignment."
b. "As long as publishing your project on *Jij Maakt Utrecht* is without obligations, the list never will be complete. If you want that, in fact our management should oblige us to publish our project."

3. The benefits for the project leaders are on beforehand not direct clear and/or convincing enough.
   a. They describe the benefits for the city, but don't recognise benefits for themselves. Some project leaders have published their project during the interview or short time after – more with the approach "why not", "fine" and "the more places I publish the project, the more people know of the project, the better".
   b. The experimental phase of JMU makes it difficult to encourage project leaders to publish their project, mainly because this is not an established application and many experiments pass by.
   c. "Once in a while an experiment passes by, most of the time it does not reach success."

Project leaders distinguish benefits and possible value for them personally, for the organisation and for society:

- See what is going on in the surroundings of your project
- One can view other projects and initiatives and contact the owner, if desired. Not all projects publish the details of the owner, but the owner gets a notification if a reaction is placed with their initiative or project.
- Transparency towards citizens and other interested parties about what the municipality is doing.

Organisation of participation within the municipality

Within the municipality of Utrecht participation is an important subject on the political agenda. The municipality has gathered experience with participation as from 2010 with the guidelines of the *Utrechtse Participatiestandaard*[2]. This was a reason for the Council to formally ratify the use of participation in developing policy and frameworks. With the *Participatie- en Inspraakverordening*[3], which became effective as from August 2, 2013, participation is legally embedded in the organisation. The *Participatie- en Inspraakverordening* considers participation in a broad sense, which includes more than solely citizen involvement. It is really entailed to "give more space for initiatives and co-creation, and to reach larger groups of people in a fast way with the use of new media" [23].

[2] The Utrecht Participation Standard is developed as a guideline for public officials and was ratified on April 8, 2010. When public officials use participation in their projects, they should use this standard as a guideline. See **http://www.participedia.nl/utrechtse-participatiestandaard**

[3] Municipal regulation on Participation and Citizen Involvement. This is formal policy in the municipality of Utrecht as from August 2, 2013. See for the formal document: **http://www.utrecht.nl/fileadmin/uploads/documenten/1.concern-bestuur-ontwikkeling/Wijken/Participatie/ParticipatieEnInspraakverordening2013.pdf**

In short, participation is mandatory for public officials in the development of policies and policy frameworks. This is another large step made in the entire process of opening up the citizen-government involvement and dialogue, as well as active citizenship.

Process of participation

Previously, the formal part of participation has been described. When using participation in projects, project leaders are supposed to use the guidelines of the *Utrechtse Participatiestandaard*, which is broadly based on the extensive literature on participation ladders (see for instance [24,25,26,27]). However, it is derived from interviews that most project leaders do not follow any predefined process in their projects. Most of them use common sense when it comes to applying participation. Moreover, they want to be as flexible as possible and a predefined process can interfere with that flexibility.

Beside, participation is very dependent on the citizens themselves. At first instance, the municipality sets the degree of participation in a project. However, this does not always match to the degree of influence that citizen's demand. In some cases, citizens just do not want to participate. The municipality can design a very broad participation process, but if citizens do not want to cooperate this is of little use. On the other side, it can happen sometimes that a citizen demands a way to contribute to the project, while the municipality did not design a large participation trajectory. Project leaders mention that they need some flexibility to cope with this. Some illustrative quotes taken from the interviews about using a predefined participation process:

- "Participation is for a large part common sense."
- "I use common sense in participation: I think about how I would want it if I were a citizen."
- "I know that there are ladders of participation, however I don't use them."
- "Sometimes I can only inform citizens about some part of my project. If a citizen has a great idea at such a meeting, than you should do something with that, right?"
- "I do participation intuitively."
- "A participation process can be very narrow: citizens have to participate or cannot participate."

Existing communication channels towards citizens

One of the goals of JMU is to show citizens where they can have influence within the municipality[4]. The interactive portal JMU, where projects are actively published, is a new digital communication channel in the municipality of Utrecht. Traditionally, participants (active citizens) are approached on basis of location. The most common way is to send a so-called *Wijkbericht* (neighbourhood message) by mail to the inhabitants within a certain radius surrounding the location of the project. This neighbourhood message is typically sent to adjacent streets, but sometimes it is sent to an entire neighbourhood. Furthermore, stakeholders are selected by a targeted approach. This applies especially to organized

[4] As has been reported in previous deliverables D5.1, D5.2, D5.4.

groups, like (associations of) entrepreneurs, sports clubs, or neighbourhood associations. Next to that, this is a key role is for Neighbourhood Councils: they are supposed to stay in close contact with the citizens of that neighbourhood.

According to some project leaders, finding the right citizens is not that hard actually, because of two reasons:

- Most active citizens are organised in some way, and
- "I am confident that interested people will know how to find me."

On the other hand, when asked how citizens should know about participation projects, project leaders expect an active attitude of citizens: "A citizen that is willing to participate is interested in their direct environment and thus should show some initiative himself by actively searching for projects."

Issues

Project leaders face different issues with participation trajectories in their projects. The first and foremost issue has to do with expectations of citizens as well as the City Council. These are unrealistically high because of several reasons.

First, the project leaders expect that participation will automatically lead to more public support for the plan. In practice, this is not always the case. There will always be people that oppose the plan; within a project it is hardly possible to satisfy all stakeholders to their full extent. As one project leader states it: "*Some things cannot be solved, even by an extensive participation trajectory.*"

Second, citizens sometimes overestimate their actual influence. In many projects, they are just one of the stakeholders that are involved. In some cases other interests can be of more importance than those of the citizens (e.g. real estate agencies or National Rail Company).

Third, even with sufficient influence, citizens sometimes do not agree with the extent of influence. Citizens can participate within certain boundaries and a project leader needs to clarify these borders. If participants do not agree with these boundaries in the first place, and they feel they need more space for participation, participation will be a very cumbersome process. However, in some cases this can also work the other way around. One project leader points out that she easily scored success in one of her projects. What citizens wanted, she could deliver 1 on 1. In this way, everyone (citizens and City Council) were very satisfied with the participation process. However, according to the project leader, this had more to do with satisfaction about the outcome of the project than satisfaction with the participation process itself. In short, success of participation is too much associated with satisfaction about the outcome of the project instead of about the process itself. And satisfaction with the outcome of the project is something that the project leader can hardly influence.

Finally, when the participation trajectory is finished, a definitive plan is made and presented to the City Council. In parallel, a formal process of citizen involvement is in place, which is the final legal possibility for citizens to give their opinion about this plan as a whole. The City Council follows the idea that no formal objections to the plan implies that participation has succeeded. Contrary the City Council interprets formal objections to the plan as a failure of participation. However, this is not the case. This has to do with the first reason: it is hardly

possible to satisfy every stakeholder to their full extent. Some stakeholders use this legal opportunity to exert influence on the plan itself.

Next to managing the expectations about participation towards all stakeholders within and outside of the municipality, a very important issue deals with trust between the stakeholders. All project leaders emphasize that they can only engage in participation on the basis of trust. In some projects this trust is built on over a long period of time. If citizens have lost their trust in the municipality, it is very hard to recover this relationship. This issue interferes excessively with the process of participation.

According to many project leaders, trust can be gained by maintaining an open and honest attitude towards citizens. Furthermore, a project leader has to be clear about the dilemmas that are apparent in the project. If citizens have all information about these dilemmas, they can cooperate and contribute in a useful manner to the project. Citizens will tend to put their own interest above the collective interest, but if they are aware of the dilemmas, they are able – and in practice also willing – to contribute in a cooperative manner.

The final issue with participation is that it is very dependent on citizens themselves and the willingness to contribute. Due to several reasons, in some areas or with some projects, citizens are just not willing to participate. For instance, in cases where many projects follow each other, citizens can be "tired of participation", as one project leader states it. In other areas language barriers or cultural reasons can be of large influence on the willingness of citizens to participate. Therefore, with every project, participation should be adjusted to the specific situation of that area.

Support from elsewhere in the organisation

Many project leaders emphasize that little to no support is needed from the municipal organisation for the participation process. It is good that other departments are involved and think along, however this is mostly limited to the content or the outcome of the project, and not to the process of participation.

Related quotes to this matter:

- "Some of the principals emphasize participation too much; it is then a goal instead of a means."
- "Support of neighbourhood departments is essential in participation. I have once had that the neighbourhood advisor of within the municipality had no time to contribute to my project and that did not help with my project."

Places where project is registered

In principal, project leaders are not obliged to register their project. Some projects have web pages, but not all. Also, neighbourhood departments are supposed to keep track of the projects in their neighbourhood. During the interviews, two project leaders knew of internal lists within their department, where projects are gathered.

From this, it can be concluded that several lists of projects exist within the municipality. However, there is no central list where is kept track of all projects that are going on. Furthermore, project leaders have no experience in registering their project.

Ideas to encourage other project leaders to publish their project

About 45% of the project leaders that have been interviewed were already familiar with JMU prior to the interview (9 out of 21). The others (12 out of 21) did not know that JMU existed, or could not remember that they have heard about the application before. Out of these nine project leaders, five had taken a look at the application prior to the interview. None of the project leaders had published a project at JMU or has experience in how to publish an initiative or project.

Asking project leaders to publish their project at JMU, means a 'call to action' of project leaders. A well-known and widely used model in marketing for putting people to action is the AIDA-model [28]. Before people go to action, they should be familiar with the product (Attention), should be interested in the product (Interest) and should want the product (Desire). The four steps are shown in Figure 11 below.

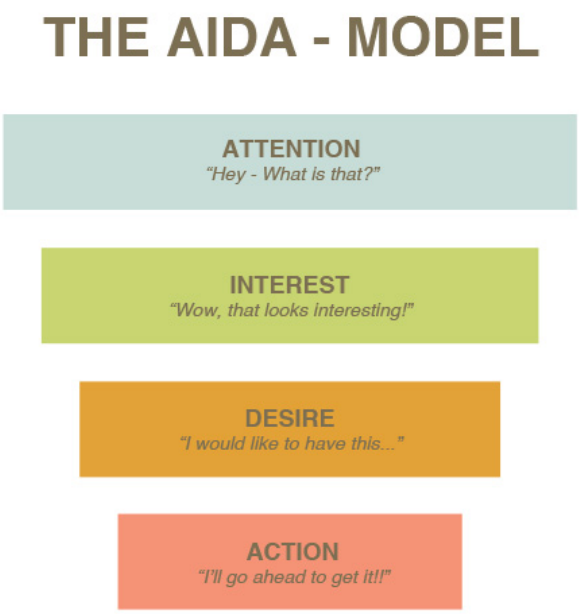

Figure 11: The AIDA-model [28]

Each step in the AIDA model is measured after the interviews. This is presented in Table 15.

Description	Measurement	Before	After

		Project leaders	Percentage	Project leaders	Percentage
Target group	Project leaders interviewed in total	21		21	
Relevant target group	Project leaders with a participation project	-		15	71% of target group
Attention	Project leaders familiar with *Jij Maakt Utrecht*	9	43% of target group	21	100% of target group

Interest	Project leaders that looked at the application	5	56% of Attention group	21	100% of Attention group
Desire	Project leaders who see it is important to publish their project	0	None	10	67% of relevant target group
Action	Project leaders that published their project	0	None	5*	50% of Desire group

*a total of 7 participation projects are published to JMU. 2 of these are added by a project assistant, 5 actually by project leaders.

Table 15: AIDA model for *Jij Maakt Utrecht*

As can be seen from Table 15, the score on the AIDA model has tremendously improved by the interviews. Before the interviews, none of the project leaders published their project to *Jij Maakt Utrecht* or considered this to be important. During the interviews, this has been explained and the scores have improved significantly to 67% of the relevant target group that considers it important to publish their project to JMU and 50% of this group that actually published their project.

Attention

The first step in a call for action is that the target group should be familiar with the product. As can be seen from Table 15, about 45% of the project leaders were familiar with JMU prior to the interview. This is important, because when project leaders do not know the application exists, they will not publish their project in the first place.

To increase the brand awareness of the application, project leaders recommend giving regular presentations at their department, for example during lunch breaks. Also, once every six weeks, project leaders have a day with their department, the so-called 'bureau days'. At these meetings, sometimes external parties are invited to give a presentation. With these presentations, we are able to reach a large group of our target group at once.

Furthermore, JMU can be highlighted at the department's intranet page or the organisation's internal communication channel of Yammer. For further digital representation, many project leaders advised to link to the application directly from the municipality homepage.[5]

Finally, printable media can be distributed along the relevant departments. A special opportunity arises here when the municipality is ready moving their offices into one place. As from October 7, 2014, all municipality offices are together in one building, the *Stadskantoor* (City Office). According to one project leader, this office building is "one big exposition space". Moreover, most relevant departments will share one floor, so printable communication can be focused on that floor.

5 http://www.utrecht.nl/startpagina/

Interest

Having the attention of your target group, does not mean they are interested. From the interviews it follows that 56% of the project leaders who were known with JMU, had a look at the application prior to the interview (5 out of 9). To the other four project leaders, it was either not clear that they were a target group or they were not sure about the position of the application. Reasons mentioned were:

- "Jij Maakt Utrecht seems mainly targeted towards citizens. I did not know it was targeted for public officials as well."
- "The purpose of the application is not clear to me."
- "It is not clear enough that this application is (politically) supported by the municipality. Once in a while, initiatives like this pass by and most of the time they do not grow to a success."

For gaining interest of project leaders, the goal, purpose and advantages of the application for citizens and public officials must be made very clear to them. Next to that, it can be made clearer that the application has (political) support by the municipality.

Desire

Before actually performing an action, the next step triggering desire in project leaders to publish their project. Of the five project leaders that had an Interest in the application, none found it important to publish their project. This is due to several reasons:

- Publishing their project on JMU is no explicit part of the assignment.
- They see no direct personal use in publishing their project.
- Even if project leaders see the advantages, they have not published their project, because:
    - it can be that they do not have a relevant project for publishing at the moment, or
    - they are doing a relevant project, but it is just too early to publish it.

To create desire among project leaders it is important to make clarify why they should publish their project. This can be reached by either promote the advantages to project leaders, or by some kind of obligation within the organisation towards project leaders. When it is part of the assignment, or management instructs them to publish their project, there is a clear desire.

Action

None of the project leaders that were interviewed published their project on *Jij Maakt Utrecht*. One project leader stated that she knew how easy it was to publish a project, although she had not done this herself before. Five project leaders published their project during the interview. When doing this, all of them were surprised by the simplicity of using the application. Some reactions:

- "Publishing your project on Jij Maakt Utrecht is really, really easy."
- "Even I understand it."
- "It is really easy to publish something, even I can do it!"

3.5 Results of Issue Reporting Trial

In this section we report on overall results of the Urban Maintenance Issue Reporting trial. In section "Overall summary of Issue Reporting" we give an overall summary of the Issue Reporting use case. First, we report a summary on the overall usability results and the evaluation of the requirements. Apart from the functional evaluation results, we report on the overall impact with a presentation of the numbers of filed reports of citizens and the provided feedback of municipalities. In section "Added value of feedback and citizen-government dialogue", we extend the evaluation significantly with additional focus on the assessment of the value of feedback and citizen-government dialogue possibilities. Key of the Use Case is the mining of citizen experiences and facilitating the dialogue in order to bridge the gap between citizens and authorities. This is of high importance for well-adjusted policies that help creating a clean, maintained, and safe urban space. In order to assess the added value, we analysed more than 600 appstore reviews, more than 7,500 tweets (Twitter), and more than 100 other messages from sources like Facebook, LinkedIn, support emails, etc. Furthermore, in section "Issue Reporting Web module" we report on the evaluation of the Issue Reporting web module as has been trialled in a specific event in the Netherlands and as part of the Mobility Use Case trial.

Overall summary of Issue Reporting

Usability and user experience

As presented in D5.3, we evaluated Issue reporting on multiple evaluation aspects, making use of user-questionnaires. As can be seen in Figure 12, the results show that each aspect scores very positive (average of 4.07 out of 5), with especially well valued Learnability and Utility.

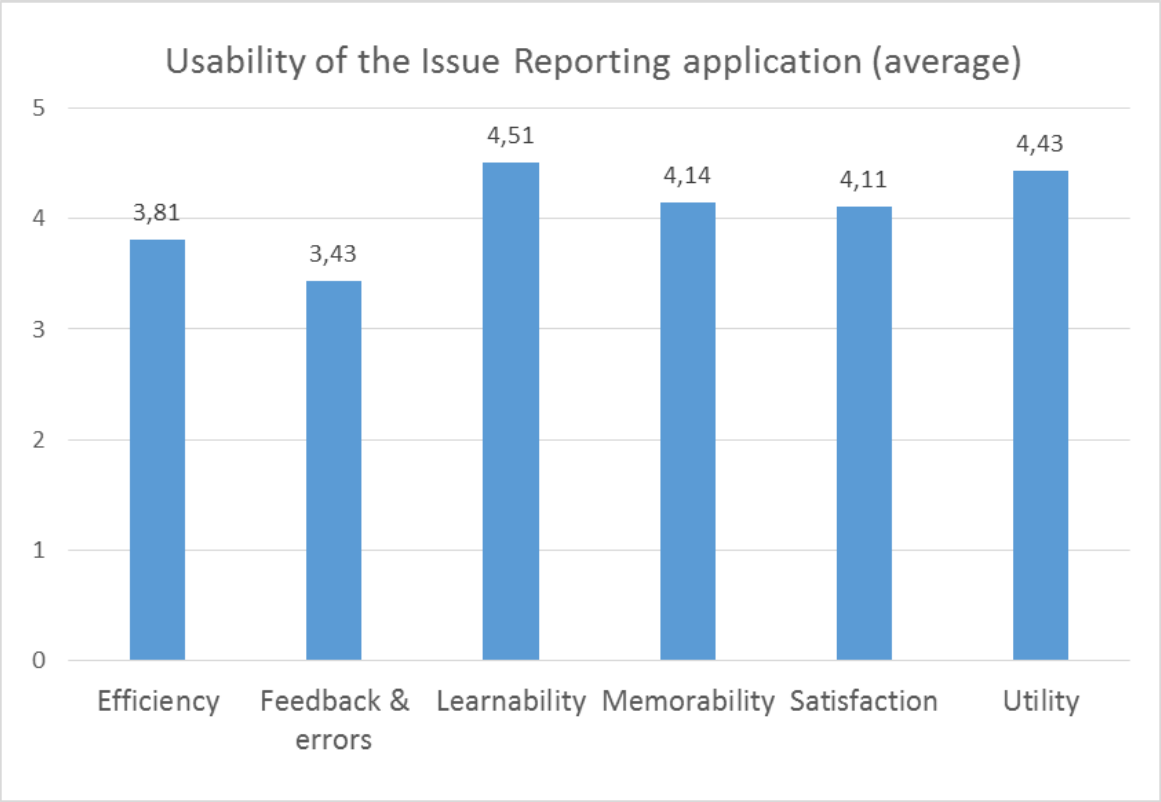

Figure 12: Overall Usability results for Issue Reporting (scale 0-5, 5 is maximum score)

To support these usability and user experience ratings, we summarised the overall ratings in different appstores (Apple appstore, GooglePlay (android), Windows Phone Marketplace, Blackberry App World) as a crosscheck. In total this data consists of 623 reviews, and the data is normalised for the different appstore rating systems.

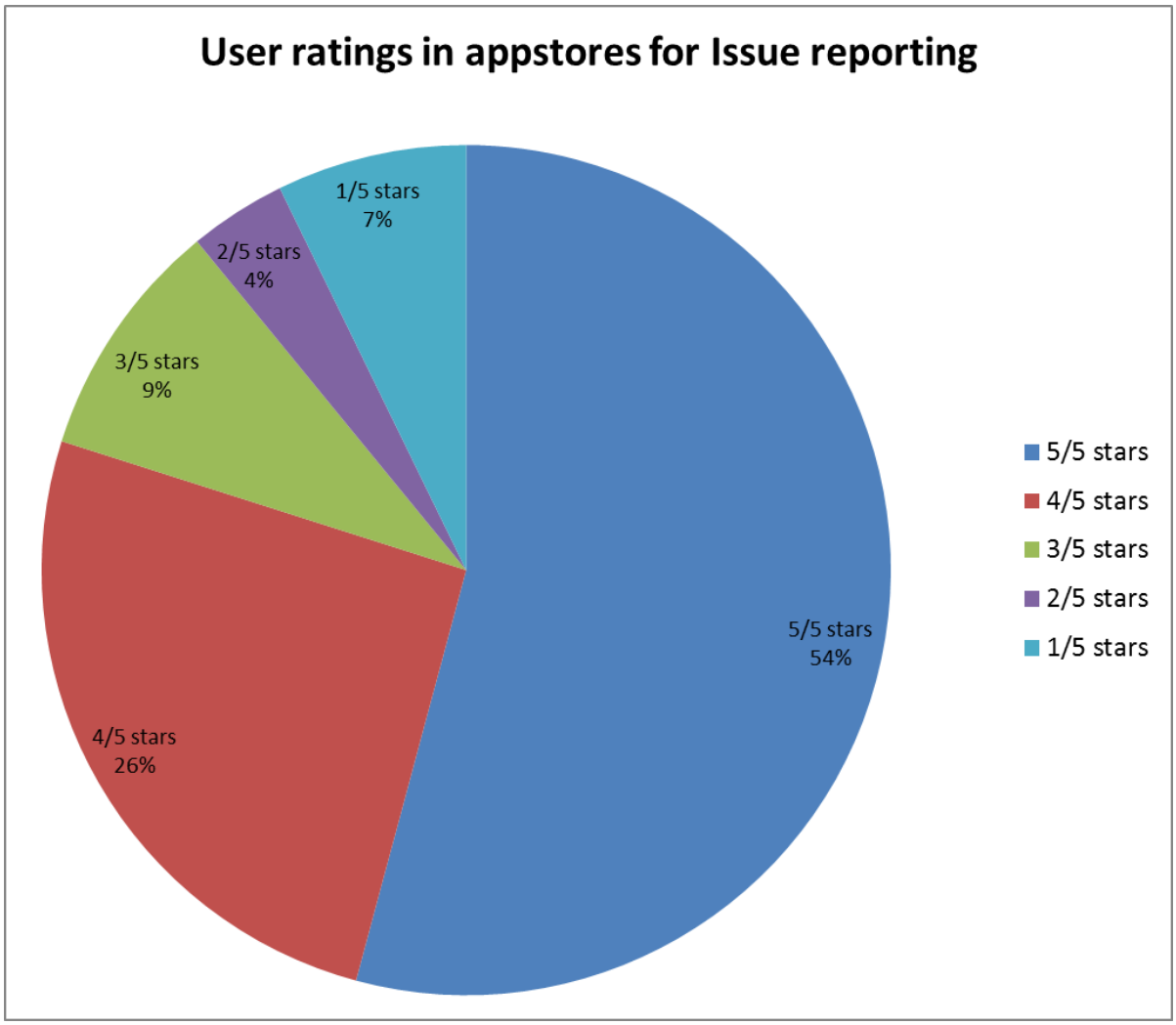

Figure 13: User ratings in appstores for Issue Reporting client (scale 1-5, 5 is maximum score)

Figure 13 supports the highly positive experience as presented in Figure 12. It shows 80% of the ratings are 4 or 5 stars, of which the majority is the maximum score of 5 out of 5 stars.

Impact

Apart from the user evaluation of the Issue Reporting application, we can report impressive figures for the trial. In

Impact	Number
Total issue reports made during the trial	***48,581 issue reports***
Total issue reports *with* textual feedback from municipality	***36,571 textual feedback***
Unique users that made issue reports in the trial	***12,767 unique users***

Table 16 total amount of reports and unique trial users are presented. These numbers encompass the reports made in our selected trial population of 16 municipalities with the

advanced feedback mechanism.[6] These key numbers regarding the impact we made are pictured in the diagram in Figure 14.

Impact	Number
Total issue reports made during the trial	***48,581 issue reports***
Total issue reports *with* textual feedback from municipality	***36,571 textual feedback***
Unique users that made issue reports in the trial	***12,767 unique users***

Table 16: Issue Reporting trial: impact in numbers

This means that over 75% of the reports were provided with textual feedback from the municipality. This high number shows even an increase compared the reported percentage in D5.3, which was 70%.

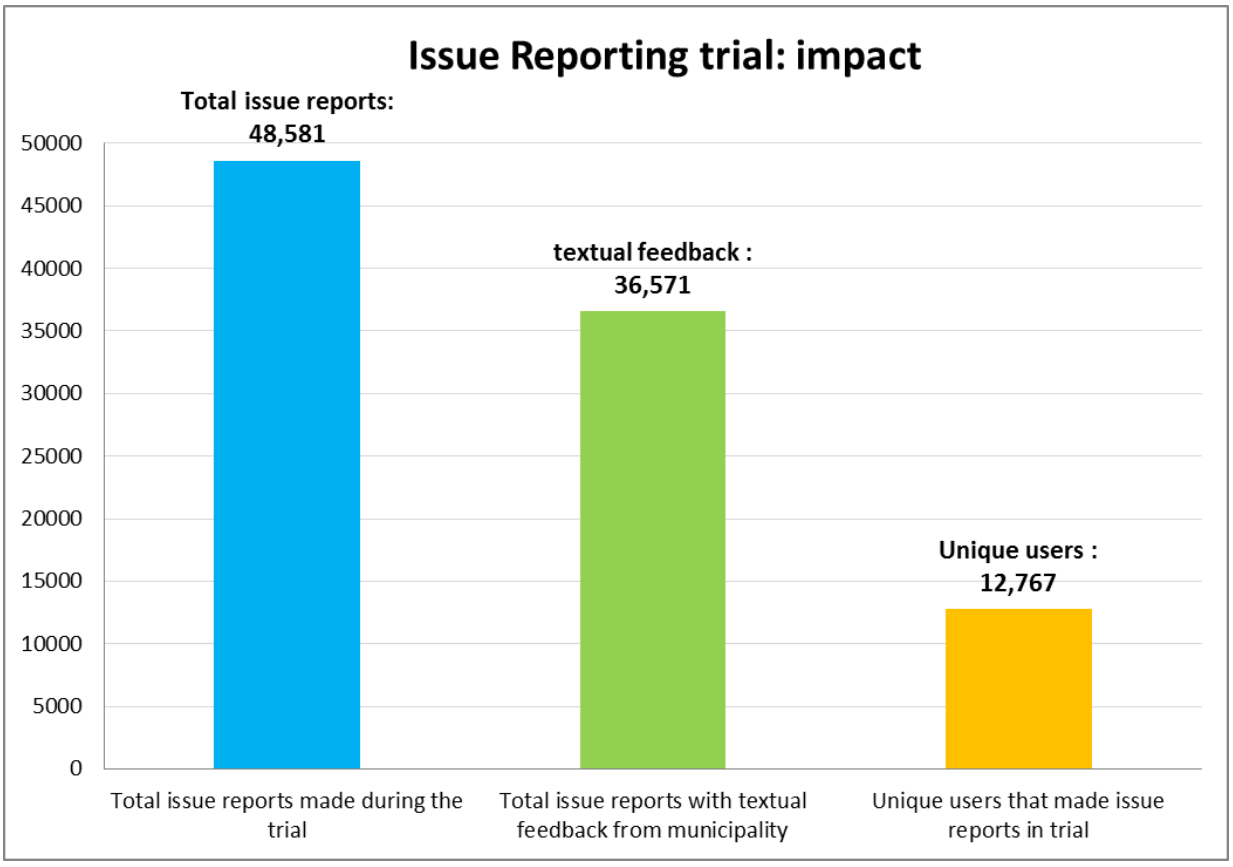

Figure 14: Issue Reporting trial: impact in numbers

[6] The issue reporting application runs for all 400+ Dutch municipalities. These 16 municipalities are provided with the advanced feedback mechanism, specifically for the Urban Maintenance trial. During the trial, we gradually increased the municipalities. The numbers are based on the reports that had the advanced feedback mechanism option.

Overall, these scores and numbers demonstrate a highly successful trial that reached a large amount of people. The users valued the application very positive and the enhanced feedback mechanism has been used in a large percentage of the reports. This shows that apart from the massive amount of users and reports, also the municipalities made use of the offered possibility to communicate and close the feedback loop with citizens.

In the Mobility trial (described in Section 2) 110 issue reports have been sent with the mobile application. These issues have been processed by HSL, with the use of the Mobility Web Module. Also here, we can report a high feedback-ratio: 85% of the filed reports have been provided with feedback. In next section Added value of feedback and citizen-government dialogue, we extend the evaluation with specific investigation of an important aspect of Issue Reporting: the value of feedback and citizen-government dialogue possibilities. Evaluation results about the Issue Reporting Web Module are presented in section Issue Reporting Web module.

Added value of feedback and citizen-government dialogue

Key of the Use Case is the mining of citizen experiences and facilitating the dialogue in order to bridge the gap between citizens and authorities. This is of high importance for well-adjusted policies that help creating a clean, maintained, and safe urban space. In that sense, the maintenance is truly citizen-government cooperation. In order to assess the added value of the eGovernment dialogue, we analysed more than 600 appstore reviews, more than 7,500 tweets (Twitter), and more than 100 other messages from sources like Facebook, LinkedIn, support emails, etc.

We have been able to derive valuable insights from different sources. We have analysed 7727 tweets (Twitter) and 623 appstore reviews specifically on the important Issue Reporting Use Case aspect of feedback and citizen-government dialogue. From this rich material, we are able to conclude that there are in general two sentiments regarding status, feedback, and authority-citizen interaction or communication: disapproval and praise.

In 123 occasions the sentiment of disapproval is found: the tweet or review clearly voiced the wish for feedback from administrations. Examples of these sentiments can be seen in Figure 15:

Terugkoppeling ★★★
by B en t

Prima app, werkt simpel. Echter 1 groot minpunt, geen verplichte reactie van gemeente. De lol is er snel af als je regelmatig iets meld en geen reactie krijgt of er wordt niets mee gedaan.

"The application is working in my municipality, however there is no feedback"

"It would be great if the municipality of Schiedam is providing feedback via the application. Its solely possible to check whether a message is send"

"Great application, 4 stars rating. Nevertheless the processing is disappointing because I cannot track the message. "

"The application is great, it's easy to use. Only one major issue, there is no obligation for the municipality to reply. There is no fun in sending messages and getting no feedback or worse there is no follow-up."

Figure 15: Disapproval in case of the lack of feedback and citizen-government dialogue

These requests for an open dialogue are directed both to the Issue Reporting application itself, as well as the municipalities involved. This mixed direction of the desired feedback is interesting when compared to the messages that praise given feedback.

This other sentiment we extracted has been the praise of feedback that had been provided. In Figure 16, an impression of the compliments is shown. Numerous times a municipality is explicitly complemented.

"Munipality Binnenmaas solved a few urban space notifications derived from citizens by the application. Good and active communication is always fun!"

"Something worthy to notify; a compliment for the municipality of Almere, they provide feedback via the application."

"Hopefully the municipality of Ridderkerk quickly adopts the application BuitenBeter, so they can send feedback."

"Yesterday I send a message via the application about cleaning the public space, and direct feedback of the municipality of Ridderkerk. It's great!!"

"Quick response of the municipality, it really works"

"Every municipality is in urgent need of this application, really quick feedback!"

"the application is a great innovative example of making things more easy. The municipality Veere is actively processing the messages of citizens."

Figure 16: Praise for municipalities in case of feedback and citizen-government dialogue

We have found 165 examples of these complimentary messages. Interestingly, the applause is in most cases directed to the *municipality* (unlike the more negative sentiment). From the insights, two important things can be learned regarding the value of feedback and citizen-government dialogue:

1. First, there is a clear base to conclude that the feedback and citizen-government dialogue in Issue Reporting has clear added value compared to a one-way communication application.
2. Second, what can be seen in the different messages, is true sentiment (or "emotion") regarding the citizen-government dialogue is involved:
   - There is a clear praise in cases when there has been true interaction. This praise and enthusiasm stimulates citizens' future participation.
   - On the other hand, in cases there is a lack of status feedback, people voiced their disapproval or discontent. Furthermore, in some occasions, this sentiment even turns into apathy; the feeling of indifference that their help of improving public space is not appreciated.

It must be noted here that all this information includes the entire Netherlands. As our trial is with 16 municipalities, not each municipality in the Netherlands has the option to provide the feedback. What our analysis shows, is that the added value for citizens and municipalities is evident. Citizens truly value the dialogue, which encourages future participation towards a clean, maintained, and safe urban space. For the authorities, a lot of value potential is available. Related to the value for citizens, it is also in municipalities' interest to have engaged citizens. Furthermore, the municipalities have an easy tool to score successes with their maintenance efforts.

Issue Reporting Web module

For Issue Reporting a web module has been developed. The module is described in D5.4 and detailed information about intended insights of the visualisation is provided in D3.2. The web module has been trailed in earlier stages of Live+Gov (D5.3). As the Web module is on prototype stage, we are very careful with the scope of deployment of it in our existing user group. The Web module has been tested in a closed user group setting: the Jekerkwartier City Safari event. Furthermore the Mobility use case included Issue Reporting and evaluated the application with 8 officials of HSL.

The experiences from the City Safari event were highly positive. The event involved 15 trial users with different background: citizens, administration officials, entrepreneurs, and politicians. Over 125 reports were made on different locations. These reports were directly available in the Web Module as can be seen in Figure 17, 18, and 19.

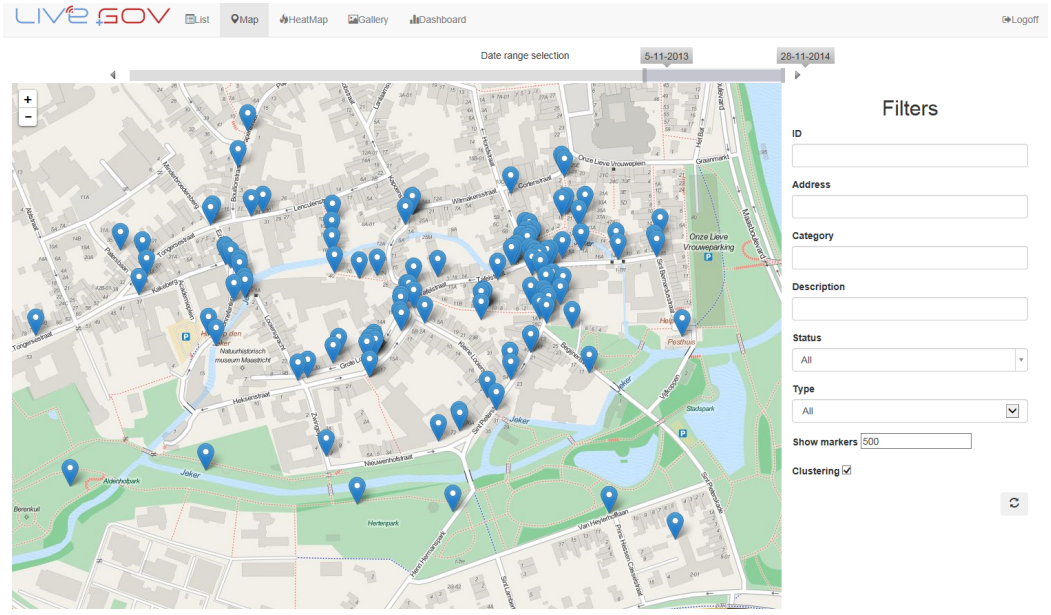

Figure 17: Issue Reporting web module

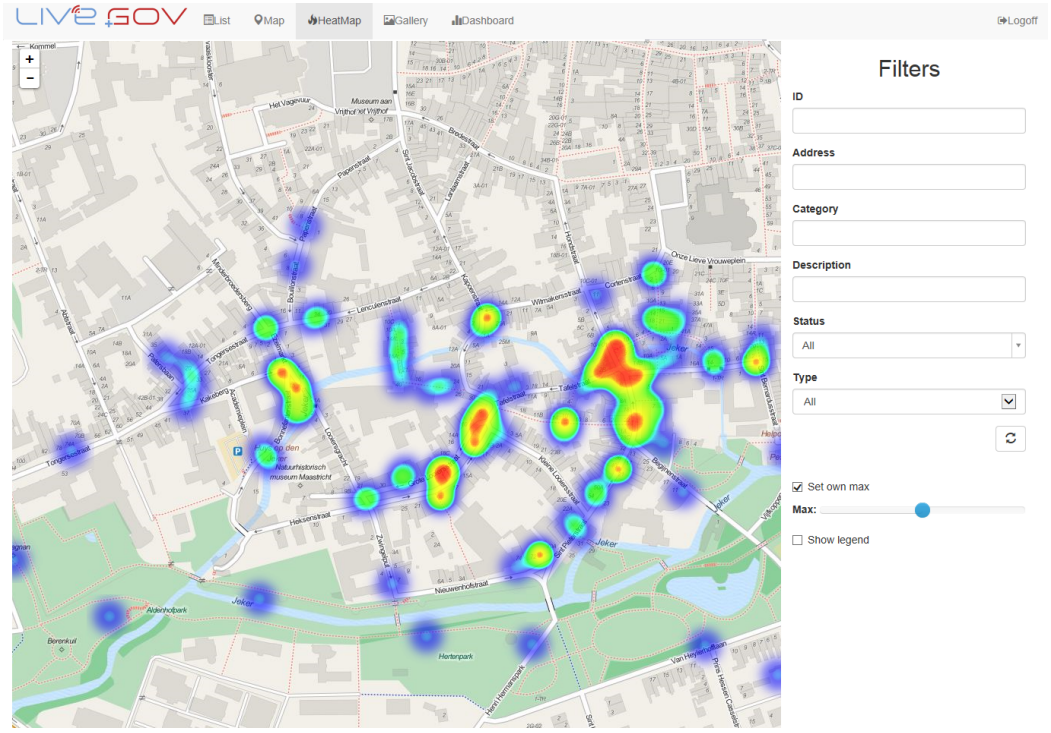

Figure 18: Issue Reporting web module (heat-map view)

The experience mining during this event has been rated very positively by both the targeted end users as well as on the organisational level. The aggregations and visualisations of Issue Reporting data in the Web Module immediately opened up dialogue between all participants; especially the gallery view (Figure 19) was met with great enthusiasm. This catalysing element of the visualisations has been praised by involved participants.

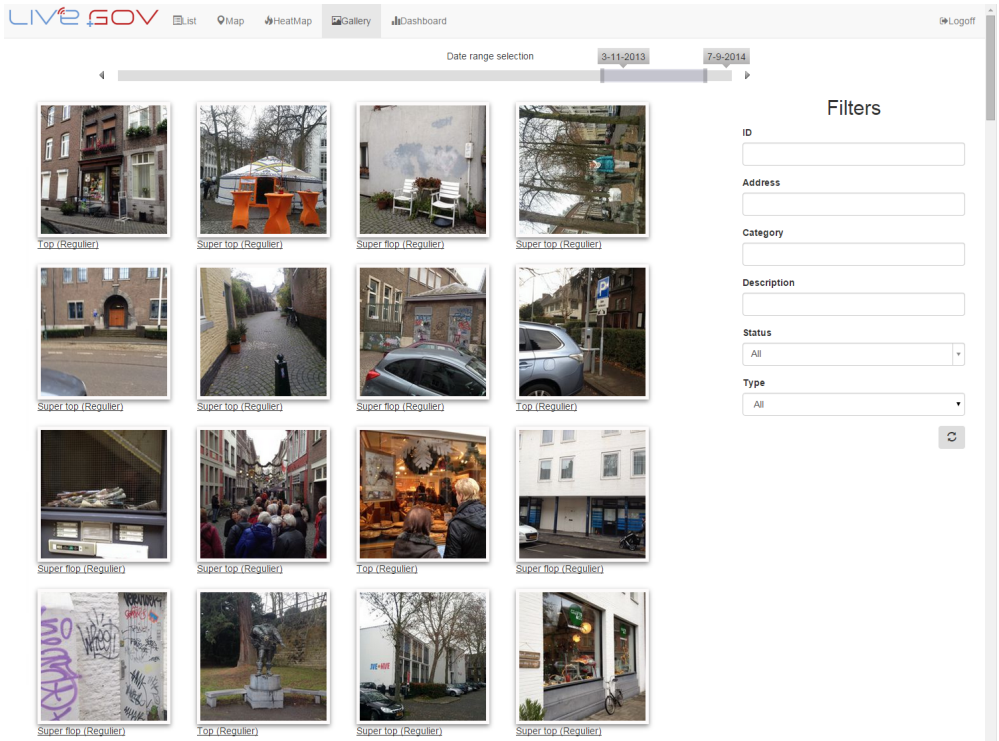

Figure 19: Issue Reporting web module (gallery-view)

The evaluation of the Issue Reporting web module is accompanied with the experiences in Finland. Here, the authorities stated that the Issue reporting tools were efficient and to provide valuable information, many features such as possibility to view attached images and to include exact addresses were considered to bring much additional value when compared to existing feedback tools used by HSL. The general impression was positively surprised that the reports received during the trial and the quality of the reports provided extremely valuable information to authorities' attention. This gives the urban maintenance use case confirmation that the enriched issue reports are valued highly in a broader and more generic context. The positive comparison with existing tools used by HSL indicated the high exploitation potential. Also in Finland, the representatives stated that many of the issue reports lead to more efficient and adequate processing of reports. Also the following up in actions and possibilities to provide feedback is considered straightforward and faster than by existing channels. Overall, 110 issue reports have been sent, for which HSL provided 93 with user feedback (feedback-ratio of 85%). The web application and the information it provides were seen to bring much additional value.

An important improvement that was brought forth during the evaluation session is that for future daily usage the integration to other systems is essential. The Web Module is met with enthusiasm as a stand-alone application; however the inconvenience of working with separate systems simultaneously is regarded as a hurdle in real practice.

3.6 Lessons Learned

The field trials for urban maintenance have been executed during different trials. In this section, we reflect on the field trials and extract lessons learned from them.

Jij Maakt Utrecht

Jij Maakt Utrecht is developed to function as a platform for citizens where they can see what is going on in the municipality of Utrecht. The municipality actively supports the platform and actively cooperates with (active) citizens, networks and professionals. Fulfilling this platform function is quite challenging in practice. One of the comments that results from the evaluation, is that the information is not yet complete and therefore loses most of its value for a visitor. However, people that add their content are wondering what the effects are. If the webapplication is visited by the entire population of Utrecht or by just a few, makes a lot of difference for them. We refer to this as 'the Catch-22 problem of user-generated content': between having complete information at your platform and users that add this information to the platform, as can be seen in Figure 20.

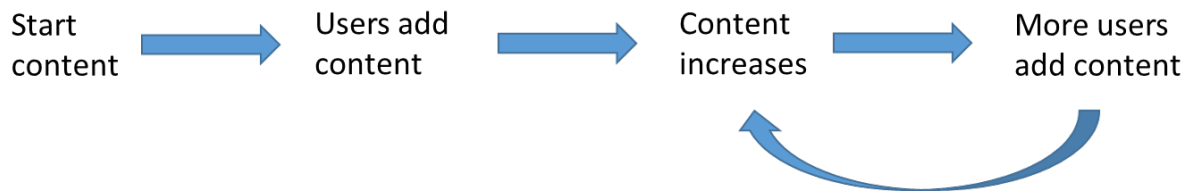

Figure 20: The Catch-22 problem of user-generated content with *Jij Maakt Utrecht*

One of the lessons learned from experiencing this problem is to develop a smart communication strategy to increase the awareness about the web application among the

citizens and public administrators of the municipality of Utrecht. Five specific recommendations to increase the Attention, Interest, Desire and Action follow from the evaluation.

1. Make sure that Jij Maakt Utrecht is visible – inside and outside of the organisation

To encourage citizens and public administrators to publish their initiative or project on JMU, first they need to know that the web application is the digital platform for initiative and participation in the municipality of Utrecht. Thus, the municipality should communicate this very clearly internally and to their citizens. This can be achieved by e.g. actively telling public administrators and citizen and making the platform digitally very easy to find.

2. Clarify the position and role of Jij Maakt Utrecht

The concept of *Jij Maakt Utrecht* is not definitely determined, but still developing in the co-creation process with internal and external stakeholders. Once people know the web application exists, they should have a clear idea about what they can find there and add content themselves.

3. Clarify the value of Jij Maakt Utrecht

To gain the interest of citizens, the value of JMU should be made really clear. This is part of a communication strategy.

4. Clarify the value of adding your initiative/project to Jij Maakt Utrecht

From the evaluation, it follows that some people are not sure about the added value of adding their initiative or project to JMU and for that reason, they refrain from actually adding it. This is contributing negatively to the Catch-22 problem described above. When the added value is clear to people, more people will actually add content to *Jij Maakt Utrecht*.

5. Emphasise the user-friendliness of adding your project

Opposite to the added value of adding your initiative/project, is the time and effort it takes to actually perform the action. The user-friendliness of adding your project is really good, this also follows from the evaluation. Making this clear to potential users also increases the possibility that they publish their initiative to JMU. Linked to this is to encourage people that once their initiative or project is added to JMU, much value to visitors is in actually keeping it updated.

Issue Reporting

We have been able to show successful results with the Issue Reporting trial. It is important to realise that the technical solution by itself can only support a broader transition of the organisations that want to start embedding participation in their municipality. This transition does not imply a revolution; however the transition should not be underestimated either. Of great importance is the integration of the citizen-government dialogue in the organisational mind-set. Derived from experience of the Urban Maintenance use case, we have four learned lessons and recommendations:

1. Mind-set: issue reporting is about mined citizen experiences (and not about complains)

The initial reaction of municipalities when adjusting their conventional issue reporting service to the low-barrier citizen centric reality mining solution as offered in the Urban

Maintenance use case, is one of reluctance. Municipalities can hold the conception that citizen reports are complains and that by introduction of the solution, a channel is opened that facilitates complaining. However, issue reports are reports of the mined experience of urban space by citizens. The reporters see their reports as help, not as complaint. Introducing the platform introduces the citizens as well-informed and effective sensors of urban space. The organisational mind-set will need to be adapted to this idea in order to realise the great value that can be gained.

2. Mind-set: service oriented approach

An extension on the first recommendation is the adaptation of service-oriented approach. As issue reports aren't complains, the entire processing of the reports should not follow the conventional complaint-process. Instead, the entire processing of issue reports is about delivering a service. This service is valued by the stakeholders to whom the service is offered. Furthermore, on a high-level the service helps adjusting the policies regarding urban space to citizens-needs. Introducing the citizen-government dialogue offers the authorities possibilities in understanding citizens experiences as well as offering appropriate follow up. The service oriented approach allows municipalities to offer a better adjusted maintenance as well as communicating their efforts with their citizens. With the service-oriented mind-set, municipalities are able to benefit greatly from the citizen-government dialogue and have a means to score with the efforts regarding public space.

3. Mind-set: municipality manages public space with citizen input

A misconception that can easily rise is that an issue report is a work order. Introducing issue reporting would ease the 'placing of work orders' by citizens, a situation most municipalities are not happy to welcome. However, the issue reports shouldn't be seen as complains and they should also not be regarded as work-orders. As described before, a rich and well-informed citizen-experience of urban space is mined that can be followed up with service. This does not mean that each report means work in the traditional sense. Municipalities do the intake and also the assessment what should be the service. In a lot of cases, the service can mean supplying the reporter with the right information. This information is in a lot of cases core in the citizen-centric service delivery. Managing the expectations and communicating those effectively is one of the great benefits of the Issue Reporting solution. The municipality has the professional knowledge in managing the citizen-experiences of public space, and this location of the professional expertise does not change when engaging citizens helping with urban maintenance. The organisational mind-set that an issue report is not a work order is essential in effectively working and, most important, adopting and with the solution.

4. Internal organisation of the feedback loop

Municipalities differ greatly from each other. Factors of influence can be the size, the location, the political orientation, demographic population differences etc. The internal organisation of urban maintenance differs greatly per municipality as well. Important to realise is that for each municipality the organisation of the internal feedback loop is different as well. To effectively benefit from the issue reporting solution, it is key that the information that is needed in order to be able to deliver the service to citizens, first and foremost the internal dialogue has to be in place. In general, the description of the problem and the

solution by technical fixers is not the most appropriate service oriented communication with citizens. From experience, some municipalities have their internal feedback loop in place, and are able benefit quickly of the issue reporting solution. However, this is not the case for all municipalities. When adapting the solution, it is of great importance that the internal organisational feedback loop is analysed and adjusted in order to profit most.

These four lessons and recommendations are interrelated and all affect effective implementation of the Live+Gov Urban Maintenance software tools in the organisations of the municipality. To accompany the software tools Live+Gov developed a Training Package as well that helps customers applying the Live+Gov eParticipation software tools on a more organisational level. These recommendations should be emphasised in the offered training of the Live+Gov Training Package, see D2.4, in order to make sure that the software is accompanied with the right mind-set and organisational readiness.

3.7 Summary of the Evaluation of Urban Maintenance

Jij Maakt Utrecht

The *Jij Maakt Utrecht* field trial has been running in for over 5 months and the platform is still live. Overall, the trial of *Jij Maakt Utrecht* is considered a success. One of the most important evaluation results is that all stakeholders are very impressed with *Jij Maakt Utrecht* and the possibilities of the platform. The updated version of JMU scores higher on each usability aspect compared to the public beta version. This indicates that the results of the first field have been efficiently implemented and leaded to significant improvement. Much positive feedback has been gathered emphasising the facilitation of citizen government dialogue. Stakeholders are convinced that the overall concept of visualisation of the events and initiatives in the city of Utrecht are successfully met. The web application has shown to be a production ready application, tested and used in a live environment. The stability of the application with considerable usage and data gives a very solid foundation for future SaaS-based exploitation possibilities.

With our trial we engaged many stakeholders to participate. Over 50 evaluation and engagement interviews, sessions, workshops and events have been undertaken, which all increased the interest, the activity and gave us evaluative feedback. The trial gained noticeable attention in media and political bodies on a local, national and European level. Overall, the Urban Maintenance field trial with *Jij Maakt Utrecht* has a large impact. *Jij Maakt Utrecht* enlarges engagement and triggers opinions. It is published in several press and blog articles about self-organisation and participation. Moreover, the action plan on open government from the Dutch National Government and an important European report state the webapplication as key example for eParticipation initiatives and open government [19].

Next to the valued Live+Gov webapplication for eGovernment Dialogue and Visualisation – *Jij Maakt Utrecht*, an important aspect lies in the organisational dimension. In order to explore this important aspect, specific evaluation efforts on the embedding of participation by the organisation of the municipality have been taken. This showed many unconscious challenges. The innovative nature of JMU and the novel transition process to we-government that is taking place in the Netherlands comes with uncertainties about roles and

responsibilities. In other words, there is no set market yet. We have been successful in addressing these uncertainties with the changes we made to our application: the platform is regarded as conceptually clear. On the other hand the platform solely one part of a wider transition in enhancing the dialogue between citizens and government. We have been able to tackle most obstacles; however from an organisational point of view there are hurdles to take. The municipality is constantly reflecting and taking next steps on their self-realisation in the transition. The many evaluation sessions with different stakeholders provided insights that the new role is not a trivial one to define, especially since it involves very a diverse group of stakeholders. For one that familiar with the eParticipation domain, this comes as no surprise. For Utrecht itself *Jij Maakt Utrecht* serves as an important platform and point of reference in this transition process. This is an important trial result: *Jij Maakt Utrecht* and the co-creation process in which it is developed, support the process of wider transition within the municipality of Utrecht. It really helps to (re)define roles, processes and agendas within the municipality. The experiences and insights from the trial have been of great value for the development of the Live+Gov Training Package as developed in WP2, see D2.4, which is aimed help municipalities with both incorporating software solutions as well as the organisational embedding of eParticipation tools.

Issue Reporting

With the Issue reporting and reality mining trial, a large-scale implementation of the customised Issue Reporting application has been realised. The evaluation of the experienced usability is positively met in our trial and in the application reviews of appstores. The overall usability scored an impressive 4.07 out of 5 and over 50% of the appstore-reviews were 5 out of 5 stars (more than 80% of the reviews scored 4 stars or higher).

The Issue reporting trial had a large impact. Over 48,000 reports have been sent by more than 12,000 unique users to our 16 trial municipalities. The citizens acquired textual feedback in more than 75% of these reports. There is a successful a feedback-ratio of 85% in the mobility setting.

As reported in earlier stages of Live+Gov, the quality of the reports mining citizen experiences and implicit norms is regarded of high quality by municipalities. This is due to the citizen-as-sensors philosophy. Real detailed information about urban space and how it is experienced can be collected by leverage of citizens to mine reality, real detailed information about urban space and how it is experienced can be collected. The Issue reporting client and the extended feedback mechanism are deployed on 6 different platforms (iPhone, Android, BlackBerry, Symbian, Windows Phone, and Windows Mobile). Over all these platforms, the architecture proves itself stable for large amount of usage. The option is dynamically available based on location. This strategy fits our SaaS based approach neatly. With the standardised external connector (StUF), we are able to connect directly to administrative systems whenever municipalities are equipped for the automatic connections.

In order to assess the added value of the eGovernment dialogue, we analysed more than 600 appstore reviews, more than 7,500 tweets (Twitter), and more than 100 other messages from sources like Facebook, LinkedIn, and support emails. From this analysis, the added value of feedback and citizen-government dialogue becomes very clear. In cases the feedback is provided, citizens are complimentary about the municipality and indicate that

their participation is valued. The added value becomes clear by the negated sentiment that has been extracted from the messages: when status feedback and follow up is not provided, people voiced their disapproval or discontent. Both sentiments have impact on future participation. Citizens truly value the dialogue, which encourages future participation towards a clean, maintained, and safe urban space. A more damaging pattern can be seen when no feedback is provided: people voice their indifference that their help of improving public space is not appreciated and that future participation less likely. Related to the value for citizens, it is also in municipalities' interest to have engaged citizens, have citizens help to sense urban space and by this helping to maintain. Furthermore, municipalities have a great communication tool to score successes with their maintenance efforts and help making their work visible.

The Issue Reporting web module has been trialled in a specific event in the municipality Maastricht (Netherlands) and in international context during the Mobility trial in Finland. In both settings the involved stakeholders see much value for the web application. The experience mining during the specific event has been rated very positively by both the targeted end users as well as on the organisational level. The aggregations and visualisations of Issue Reporting data in the Web Module immediately opened up dialogue between all participants was met with great enthusiasm. Quick impressions are immediately available, which give a very effective impression on the experience of urban space and can lead to adequate policy modelling. The authorities of HSL expressed that the tool has much added value compared to their existing tools. The overall design and presentation of information is regarded as very effective and clear. HSL expressed that connection of their other systems is wished for. This relates of course to the general recommendation as described in section that the internal organisation of the intake, processing, technical problem solving and closing the feedback loop with the citizen accordingly is of great importance.

Overall, with the Urban Maintenance use case we have been able to customize innovative and effective tools, made large impact and engaged a lot of stakeholders.

4 Urban Planning Use Case

4.1 Use Case Description

The Urban Planning use case focuses on urban planning in the local level, as was described in D5.1, as they have most responsibilities in this area. This is an interesting initiative also from the perspective of complying with the Basque Law of Land, Ley del Suelo 2/2006, that includes an article about the participation of citizens.

This use case is a customization of the Live+Gov developments for the application in Urban Planning in a municipality of Biscay, in Gordexola, but it is different from the other use cases in the fundamental essence as it is the most challenging in terms of engagement of the decision makers because of the possible political consequences a participation of this type. Once the participation is made public there is no certainty what will happen and how far it can influence the delicate political arena, so it is challenging from the administration´s perspective. Although the other use cases also need engagement of administrators and political commitment, in the case of this use case the process is quite straightforward and therefore the expectations that this type of field trial generates for the people put the decision makers in the spotlight. Therefore this field trial is mostly ambitious in the goals of bridging the gap between citizens and governments and triggering the change.

In general, a municipality needs a lot of courage to take up a CPMT approach, as has been stated previously. Making its organization open up to citizen participation when this is still a new scenario and there are no rules yet. It is difficult for the people who have the responsibilities in the local administration to assume such a challenge. Nonetheless the first field trial was set up with this commitment as the goal in order to fully implement a public eParticipation process in the second round. The trust of politicians in the initiative and the acceptance of the system, as well as the understanding of the clear aims and objectives for a real participation project that would not produce distrust, scepticism or cynism, was reached, as was detailed in D5.3 where the first field trial is studied [29].

On another hand, and as it was stated in previous deliverables, this use case relies on the calendar and timing is crucial, it is strongly dependent on the current needs in terms of municipal planning, as local circumstances change and plans depend on these changes. This was mentioned in D5.4 [22] when the prototypes for the second field trial were described, and therefore in this use case customization is very important.

The following subsections of this deliverable evaluate the results of the second round of the field trial of the urban planning use case, covering the set up and planning of the trial, the execution, the results and the lessons learnt through it. They will wrap up all of the experience acquired within the field trials, making cross-references to other deliverables where further details of some aspects are covered in more depth.

4.2 Set Up of the trial

The set up for the second field trial began with the selection and description in detail of what plan or plans would be included in this second round, following the agenda and current circumstances of the municipality. The technical and functional description of the prototypes developed for this field trial has been detailed in D5.4 [22]. However, as was mentioned in

this deliverable, the main aspect of the functional customization was the inclusion of this plan itself. All along the deliverables there have been mentions to the dynamic of work followed in this use case for the planning and set up, as well as the evaluation, that has been through meetings of the so called Working Group, composed by technical workers and council members of Gordexola, and by people from BiscayTIK (project partners). These meetings have been conducted periodically, but the members have also had close contact via email and telephone. The most important meetings for the planning of the use case and to specify the details can be found in the following list in table 17.

Date	Description
May 8th, 2014	2nd Field Trial planning. Definition of goals and calendar of work, identification of potential risks and initial contingency measures and presentation of the citizen initiative received.
May 29th, 2014	2nd Field Trial planning. Formal approval by the Council of the Health park plan. Definition of initial details. Set up of dissemination strategies. Plan to provide detail about the meetings to the opposition.
June 12th, 2014	2nd Field trial planning. Participation of Rosa Herrero as an expert advisor. Definition of health requirements and requirements from the council. Proposal of the Live+Gov project as a main topic in a Health Talk at the end of October, due to the relationship and synergies created.
July 10th, 2014	2nd Field trial planning. Refinement of details. Possibility to request a financial aid given by the Basque Health Department for the installation of the outdoor health/sports park.
August 25th, 2014	2nd Field trial planning. Refinement of details: option definition and testing.
September 4th, 2014	2nd Field trial planning. Refinement of details: option definition and testing.
September 18th, 2014	2nd Field trial planning. Refinement of details: option definition and testing.
October 10th, 2014	2nd Field trial planning. Refinement of details. Kick off strategies.
October 17th, 2014	Official public launch of the 2nd Field trial. Working group meeting prior to the in person public event held at the Town Hall.
October 28th, 2014	Health talk in Gordexola – including Live+Gov as a topic. Working group meeting prior to the event.
November 4th, 2014	Follow up Working group meeting.
November 12th, 2014	Closing of the official participation period. Validation and counting of traditional ballots.
November 13th, 2014	2nd Field Trial.2nd Field trial first evaluation session. eParticipation and traditional participation results included in the UPG Reporter

	platform for this purpose.
December 4th, 2014	2nd Field trial second evaluation session. Special attention to the comments collected.

Table 17. Main Urban Planning Gordexola Working Group meetings in the second cycle.

During one of the regular Working Group sessions, a citizen proposal for a new installation in the town was put on the table. This plan was proposed by a group of people from Gordexola, who presented this initiative to one of the associations from this town, and the association presented the plan at one of the monthly meetings that all of the associations regularly hold. Then it was taken to the Local Council by Rosa Herrero, the person in charge of these collective meetings, a person who is also responsible for the Health Service of the municipality and part of the Communication Division of the Basque Health Department. This proposal came into the planning of the second field trial just in time, so it was decided by the Working Group that it could be suitable as the proposal for citizen participation for the Urban Planning Gordexola use case of the Live+Gov project.

At this point, before the final decision to open the plan to citizen participation and work on the details, it was necessary for the Town Council to study the budget availability for an installation of this type to make sure it was feasible and avoid creating distrust or frustration towards the participation initiative and this way towards the administration. After internal discussion it was considered viable by the local council and the decision was final to share this initiative with the citizens and collect their opinion.

From then on, the next steps for the Working Group were to clearly define the participation process. The aspects that were analyzed in D2.1 [5] and already considered in the first field trials, needed to be taken into account in a new customization. These aspects were mainly offering a participation process for citizens that would fulfill their expectations and not lead to frustration. Therefore, how the plan would be presented, the useful information for citizens that would be shared, what aspects would be offered for people to share their opinion or feelings about, and how this input would be taken into account. Some important aspects that did not require changes and were already included in the version for the first trial were kept, such as the free text feedback option in the mobile app, or the direct presentation of the total results through the application to all participants. However a change in the plan required changing all of the content giving special attention to the points from D2.1 [5] mentioned above.

Therefore there were several aspects that were worked on in parallel. On one hand it was necessary to have the 3D models. As a result of the first trial it was already known that this was a difficult task, and that the preconceived idea of these models being made easily available by the Council, who would receive them from their providers, was erroneous. The proposal of suitable models was conducted by BIZ, and the customization necessary to adapt the models was done by CERTH, as described in D3.2 [31].

On another hand, the options for citizens to select from needed to be defined. At this point there was a special Working Group meeting, held on the 12th of June as is listed in Table 17, where Rosa Herrero who was mentioned earlier and is the person in charge of the Health Service in Gordexola, and nurse here, took part in as an expert advisor from the Health perspective of the plan. The main objective of this meeting was to identify the requirements

in terms of health, and the demands in terms of the needs of the inhabitants of Gordexola, from the medical perspective, as the nurse is in direct day-to-day contact with the people of the town, and she knows about the benefits of the type of installation proposed. She was also a key person for the development of the plan as she is in charge of managing the regular meetings between the associations in town, and transferred the proposal for health parks to the council in first place. In this same meeting, technical aspects about the plan, such as the most appropriate surface to place the elements, or the areas within the town which were suitable, were present through the council members, and in particular the council member who is in charge of public works. After discussing the options, it was decided at this point, that it would be most appropriate to ask citizens about their preferences in terms of size and location of the health elements, while keeping a set budget for the total plan. The result of this meeting was a set of requirements for the elements to be installed in one or several health parks, having each park necessarily to have at least one element for the top part of the body, bottom part of the body and one for aerobic exercise, as well as information for users.

The next steps, for the next meetings, was the definition of the exact points where the park could be installed, which would be offered as possible locations through the Urban Planning application. This aspect required several iterations as it was discussed taking into account different aspects by the entire council. In the next Working Group meeting the exact points were presented by the council members, and the information that would be given to citizens, so that they would be able to make a reasoned decision about their preferences. These details included the fact that the initiative had started as a proposal by a group of citizens, the approximate cost of the park per inhabitant, and the type of elements that would be installed near walking areas. Then the people could answer the questions to give their preferences about having a health park or not, having one big park or two small ones, and in the case of one big park, or two small parks, the places they liked best from a set of options. The feedback collected from citizens also included the option of a free text field for anyone who wanted to express their feelings, so they could do so if they were unable to do so through the set of questions. To complete the customization, the visualization of pie charts was kept. After a person voted, the total results were presented, a feature that was kept exactly the same as it was in the first field trial.

During the set up, and also as a result of the first field trial, it was seen that mobile participation was still insufficient to satisfy the needs of the population of Gordexola, or of Biscay in general, even though the app was now available for Android and iPhone. Therefore it was decided to offer traditional participation to complement the mobile eParticipation following the exact same line as in the application, but offered on paper and handed in at the Town Hall. In this case the forms had a verification number to avoid duplicates, and the list of participants was managed by the Council workers to avoid manipulation of votes in a simple manner.

From the technical and functional perspective, the changes that have been implemented in the prototypes, that were described in D5.4, are part of the set up for the trial, following the guidelines described previuosly. However, it is also necessary at this point when we are looking at the evaluation of the second field trial to analyze the consequences that the changes have for the real life experience. For this reason and to avoid repetition, we will go over these aspects one by one in section 4.4 results of the trial.

4.3 Execution of the trial

The Second Field Trial of the Urban Planning use case was officially open for public participation of citizens from the 17th of October to the 11th of November 2014, period in which the results are considered valid, although the app was available on the platforms some days before, and has been kept public afterwards for dissemination purpose. The backend web application for administrators to study the results has been available during this period for them to study the information that was being collected. However the total results including the traditional participation that were introduced manually in the system, were available on the Urban Planning Web Reporter for the Working Group meeting on the 13th of November. The calendar for the field trial within the second cycle was slightly delayed due to intensive testing of the mobile applications to improve the user experience as is detailed in D3.2.

Figure 21 Urban Planning Gordexola poster used in the second field trial.

The first part within the execution of the trial was raising awareness among the population of Gordexola which was the target public of the participation initiative in order to have their later engagement. As a starting point posters were put up in town on the information bulletin boards and a pamphlet with information was sent out to all of the households in Gordexola. This communication strategy was followed, as it is the standard way in which the Council spreads their news so it reaches all of the inhabitants. All of the associations listed in the municipality were also personally contacted by phone and by email to announce the kick off of the participation initiative, the availability of the app on app stores and the presentation event at the Town Hall of Gordexola on the 17th of October, 2014. This event aimed at the citizens of Gordexola who were interested in finding out more about the initiative or needed help as they were experiencing trouble with their devices had low participation. However, among the few people who participated there were two people who should be mentioned due to their relevance in different aspects. One was the candidate from the major political party, the Basque Nationalist Party (PNV), for Mayor of Gordexola in

the next elections that will take place in May 2015. She was quite interested in knowing more about the initiative, which she was not totally informed about and had not downloaded on her phone yet. After doing so and finding out more about Urban Planning Gordexola she shared her impression that this was a nice application and a great initiative for a Town like Gordexola from multiple points of view. She added that she felt that it was good for modernization to reach the local administration this way with innovative pilot experiences that set the standards for the near future. The other relevant person was one of the leaders of previous initiatives done in the town, such as the popular basketball contest conducted through social media that this town won a few years ago, competing with municipalities from all over Spain that had great participation numbers. From previous events, this basketball contest and others, she has an important number of people from town in a group of contacts in social media, and at this point she started spreading the word through these means about the Urban Planning Gordexola field trial and the Live+Gov project.

One of the standard channels for offering information to citizens in Gordexola nowadays is the municipal web page of Gordexola, possibly the first source of local information for many, which also shared information about the initiative. A banner was placed in a prominent position, announcements about the in person events were included, together with news with details about the project and the field trial. A quick user manual to give an explanation about how to use the app to participate was also available for download for those who were interested in having further instructions about the different features of the app.

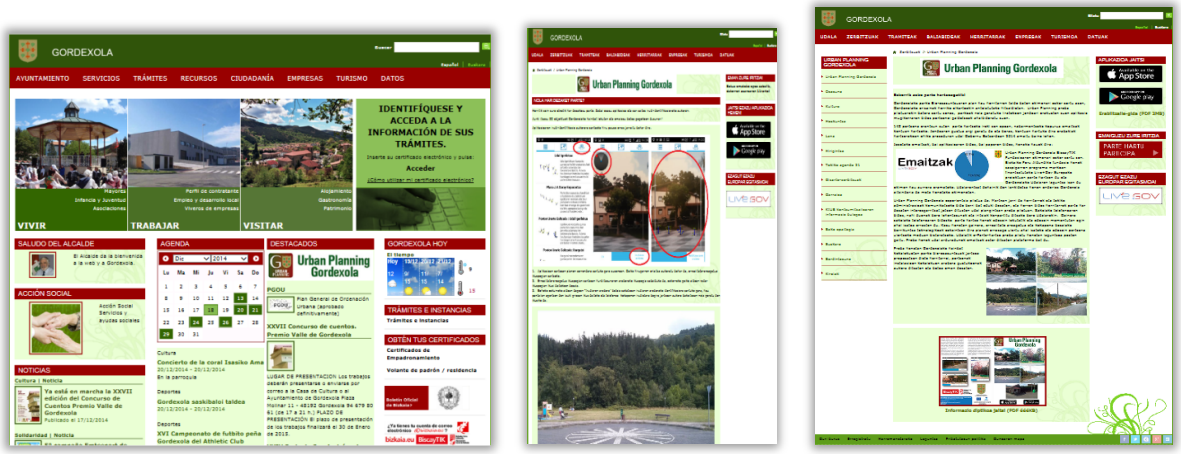

Figure 22 Municipal web of Gordexola with the information of Live+Gov for the second Field Trial: homepage and dedicated sections.

The second in person event to give information about the initiative was conducted as part of a regular Health talk, scheduled on the 28th of October. This meeting was focused on healthy lifestyles and the plan was included as a main topic for two reasons, firstly because of the suitability of the plan to build an outdoor health park with sportive elements and secondly because Rosa Herrero, who is in charge of these meetings, also participated in the proposal and definition of the plan for the health park, as well as on giving information to people from Gordexola at her office. The periodical meeting about health issues in this case had special importance as the first part was presented by Dr. Josean Lekue, the Medical Director of the Athletic Club of Bilbao Football Club. Football is closely followed and Dr. Lekue has a good

reputation, and these fact made this event have echo in the town, and therefore the project benefited from this buzz.

Figure 23 Images from the events in Gordexola.

After the participation period was closed there was a Working Group session devoted to the analysis of the results of participation in the backend web reporter and evaluation of the results and the system by this group. The total number of questionnaires received during the period was 143, from which 101 were eParticipation results coming from the mobile apps, and 42 were traditional paper ballots collected at the Town Hall. The profile information was introduced by users and filtering shows that 100 of these participants were residents in Gordexola.

Although there was a proper testing conducted prior to making the system public, during the field trial there were some technical flaws that were discovered and solved as soon as they

were detected. One of the bugs detected was that the location from which people were sending their answered questionnaire was not being saved properly. This became visible in the views on the Reporter web application. In some cases, the defect value of (0,0) was misleading the representation on a map, as this point is in the sea off of the coast of Africa. The bug was found, corrected promptly, and the problem solved by uploading an update for the applications for both platforms, Android and iPhone, and leaving out the defect value of (0,0) in the case of this mistaken value to not blur the representation of results. However, for this reason the location view of the results from which people participated gives an incomplete view of the results. Nonetheless, the intention of the representation of voting spots on a map, to give administrators an idea of where people participate from is still met, although not all results are shown this way.

Another inconsistency that was detected during the trial and was solved during this period was that, only on iPhone, a user had to give an answer to all of the questions, which was not intended to be so. Questions should be independently answered, some or all, and the questionnaire could be sent incomplete. This would allow a person who wanted to vote no to the whole plan to do so, without selecting options for each location of a park. The same way a person could answer only to the option of park he or she is interested in. This was detected and solved, and a new version was uploaded and users were able to automatically update the application on their device.

4.4 Results of Trial

A great part of the evaluation has been conducted through sessions with both citizens and governmental representatives. In the sessions with politicians and civil servants it was made very clear that they perceived a need for change in order for politics to adapt to modern life. However it was also stated that, like in other aspects of life and fields of work, modernization is becoming “real” before the standards are set and the rules are decided upon, making it a risky business. It is quite necessary to evolve in local public administration, but the way things will go will only be determined during this change, with no plans to follow, just like in the second field trial where there was constant adaptation to the circumstances due to this reason. However several aspects will be analysed in this section in order to try to quantify the results of the project.

Evaluation of initial requirement fulfillment

To begin with the evaluation of the trial, and of the whole use case, it is of interest to go over the functional requirements that were set at the beginning of the project, and are reflected in D5.1 [2]. These functional requirements have all been met, although in some cases the requirements have been slightly reoriented due to the circumstances and desires of the use case owners, the municipality of Gordexola. In the following table 18 there is a summary of the functional requirements and their implementation.

Initial functional requirement	Fulfilled	Implementation in the use case
It should be possible that the system can be customized for each municipality individually	yes	Prototypes have the digital image of Gordexola. Although components are reused following a SaaS model, it allows customization.
The system shall receive data from the mobile application containing location information.	yes	Location information is collected from the mobile when the user sends the questionnaire.
The system shall save user information about anonymised user details, such as age group, gender, residence, nationality, etc.	yes	User profile information is collected by the app for later statistical analysis. The items have been defined by the municipality.
The system shall give citizens who use the application the information considered necessary to offer a better context and create awareness about the plan.	yes	Information of interest has been included in the app. This was decided upon by the municipality (content customization)
The system shall retrieve personal opinion, votes or comments from users, group and filter it, offer it to administrators, and also give feedback to users about how this contribution is taken into consideration, such as voting percentages up to the moment, including possible benefits for participation.	yes	Opinion collected as votes or responses to proposed questions about the plan and a comment field included. Feedback is instantly given to participants about total responses to the questions. Benefits not included, decided by use case owner.
The system shall allow a user to view all open issues, and a history record of “my issues” and “my municipality”.	yes, revised	This was initially foreseen but finally not included. As this type of participation has high political commitment, it could not include misleading or non realistic information about unreal plans.
A user should be able to filter issues depending on different criteria.	yes, revised	A historical view has been included in the web application for administrative users.
The system shall allow a user to participate in each open issue only once.	yes	Controlled by the system based on mobile hardware identification, one device – one vote.

Table 18: Details about fulfillment of initial functional requirements of the Urban Planning use case.

Following this study of the initial requirements, the next aspect that can be taken into account to evaluate the final implementation of the use case compared to the initial

approach is the analysis of the risks and contingency plans, also part of D5.1 [2], and the final results related to them, which are detailed in the following table 19. As an evaluation of how the risks have finally affected the use case, we could say that all of the anticipated risks have appeared in a certain degree, but the initial or redefined contingency measures taken have proved to be sufficient to control them and not suffer negative consequences for the use case.

	Risk description	Initial contingency plan	Real measures taken
R-UP.1	Quality of AR views – with enough information about the project	Select plans that have sufficient 2D/3D models to use in the AR view	Use publicly available models and adapt them to the demands of the use case and technical requirements. [31]
R-UP.2	Lack of two-way communication and citizen frustration with the initiative	Get feedback from citizens and ask government about their experience.	Feedback from citizens, specifically in the first field trial. Ask representatives from the municipality about their experience. Pay special attention to giving feedback to citizens about the results, not only by means of the app.
R-G.1	Number of trial users	Create trials that are close to user needs. Reward trial users. Use existing user-groups. Involve end-users in the project.	Plan in the public field trial started as a citizen initiative. Meditated decision to discard rewarding users. Local associations contacted as existing user groups to participate, as well as existing groups of active citizens that participated in other social events, such as contests, and the people from the local health services. These groups were also involved in the project.
R-G.2	Limited government exploitation	Working with administrations that are supporting the project. Frequent interaction with administrations.	Work with the municipality of Gordexola who supported the project. Frequent interaction with them via email, telephone, and with in person Working Group meetings. Extra compromise for decision makers as the plan started as a citizen demand backed by

			several associations of the town and the local nurse. Synergies with the health department and the petition for a financial aid to build the plan also helped raise the interest.
R-G.3	User – friendliness (avoid barriers for use)	Close relationship with partners closely involved in the technical aspects of the use case (WP3, WP4, WP5). Prevent feature creep.	Close relationship and intensive work and collaboration during and before the trial period. Specific actions were also conducted in this line: stability, user interface, image recognition, bandwidth, and battery consumption, among others. [22, 31]

Table 19: Details about initial risk analysis of the Urban Planning use case and final measures taken.

The next step that we take in terms of the evaluation of results is based on objective criteria such as indicators and numbers, although this is difficult in a use case of this type, as was already mentioned when the evaluation criteria was set at the beginning of the project in D5.1 and in the results of the first field trial in D5.3. Subjective analysis and looking at the circumstances that surround the use case are of maximum importance when we are dealing with new scenarios, as there was little to compare to. However, a combination of the objective and subjective analysis is done in this section to try to extract a meaningful evaluation of this experience within the project. This information comes from both the indicators used to quantify objective criteria, as mentioned above, and from the interviews with stakeholders.

Results and evaluation based on quantifiable criteria

Number of participants

The natural starting point to study the results based on numbers is to look into the total users. When the participation period was closed 143 participants had sent their questionnaire expressing their opinion about the plan. In order to say if this number is low or high we need to closely look at the comparison with other numbers. When the issue of the desired representativeness was tackled by the Working Group, where council members take part, it was difficult to give a straight forward answer, as there are no explicit participation processes in place to compare to: neither direct and individual nor group participation are institutionalized, as described in the analysis of the organizational implementation of the use case in D2.4 [30]. There are no significant experiences in the close past either about citizen participation in municipal decisions. Therefore the approach taken to establish the goal in representativeness for this second field trial was to use the number of voters that were

necessary, following the electoral laws and the D´Hondt method, to choose the last member of the council. In the case of Gordexola´s last municipal elections in 2011 the number of voters that determined this last seat in the council was 108, as is shown in table 20. Therefore this was used as the threshold established by the working group to consider the participation as representative enough in terms of the results being taken into account in the decision making process and having enough value in terms of percentage of participation. Therefore the number of participants that gave their opinion during the period established for the second field trial was higher than this number, and even higher than the number of votes necessary for the last four council members, so in sum, the opinion collected from the user group could be considered to have the same weight as a council member, and the number was considered as a success by the council members. At the same time this number can be considered important if we compare it to the total number of people who vote for each party, the participants in the trial would be in third place, after the numbers of the two main parties. Looking at the number from another perspective, compared to the total number of inhabitants in Gordexola, which is 1,717, the participation rate is 8.5% of the population.

Political party	Votes	% Votes	D´Hondt Method					
PNV	542	45.97%	542	271	181	136	108	90
aG	373	31.64%	373	187	124	93	75	62
Bildu	126	10.69%	126	63	42	32	25	21
PP	82	6.96%	82	41	27	21	16	14
PSE EE (PSOE)	18	1.53%	18	9	6	4.5	3.6	3

Table 20. Results of the last municipal elections in Gordexola in 2011. Distribution of the votes in order to distribute the 9 council members following the D'Hondt method. Each grey cells determines one council member for the corresponding party.

This number can also be divided into those participants who used the mobile devices, 101, and those who did traditional participation, 42. This again proves that the CPMT approach was preferred by citizens, even more so if we take into account that the reason that some people used traditional paper means was because they had technical difficulties with their device due to compatibility, and others because they are not interested in using a mobile phone because of their age.

As also mentioned in section 4.3, users were able to answer some profile information in order to be used for statistical analysis, and from this information it can be extracted that 100 participants say to be residents in Gordexola. This number is also a very high percentage of the total numbers of participants, and is interpreted the same way as a good result in terms of representativeness.

Downloads of the mobile apps

The most valuable number as a result of the field trial is the number of questionnaires that have made it to share their impressions so that they are taken into account in the decision making process. Nonetheless, in terms of studying the impact of the use case and the field trial, specially as an application of this type for administrative participation purposes is a new scenario, it is also interesting to see how many downloads there has been of the

applications. Some people may have not decided to vote, either due to little interest in the results of the participation, or because they were only curious to have a look at the app, and not to use it for its purpose. Looking only at the numbers until the participation was officially closed, we see that the total number of downloads for iPhone and Android was 189. In total the Android app has been downloaded 106 times, and although some users uninstalled it, 62 users still had the app at the end of the trial period. The iPhone app was downloaded by 83 unique users. Therefore, and by comparing this total to the number of questionnaires received electronically, we see that there have been 88 users who have downloaded the app but did not send their opinion using the apps.

As the plan is not controversial it may be considered that a large fraction of these 88 users that did not send any response was because they were happy with the plan, had no preferences on location, and did not feel the need to send any feedback to the municipality. This conclusion is the result of the impressions collected during the user interviewing, where many people shared this point of view, they knew about the initiative, thought it was quite nice and they received it well, but did not feel that it was necessary for them to vote as they were ok with any possible option.

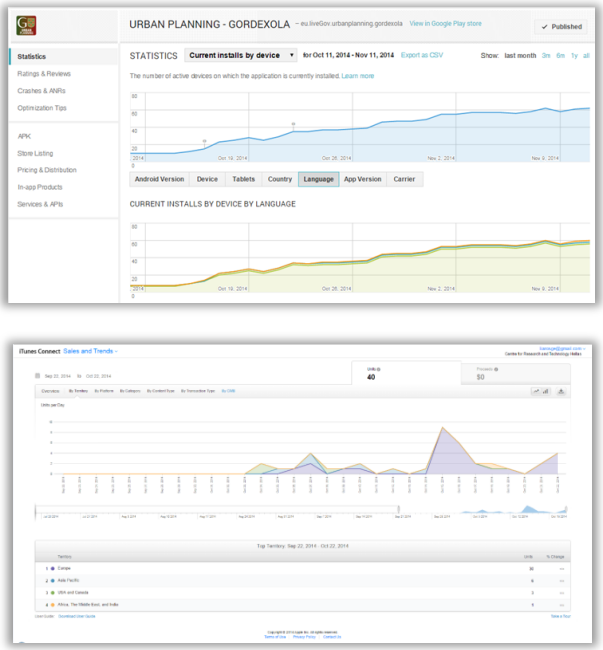

Figure 24: Statistics from the trial period relating to the Android and iPhone versions respectively of the Urban Planning Gordexola app administration consoles.

Visits to the municipal web page

The impact of the project at a local level can be studied in terms of the interest it has created among people closely related to Gordexola. Another way to consider this with a group of interest linked to the municipality is looking into the activity of project related material within the local web portal. The inclusion of the participation initiative Urban Planning Gordexola increased the visits to the municipal web page during the field trial period. The information related to the plan was included in the municipal web page, as stated before, and this initiative increased the visits they received during the field trial period. This result comes from the analysis of the web traffic during the period of the field trial in October, and

the previous months. The number of unique visitors in October was 1129, and the total visits in the same period was 1698.

A closer study of the activity of users on the web page shows us that the page dedicated to the information about Urban Planning Gordexola had 185 visits. This page was the third most visited page, behind the page dedicated to the Council and the page about the legal urban planning section, which are both very important sections. This ranking is not taking into account the entrance page and the home page, which are normally always accessed as a starting point. Further detail about the statistics from the page can be found in Figure 25 below.

Títulos de página

Nombre de Página	Páginas vistas	Páginas vistas únicas	Porcentaje de rebote	Tiempo promedio en la página	Porcentaje de salida	Promedio de tiempo de generación
Gordexola - Ayuntamiento	1103	829	13%	00:01:07	31%	1,53s
Ayuntamiento de Gordexola - Inicio	1302	813	44%	00:01:32	33%	8,55s
Ayuntamiento de Gordexola - Ayuntamiento	217	151	24%	00:00:48	35%	1,51s
Ayuntamiento de Gordexola - Servicios	148	104	33%	00:00:59	13%	2,2s
Ayuntamiento de Gordexola - Transporte	116	102	82%	00:01:16	84%	2,93s
Gordexolako Udala - Hasiera	170	94	28%	00:02:35	46%	12,72s
Ayuntamiento de Gordexola - Urban Planning Gordexola	185	90	35%	00:03:38	51%	2,95s
Ayuntamiento de Gordexola - Turismo	96	76	38%	00:00:28	13%	1,41s
Ayuntamiento de Gordexola - Plan General de Ordenació	229	74	29%	00:11:30	61%	3,01s
Ayuntamiento de Gordexola - Noticias	157	65	50%	00:02:01	29%	3,34s
Ayuntamiento de Gordexola - Fiestas y eventos	65	48	43%	00:00:45	54%	1,45s
Ayuntamiento de Gordexola - Contacto	48	45	0%	00:00:40	71%	1,04s
Ayuntamiento de Gordexola - Datos	55	43	0%	00:00:18	7%	1,24s
Ayuntamiento de Gordexola - Patrimonio histórico	87	43	33%	00:00:26	5%	0,76s
Ayuntamiento de Gordexola - Palacios	60	37	59%	00:01:49	65%	1,39s
Ayuntamiento de Gordexola - Empresas	55	36	14%	00:00:18	22%	0,94s
Ayuntamiento de Gordexola - Trámites	52	36	0%	00:01:15	14%	3,78s
Ayuntamiento de Gordexola - Perfil de contratante	52	35	50%	00:00:50	34%	2,77s
Ayuntamiento de Gordexola - Herriko Abereen XXIV. lehi	50	34	0%	00:01:59	35%	3,08s
Ayuntamiento de Gordexola - Rutas	72	34	13%	00:00:38	24%	0,86s
Ayuntamiento de Gordexola - Alojamiento	41	33	80%	00:02:37	45%	1,88s
Ayuntamiento de Gordexola - Anuncios, bandos y edictos	49	33	20%	00:02:00	9%	2,31s
Ayuntamiento de Gordexola - Presentación del proyecto	58	33	67%	00:01:03	39%	2,39s
Otros	2891	1660	58%	00:01:58	41%	2,42s

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Figure 25: Statistics about visits to www.gordexola.net in October 2014.

Synergies

Another result of this trial is that the project to build a health park has also applied to a campaign by the Basque Health Department to give financial aid to initiatives that promote healthy lifestyles. The application was submitted in parallel to the participation process and the financial aid has been approved for the installation of outdoor sports urban equipment in Gordexola. The proposal of the installation that was sent to the Health department was done in order to be compatible with the ideas offered for participation, although pending the final decision making process, to decide about final details.

This grant includes the costs of giving information to people about the benefits of this installation, and how to use them, which also follows the guidelines set within the project of giving information back to citizens about what they participated in and fulfilling their expectations in terms of information. These in person sessions will also include a mention to the Urban Planning use case, and the Live+Gov project, and how this project was a result of a citizen initiative that was then included in the mobile eParticipation project, and how the results that came from it have been taken into account in the decision making process, offering a different type of dissemination at the end of the Live+Gov project lifetime, and even after this period.

Therefore the synergies created and timing allowed the project and the real plan to mutually benefit, and complement each other in the final part of bringing the participation to reality in order to benefit the people.

Figure 26 Documentation provided as part of the application submitted by the Local Council of Gordexola to ask for a subsidy given by the Basque Health Department

Usability and user experience

The evaluation of the first field trial put great stress on the user experience and as a result a number of changes were planned and implemented towards the second cycle as was studied and described in D5.3 and D5.4 and also further developed and translated into the technical changes described in D3.2.

Usability aspect	Change name	Improvements
Efficiency	Change 1 – Improvement of mobile app availability	Android and iOS Improved layout design Context awareness Battery consumption optimization
	Change 2 – Improvement of 3D model configuration	Improved AR experience of 3D models based on location Improved AR experience of 3D models based on visual recognition
Feedback & Errors	Change 6 – Inclusion of warning messages	Rich set of messages and notifications Bandwidth usage optimization
Learnability	Change 1 – Improvement of mobile app availability	Android and iOS Improved layout design
	Change 6 – Inclusion of warning messages	Rich set of messages and notifications
Memorability	Change 1 – Improvement of mobile app availability	Android and iOS Improved layout design
	Change 6 – Inclusion of warning messages	Rich set of messages and notifications
Reliability	Change 1 – Improvement of mobile app availability	Android and iOS Improved layout design Context awareness Bandwidth usage optimization Battery consumption optimization
Satisfaction	Change 1 – Improvement of mobile app availability	Android and iOS Improved layout design Context awareness Bandwidth usage optimization Battery consumption optimization
	Change 2 – Improvement of 3D model configuration	Improved AR experience of 3D models based on location

	Change 3 – Improvement of image detection	Context awareness Improved AR experience of 3D models based on visual recognition
Utility	Change 1 – Improvement of mobile app availability	Android and iOS Improved layout design Context awareness Bandwidth usage optimization Battery consumption optimization
	Change 3 – Improvement of image detection	Context awareness Improved AR experience of 3D models based on visual recognition

Table 21: Changes and improvements for the second field trial of the Urban Planning Gordexola mobile app related to the usability aspects

In order to analyze the results of the second field trial it is good to take a look at the changes that have been implemented in the prototypes for the second field trial and how they have come into real life, as is summarized in the table above, and the evaluation collected from user experience.

The first change was the availability of the app on both Android and iPhone, as well as an improvement of the look and feel of the app. This way the reach of users was expanded greatly, and even those who were not able to use the app during the trial due to technical constraints had the feeling that it was a universal system, and understood that mobile technology evolves quickly and that it is ok for some devices not to be compatible. Therefore this change was received as an important improvement.

The second change made to improve the prototypes was an improvement in the 3D model configuration. It was done so as the result of the first field trial, and this aspect of the use case turned out to be quite more demanding itself than initially envisioned, as was described in D5.4 and is also mentioned in this section. However, the evaluation of this aspect as a result of the trial is that the 3D models presented based on location have not proved to enhance the user experience as much as desired and there is still room for improvement in this field. This impression was collected both from citizens and from administrators. This evaluation must also take into account that the experience has shown that the use of 3D models presented in a certain place through augmented reality on mobile devices has a strong influence on location detection, and the many factors that have influence on this cannot be controlled and therefore in order to be used there must still be an evolution either of the precision of location, or users must adjust their expectations to what is technically feasible in order to take advantage of what it has to offer. The third change, the improvement of image detection, was related to this aspect of 3D model presentation. However, this presentation of the models using augmented reality was triggered by images themselves and the models were overlaid, and the improvement came in terms of a great improvement in many ways. Users acknowledged the experience of use related to this

presentation as very nice and interesting in order to have a better impression of how the plan will look.

As part of the improvements done towards the second round, the view of the results was enhanced to offer users the total results of participation real time, from any platform, and at the end of the trial period traditional participation results collected on paper, were also included to have the whole view of the results of citizen participation for this plan. This was greatly appreciated by users as they could see the results themselves which are a proof of how clearly the information was being collected and of how transparent this system and the results were for citizens.

The fifth important change was the configuration of billing services, however, this was a change not acknowledgeable directly for end users, and therefore is could not be evaluated subjectively by them.

The last change pointed out in D5.4 was the inclusion of warning messages. This change was made as a result of the experience in the first round where citizens got lost quite easily when they experienced technical problems due to connectivity or installation problems. For the second round, close attention was paid to guide users as much as possible in any system failure they may have. The experience for users was greatly improved by this as when they had problems they could have information about what was happening.

Then, apart from the impressions collected from the interviewing that have already been described above to see if these improvements had had a result in terms of user experience, a usability survey was handed in to users. The same survey as in the first field trial was used so as to compare the results from the first cycle. The results were grouped and analysed the same way as in the first cycle, and the way this was done can be found in D5.3 [29]. The new results are in figure 27 below.

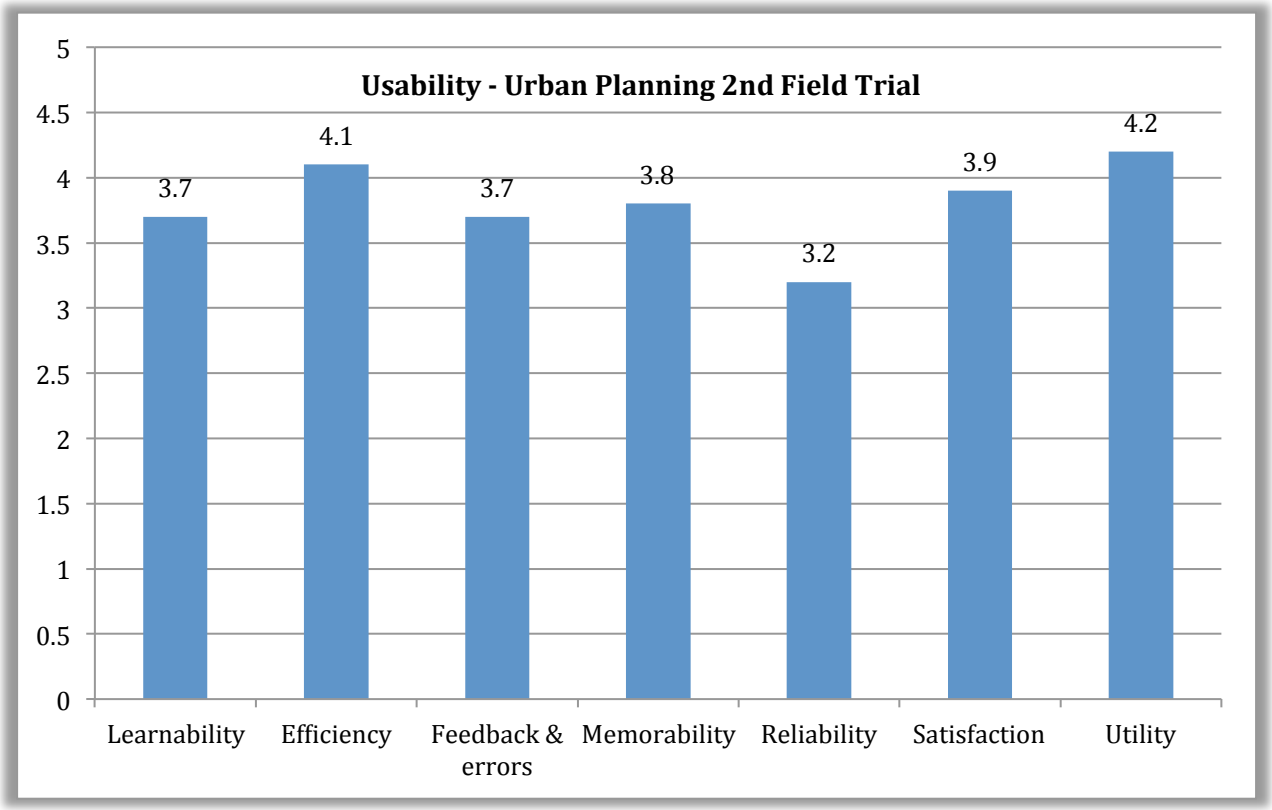

Figure 27 Average score on usability topics. Urban Planning Use Case Second Field trial.

Taking a look at the numbers and comparing to the first evaluation, we see that the numbers have increased in all of the aspects, but there has been a significant improvement in the areas detected as worse in the first cycle. From the results it seems like this progress in terms of the opinion of citizen users could be related to the work done in terms of improving the above-mentioned characteristics, and therefore this work was conducted correctly in terms of its aims. The average score for usability is now 3.8. This number is higher than in the first trial, where the average score was 3.15, which is already a positive fact, but it can also be considered as a quite high average as people normally avoid the maximum and minimum scores in these type of surveys.

Administrative users – web application evaluation

Going one step further in the evaluation of the changes for the second field trial, the whole web application that allows administrative users to visualize and study the results, is a novelty in this second phase of the use case. This platform has been evaluated very positively by the administrators of Gordexola participating in the project who referred to it as a very powerful tool for their work if they have citizen participation that they can make use of for specific plans. The evaluation has only pointed out one weakness, and this was not related to the platform itself, but related to the customization. The way the options of residence had been given lacked the potential of studying the global results from the people who said to be inhabitants of Gordexola, and discarding non-residents, so it was still necessary to do some processing of the information in this case to group all of the people from the different neighborhoods with the filtered options, that could have been solved if it had been contemplated previously.

The results of the participation in the plan itself have been studied by the municipal administrators in order to see if there have been big differences in the opinions about the plan based on age groups, area of residence or gender. They looked at the responses from the groups using the filtering options, and discovered that in general the opinion was more or less the same in the groups and in general. As this plan to build a health park is intended for everyone this result is good and helps back the final decision to install the outdoor sports equipment.

The breakdown of the results on the voting location view shows that there were no interesting patterns of participation in this aspect. This map view gave an idea of the distribution which was quite widespread and not concentrated in one specific spot, and therefore not initially related to anything.

Temporary analysis showed that the "no"s to the plan were casted at the beginning. This had value for the administrators, because it showed that people who were against the initiative were active at the beginning, but this opposition to the plan had little follow-up. In the end this only emphasizes that the majority of people backed the installation of this park.

Media attention

This second field trial in Gordexola has had a quite impressive echo in the media, and for this reason it deserves a special mention. From early in this second field trial, prior to the actual presentation, news about the project have appeared in a great range of digital and printed editions of local, regional, and national newspapers, as well as in two radio programs, with an interview to a person from Gordexola, invited to talk about it on air. This is even more interesting if we take into account that there was no action taken, prior to the first news, by the stakeholders for this to happen. The local dissemination in town brought the interest of the first newspaper, that visited the Town Hall of Gordexola in order to find out more about the citizen participation initiative, and from then on it was broadcasted. After the first attention was drawn by the media, an article was sent to the regional government's media agency which also published the news, and was also broadcasted further, as can be seen in the impression in figure 28. However, even after this, and again without any actions, there has been a follow up about the initiative, the results and how the park will be built after this experience. Over 15 articles have been detected, two of which were on web specialized in apps that included Urban Planning in their reviews, apart from the two already mentioned radio programs where information was included.

This buzz is interesting, but what is more so is to look into why this has become news. The spot light has been placed on this initiative because of the current popularity of participation of people or crowds in any of its many ways. Crowd-sourcing, crowd-funding, demonstrations, and other forms of collective ways of sharing goals and objectives, are becoming everyday topics in a society that is demanding more direct power and higher levels of interaction with all types of authorities. Therefore this attention given by the media is a proof of the assumptions made at the beginning of the project where we stated that this CPMT initiative would cover the demand that people currently have.

Figure 28: Impression of news articles about the Urban Planning Gordexola use case.

4.5 Lessons learned

There have been two insights gained during the life of the project related to the Urban Planning use case that are the most important. The first one is that this type of participation initiative, although not binding, has very important political consequences, and therefore closely studying the political aspects and having politicians feel comfortable with all aspects of the initiative is absolutely necessary in order to be successful in a CPMT approach of this type. The second one is that the characteristics of the urban plans need to be appropriate to use augmented reality presentation of 3D models, as there are many technological constraints. In the same line, the 3D models, which were initially considered as input for the system, have ended up needing a lot of efforts.

The experiences from the trials within this use case have proved that it is difficult to find significant advantages of augmented reality over a map based presentation in terms of giving location information, as is mentioned in D3.2. However, and like we predicted, the added value of augmented reality has proved so in terms of attractiveness. This presentation gave an easy to understand visual interpretation to users, which was the strength within the use case, which was clearly identified in the image based presentation of the models on the

AR view of the application. However, the impact of GPS accuracy in giving a smooth user experience in location based AR presentation was largely underestimated.

In terms of user experience, the numbers on the usability aspects from the survey on their own show the progress, but the impressions collected from citizen users in the second field trial have been significantly better than in the first trial, which means that the work done has gone in the right direction, in the usability aspects of the mobile apps for citizens.

The results from the evaluation coming from the administrative users gives a good idea of how useful the tool is to find extra information from results, which can be of many types and not following patterns that are straightforward, but that can come up with an experience of this type. This has extra value when talking about urban plans which can be very different, covering a wide range of applications. How differently it can be used to find insights and the possible uses in combination with other services make this tool even more interesting for administrators when they look into the near future.

Another lesson learned from the experience is that once you open a new channel of this type, although it may have not been explicitly demanded until this moment, people start to want more. The municipality has received a lot of feedback from people about what future participation initiatives will be done, or asking if this will be used for the urban plans that will be studied by the council.

Closing the loop and giving feedback about the results or participation, but also about the final decisions made is absolutely necessary. Not only this, but this is also a powerful way for people to have a better understanding of how local decisions are taken, increasing the transparency of the local administration, and lowering the levels of distrust in politics.

Figure 29 Importance of closing the loop for citizen satisfaction in CPMT

During the trial period many people received information about the project, but the message was not totally clear to them, so user friendliness must not start with the app, but with the communication strategy so that people know clearly about what the participation initiative is about. Although this was a lesson learnt, how to improve this is not an easy task as it is always on the table of local councils for all types of issues that they want all citizens to know about. This also demands a cultural change of citizens who must be willing to participate in their community actively and not passively, like is most common nowadays.

Finally, although the focus of the project is CPMT, a participation project where decision making for all citizens is at stake, and there is a need for strong political commitment, there

must be measures to avoid bridge the digital gap, and these actions must try to include traditional means for the purpose, to support the technological approach that is taken. The Society of Information needs to take steps forward towards innovation, but not leave anyone behind as technology evolves.

Study the political aspects closely and create a comfortable environment with a proper analysis of risks and contingency measures at this level for the experience to be successful.
Revise the appropriateness of 3D model representation using AR for the plan, taking technical restrictions into account, before deciding to use this technology.
Opening eParticipation is like moving a wheel, once it starts moving you do not need great efforts to make it continue. People demand more.
Feedback during the participation process and during the decision making gives all of the value to the process itself and helps people better understand how local administrations work.
Support CPMT with traditional means for participation to bridge the digital gap and succeed in having a solid participation initiative.

Table 22 Summary of lessons learnt in the Urban Planning field trials

4.6 Summary of the Evaluation of Urban Planning

The second field trial of Urban Planning Gordexola took place during one month, from mid October to mid November, had 143 citizen participants, out of which 101 participating using their mobile devices. The information collected during the trial period showed the preferences of the population, and as the participation rate met the goal of representativeness set by the council, the results will be taken into the decision making process, which will use this as input to build the health parks in the next months. This summarizes how the participation results will end up in a real plan for the town and the opinion from the people will determine the location where the equipment will be installed, and therefore shows that the administration is happy with the result, and the citizens are as well.

The evaluation of usability of the second field trial shows that the work done to improve the prototypes has gone in the right direction, although there is still room for improvement, and there are technological limitations related to positioning models on location based AR views, not directly related to the developments within the project, but with the positioning system (GPS).

Although many aspects have been evaluated the most relevant indicator that shows the impact that the use case has had is the attention that the project has had in the media. Over 15 articles have been published in different digital and printed newspapers, and two radio programs on different channels have talked about the project, including a personal interview in one of them. Moreover the echo of this initiative in the media has special importance if we take into account that some of the news sources are in the regional leading positions, both newspapers and portals, and radio channels.

The people from the administration of Gordexola, both at a political level and administrative workers, have collected the opinion of the citizens directly as this small town offers constant in person interaction between them. They have shared with the people working for the council mainly in two aspects.

First citizens want to have a clear understanding about the results that will come from the participation initiative and how the information will be taken into account. This itself can already be considered a fulfillment of one of the goals of the project, as it is helping people have more information about how public decisions are made, making the local administration more transparent and changing the standards for citizen participation.

Secondly, and in this same line, people have expressed their interest in having more options to participate. They would like for this experience not to be just a best practice, but to become a common practice in their administration. This is again increasing transparency, open government and changing the standards of how citizens participate in their community.

As the leaders of the use case for the trial in Gordexola, the administrators feel that they have opened the door to a new way of handling politics and local administration in their town. Therefore they evaluate the experience as quite positive. The numbers also show that the initiative has been well received by the people, and what is much more interesting than these numbers, is the feedback collected on the street. Many people have not participated due to the initiative being new and unknown, although they had received information, they were still cautious, as mentioned above. However, almost all reactions have been positive, and there were few people who could say anything bad about it. Some of the negative reactions were that people couldn´t choose the location they preferred, that they had to choose one, but this was not the case, as was told to the people who mentioned this, because the free text option allowed people to say what they considered to the administrators about the plans. Another negative comment collected was that people who were against this plan, the installation of the health park, did not want to have to answer to all of the questions. This was the initial requirement, but during the development it had been changed, and this was also one of the changes made to the application during the trial period.

In sum, the experience of the Urban Planning use case has been evaluated as quite positive in all aspects and by all stakeholders involved. These trials have opened the door to modernization in terms of local participation not only in the town of Gordexola, in the region of Biscay, but also in a much broader range, as is the goal of a European investigation project. eParticipation will become a common standard in the near future and the work conducted within this project shall help describe some of the most relevant aspects and show a best practice in the field.

5 Live+Gov Handbook: Overview

The Live+Gov Handbook is the public document "that describe[s] the best practices for adaption in future/other eGovernment initiatives" according to the Description of Work (DoW).

It is addressed to practitioners who want to set up Open Government campaigns to increase the participation of citizens in political matters. For this purpose, the handbook addresses the most important points and lessons learned for the planning, set up, execution and evaluation of eGovernment campaigns. The handbook describes and illustrates the four steps outlined in the CPMT (Citizen Participation with Mobile Technology) approach of Live+Gov.

Step 1: Choose the right form of Open Government.

This step consists of the two smaller steps: Choosing the right form of Open Government and choosing the adequate policy-field.

Choosing the right form of Open Government

The first and foremost question for a municipality which is about to open up its processes and its policies is to decide how far-reaching the Open Government approach should be and in which policy areas it should be introduced. The Live+Gov methodology defines the task of choosing the right form of Open Government by the choice of the ideal configuration among the different variants of *transparency*, *public participation* and *collaboration*.

- *Transparency*: the degree to which information is available to outsiders and enables them to have informed voice in decisions and/or to assess the decisions made by insiders.
- *Public Participation*: the possibility for citizens to communicate with public authorities about policy options and alternatives and to contribute to actual decision-making processes.
- *Collaboration*: the responsibility that is jointly taken for the urban communities by citizens and administration.

The Live+Gov methodology supports four principal variants of Transparency, three variants of Participation, and three variants of Collaboration to be implemented. The form of Open Government and the combination of pillars is highly dependent on the extent of responsibility that the public authorities are willing to share with the citizens.

Choosing the adequate policy-field

Possible fields of application of the CPMT-Approach are those in which the spatial location of the decision-making subject is important. This relates to everything that relates to mobility (e.g. the traffic infrastructure) and the public infrastructure in general. Other fields of applications for Open Government, e.g. the budget of a municipality, can also be touched if they are somehow related to the substantial questions, e.g. if the budget should be used for infrastructural project A or B. These are usually decisions being taken on a local level. Subsequently, the CPMT-Approach is particularly well-suited for municipal decision-making.

Step 2: Prepare for an Open Government Process.

Many Open Government initiatives by municipalities and cities do not have their desired effect because they are not embedded in the organisational setup of the public administration. Therefore, before implementing the one or the other form of Open Government the public authorities need to pay close attention to two fundamental questions:

- How can the Open Government variant be integrated into the already existing decision-making procedures and make it a part of the everyday routine of the public administration? Only this guarantees the sustainability and effectiveness of the Open Government initiative.
- How can the Open Government process be made as transparent as possible? Even though the Open Government process is aligned with the traditional decision-making procedures, it must not happen that citizen input is disappearing from public oversight due to nontransparent decision-making procedures. Hence, the decision-making processes which are affected by the Open Government initiative need to be opened up and made transparent.

Step 3: Implement the CPMT-Approach.

The CPMT-Approach argues that harvesting the potential of mobile technology results in cost and efficiency savings, which are necessary for effective Open Government. Appropriately chosen technical implementations facilitate a number of novel functionalities and need to be connected to existing software systems of the public administrations. The following core requirements need to be met by novel software for accomplishing these new functionalities. They need to be capable of recognising, perceiving, and interpreting the actual environment of the user. Therefore, the implemented system will be capable of inferring the activity of the user and providing information, which is fitting to the respective activity. Three main components have been developed in the context of the Live+Gov project and have been applied in three specific use-cases. *Mobile components* such as an Augmented Reality (AR) browser and an app for activity recognition have been implemented and tested as well as a *web application* and a *back-end application*.

Step 4: The Communication Process.

Live+Gov proposes a communication strategy as part of the participatory process in order to motivate citizens to take action, to issue their opinion and to take part in the public debate, in general. Hence, if a new participatory process is introduced, authorities should use online and offline media communication channels (local newspapers, radio ads, websites, email messages, social media, telephone calls, mail) for advertising the new possibilities. Furthermore, they can organise and invite to public participation days where the new possibilities are presented and discussed. There, citizens can learn how the new processes are functioning, how new technical features are working, and can issue their opinion and attitude already in the development phase of the participatory process as such. This shows the citizens that the authorities have a genuine interest in the opinion of the people and that the main purpose of politics is to make policies for the benefit of the citizens and is not an end to its own.

Structure of the Live+Gov Handbook

The handbook is structured as follows. Step 1 of the CPMT approach, which is to choose the most appropriate form of open government that should be employed, is described in Chapter 2. Chapter 3 then outlines the preparations for an open government campaign. Chapter 4 specifies different implementations of the CPMT-Approach. The question of how public authorities should communicate with citizens is answered in Chapter 5. Chapter 6 summarizes the four steps of the CPMT-Approach from Chapters 2 to 5. Use case examples from the Live+Gov project are portrayed in Chapter 7 to give the reader four specific implementation strategies of the CPMT-Approach. To be finally able to quantify the success of an Open Government campaign, Chapter 8 summarizes general evaluation criteria and reports on the specific criteria which were used to evaluate the Live+Gov use cases.

Conclusion

The Live+Gov handbook is addressed to civil servants who want to implement Open Government to increase the participation of citizens and to obtain valuable feedback for government campaigns. The handbook is a practical guideline that presents the Live+Gov approach to Open Government and gives practically appealing examples along with lessons learned from the Live+Gov project. Hence, it provides important insights that help civil servants to understand, plan and set up the necessary steps of an eGovernment initiative.

6 Summary

This document "End results of trials and Live+Gov Methodology" presents the results and lessons learned of the second field trials of applications developed for the three Use Cases Mobility, Urban Maintenance and Urban Planning. The Live+Gov project was set up in a cyclic way, in which requirements were described, development took place, field trials have been run and evaluation has been done. This cycle was repeated with adjusted requirements and development in a second field trial, which has been evaluated as well. For the three Use Cases, first prototypes were revised using the results from the first field trials. These revised applications were now successfully applied and evaluated in the second field trials. Overall, the three Use Cases were well received by citizens and the government. Future developments to make the revised prototypes market-ready are proposed for each Use Case. Furthermore, the accompanying handbook summarizes the Live+Gov methodology to help practitioners to plan, implement and set up Open Government initiatives.

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