D3.3.1

RESULTS AND FEEDBACK ANALYSIS -DRAFT

End user feedback after 1st iteration

March 2014

ABSTRACT

The aim of this document is to provide an overview and a comparison of the results of all experimentations with Smart City Scenarios of FI-Content in Brittany, Cologne, Barcelona and Berlin. It reports on the respective implementation of the experiments and summarizes, in a condensed form, the process from planning and execution of the experiments to the evaluation of the collected user data. Concluding, the document provides a generalized summary of the results and a set of recommendations to exchange knowledge between the partners for platform improvement and to support the on going planning of 2nd cycle experiments.

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EXECUTIVE SUMMARY

The aim of this document is to provide an overview and a comparison of the results of first cycle Experimentations that tested the Smart City Guide platforms and services of FI-CONTENT 2. Therefore it covers all respective phases of experimentation, from planning and execution to evaluation of the collected data and results, in a condensed form.

All sites worked with a user-centred methodology, but involved different user groups over varying time spans, while targeting different research questions. Researchers therefore worked with different sets of methods for involving the users and for capturing the feedback. The document will put all approaches and results next to each other, to enable a comparative evaluation of the outcomes and to facilitate knowledge exchange between the sites. In conclusion, generalized findings are presented, to create a common knowledge basis, delivered as a set of recommendations, to support improvement of the platforms and on-going planning of 2nd cycle experiments.

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ABBREVIATIONS

API	Application Programming Interface
AR	Augmented Reality
CG	Computer Graphics
FAQ	Frequently Answered Questions
FI	Future Internet
FI-PPP	Future Internet – Public Private Partnership
GE	Generic Enabler
GPU	Graphics Processing Unit
GPS	Global Positioning System
POI	Point of Interest
SE	Specific Enabler
XML3D	Three Dimensional Extensible Markup Language

1 - Introduction: First experimentation cycle of Smart City Services

1.1 - Overview on SCG Scenarios and Experiments in 1st cycle

Scenarios are the basis for the trials and they use a subset of the functionalities developed and provided by the Smart City Guide platform. In the following part we will give results of the main scenarios of the SCG application that have been tested in the first iteration.

Date	Site	Scenario
September 2013	Berlin	On site visit
October 2013	Brittany	Local Content and Recommendation functionalities
November 2013	Brittany	Local Content and Recommendation functionalities
February 2014	Barcelona	Local Content and Recommendation functionalities
March 2014	Cologne	Social Network
March 2014	Berlin	On site visit
April 2014	Barcelona	On site visit
October 2014	Brittany	Local Content and Recommendation functionalities
October 2014	Barcelona	On site visit

1.2 - Introduction to Smart City Services by Orange, PIX and FOKUS

The "Smart City Guide" service developed by Orange and tested in Barcelona and Brest is a android mobile application that provides recommendations for events (concerts, exhibitions, etc..) and points of interests (museums, restaurants, attractions, etc.). These contents (events and points of interest) are aggregated to provide users a simplified experience and geo-location services, tourism and cultural offerings available in both cities. These contents are from thirty sources such as UGC like Wikipedia, the "Open Data" and professional contents.

The Smart City Service "Social Network", implemented by PIX and tested in Cologne, is a mobile app, that supports a closed group of users at a life event to communicate and to collaboratively create life documentations based on different collected media. The application offers different views to present the collected content on the phones; it is technically prepared to bridge situations of low-bandwidth, to support the collaborative action also under high traffic circumstances.

In Berlin, the 1st version of the Smart City Guide Web App was developed and tested by FOKUS as part of the on site visit scenario. The mobile web application is optimised to be used in a web browser on a smartphone. The main content in the app comes from the Open City Database (OCD); this contains a collection of cities and their Points of Interest (POIs). The app offers users functions ranging from access to the Open City Database to receiving information on sights, a map to find and localize POIs, as well as the opportunity to create and add user generated content. Users can extend the OCD by adding a new POI to the database. For the first experiment in Berlin, the IFA was established as a “city” and various booths could be created as POIs. The test users were given the Smart City Guide Web App and asked to complete a number of tasks.

1.3 - User Centric approach and qualitative methods

All Experimentation Sites agreed to apply a user centric methodology, introduced in Deliverable D7.1.2, for testing the novel applications and services with users groups on-site. Each site decided on different ways for

implementing these methods, due to the specific requirements of the technology and to the different scenarios that the experiments were based on.

The approach used to have experimenters' feedback about the Smart City android application during the Brest and Barcelona experimentations is completely developed and integrated to the process used to design and develop it. The aim of the user centred agile method is to enable regularly feedbacks from users through all phases of the project. This process is divided on three phases: early design phase, agile development phase and experimentation phase. In D3.1 the first two phases have been described and the concrete result is the android application. During experimentation, users are placed in real environment invited to test the application and we had feedbacks from several methods. We asked them to answer three questionnaires including the System Usability Scale and the Kano questionnaires that have been also used during agile development phase. We also created log files and some users have been invited to participate in a focus group.

The social network enabler was evaluated in a long-termed co-design process, initiated in phase one of FI-PPP, with a focus group of pupils at a Cologne high-school. Decisions on the appropriate test scenario ("Social Network experiment") were based on the shared interest of the group and were adjusted to the groups´ requirements for making use of the application in a real life setting. The scenario focused on performing a shared life documentation while experiencing the event in the group. The experiment was rolled out at a street parade at the Cologne Carnival. To capture and evaluate feedback of the group before, during and after the event focus group sessions, informal interviews and a questionnaire was used.

The objective of the Berlin experiment was to access the overall desirability of the Smart City Guide Web App and usability on a mobile device in a real live situation. The corresponding outcomes were expected to provide feedback on the overall navigation and the touch-screen experience. Further expected outcomes were design related, in particular feedback on icons and control options and validation of the general interaction design. During the experiment users were given a brief introduction to the app and then asked to test it by completing a number of tasks. This involved the testers using the app as a guide for the IFA trade fair and creating POI. The testers were then requested to complete questionnaires and be interviewed after they had attempted to fulfil all the tasks. The results of the first experiment were used to optimise the app for the second experiment in March 2014.

1.4 - Cooperation between different sites

The android SmartCityGuide developed by Orange was tested at two different Experimentation Sites (Barcelona and Brittany):
The Smart City application tested in Brest and in Barcelona was the same. The main difference between both was linked to specific local data that have been integrated. The most significant collaboration stood on a technical level, since the Android application used by Barcelona experimenters is hosted in the ImaginLab data center in Lannion. The first experiment of the smart city services application was held in Brest, organized jointly by Orange and ImaginLab, it is natural that there has been a collaboration with Brittany for the preparation of the experiment in Barcelona. In addition were added some exchanges on how to manage the users and methods to get experimenters feedbacks have been shared between Orange and I2cat and should be same between both experimentation sites.

The Berlin and Barcelona experimentation sites are collaborating on the 2nd release of the Smart City Guide Web App. FOKUS and I2CAT have worked together to include local open data from Barcelona into the Open City Database and an experiment using the web application in Barcelona is planned for April 2014. This experiment follows the lab trials in Berlin in March. FOKUS and I2CAT will also work together on the methodology, to ensure a coherent approach to testing and results analysis in both locations.

2 - SCENARIO LOCAL CONTENT AND RECOMMENDATION FUNCTIONALITIES

2.1.1 - Description of tested application

The “Smart City Guide” service is a mobile application that provides recommendations, android events (concerts, exhibitions, etc..), and points of interests (museums, restaurants, attractions, etc.). These contents (events and points of interest) are aggregated to provide users a simplified experience and geo-location services, tourism and cultural offerings available in Brest. These contents are from thirty sources such as UGC like Wikipedia, the “Open Data” and professional contents.

2.1.1.1 - List of functionalities:

My personal profile/data:

- I access to my profile
- I modify my profile
- I modify my photo
- I select descriptors
- I look to my personal lists
- I modify the rating of a POI in a personal list
- I look to the list of my posts
- I delete one of my posts

People:

- I see the profile of another user

Places:

- I see on a map the POI (places)around me
- I access to data relative to a POI (place) on a map
- I see in a list the POI (places) around me
- I do a search on a POI (place)
- I see in a list the POI (places) corresponding to my search
- I see in a map the POI (places) corresponding to my search
- I sort POI (places) of a list
- I see the description, of a POI (place)
- I see the details of a cluster of POI (places)
- I see the events associated to a place
- I access to recommendations of POI (places) close to me

Evaluation of a POI:

- I assign a rate to POI
- I see a rate I assigned to a POI
- I publish on Facebook the rate I assigned
- I add a POI in my desire list
- I see the global rate of a PIO (place)
- I see the global rate of an event

UGC for a POI:

- I post something on a POI
- I make my posts public or private
- I add one or several photos (from my gallery) in one of my post on a POI
- I delete one of my post on a POI
- I see my posts relative to a POI

- I see public posts relative to a POI
- I see my photos relative to a POI
- I see the public photos relative to a POI
- I see (full screen display) a photo relative to a POI and its description

Events:

- I see on a map the POI (events) around me
- I access to data relative to a POI (event) on a map
- I see in a list the POI (events) around me
- I do a search on a POI (event) by name, type, location, date, period
- I see in a list the POI (events) corresponding to my search
- I see in a map the POI (events) corresponding to my search
- I sort POI (events) of a list
- I see the description, of a POI (event)
- I see the places relative to an event
- I receive recommendations of POI (event) close to me
- I see the details of a cluster of POI (events)

Transports and routes:

- I see on a map the POI (bus, tramway) around me
- I search for a route (public transport)
- I see the details of a route (public transport)
- I see information about a bus/tramway stop
- I see information on a bus/tramway line

Screen shots of the SCG interface:

Figure 1 SCG Screenshot: I can modify my profile

Figure 2 SCG Screenshot: I can see a POI around me on a map

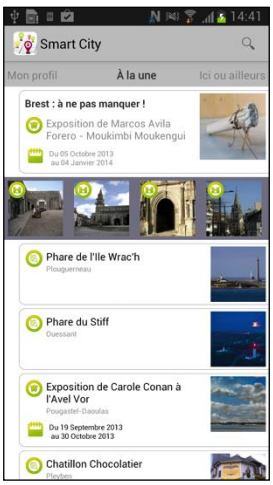


Figure 3 SCG Screenshot: I have some recommendations (events …)

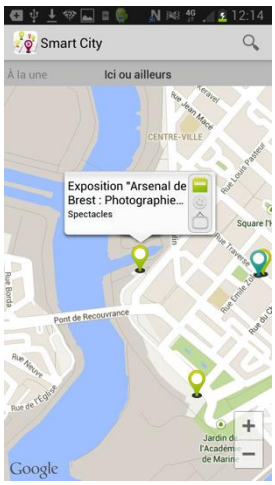


Figure 4 SCG Screenshot: I can have few information about the POI 2

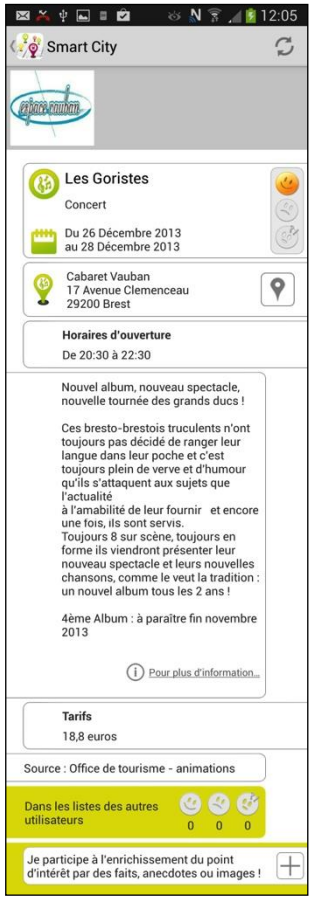


Figure 5 SCG Screenshot: I can have some details about a recommended POI 1

Figure 6 SCG Screenshot: I can have some details about a recommended POI 2

2.1.2 - Test objectives and expected outcomes

From October, 21st the application will be tested with 30 users in Brest (add Barcelona here). These 30 users are divided into two groups of 15 persons who will use the application during 4 weeks in their environment.

The following questions have been addressed through this first experiment cycle:

Social and usage:

- Which user scenarios for experiments will motivate the creation and sharing of user generated content?
- How sociability is bringing in services mixing contents and communications?
- How to create community with citizens and tourists?
- How real time information can foster sociability and sharing?
- What type of open data can make sense? How can end user use it?
- Which impact has pushing a “person centric” approach rather than “user centric” approach on services conceptualization, on business?
- Which “continuum” makes sense between presence and distance, collective and individual, multiple services, devices and technologies?
- What is the acceptability of profiling in regards to the service?
- Multi-screen: what is appropriate for which device? In presence and in distance? At home and on the move? Complementarity and similarity?
- How to recommend and support the connection between people based around a common media experiences?

Service and technology:

- How to facilitate open data access to end user in a technical point of view? In a service point of view?
- How to combine open data, UGC and professional content in cross-border experiments?
- How to technically enable the aforementioned continuum?
- Which adaptation is needed to existing technologies to achieve these types of services?
- Which tools (enablers/ functionalities) are necessary? Secondary but necessary? How different technologies coming from different providers can fit together?

2.1.3 - Applied methods and tools for evaluation

To gain users’ feedbacks regarding this first version of the application, we plan to use several methods and tools:

- Create log files
- Ask the users to answer to 3 questionnaires
- Ask some users to participate to a focus group

The log file is the observation of usage statistics from the application.

An online questionnaire has been submitted twice to gather the feelings of users: at the very beginning of the experimentation (annex A: first questionnaire) and at the end of experimentation to check evolution of their interest (annex B: end questionnaire). This questionnaire integrates SUS (System Usability Scale) questions to obtain metric to follow the evolution of the user experience in term of usability, attractiveness and appearance. A Kano questionnaire (annex C: middle questionnaire) has been submitted in the middle of the experimentation to identify and prioritize the functions. This questionnaire has also been submitted during the user centred development phase. Taking into account all the phases (2 experimentations and 5 “mini end user tests”) 43 users have received and completed the Kano questionnaire. 36 potential functions have been tested with at least 25 experimenters and potential users and 25 potential functions tested with 43 experimenters and potential end-users.

Finally, co designed workshops (annex D: co design interview) is applied at end of the experiment in order to have qualitative information on the new features expected on the service, their implementation and how the experimenters would like to see it.

2.1.4 - Cooperation between Experimentation Sites involved in the trial

In Brest and in Barcelona the same version of the Smart City Guide was tested. The difference between both applications is only linked to the specific local data that has been integrated. The most significant

collaboration stood on a technical level, since the application used by Barcelona experimenters is hosted in the ImaginLab data center in Lannion. The first experiment of the smart city services application was held in Brest, organized jointly by Orange and ImaginLab, there has been natural collaboration between Brittany and Barcelona site to prepare experimentations. In addition were added some cooperation on how to manage the users and methods to get experimenters feedbacks between Orange and I2cat. They should be the same in Brittany and Barcelona experimentation sites.

2.2 - Experimentation in Brest

From October the 21st to the 18th of December 2013 the application has been tested by 30 users in Brest. These 30 users have been divided into two groups of 15 persons who used the application during 4 weeks in their environment.

2.2.1 - Specifics of the scenario

2.2.1.1 - Specifics of tested application

Only data specificities linked to the city.

2.2.1.2 - Summary of test Objectives and expected outcomes

Through this experimentation we aim at:

- Getting information regarding the level of attractiveness and utility of the application;
- Improving the application and identify the orientation to take for the second version;
- Identifying technical problems and evaluating reliability of the application.

2.2.1.3 - Specifics of application of Methods and evaluation tools

No specificities

2.2.2 - Experimentation Infrastructure

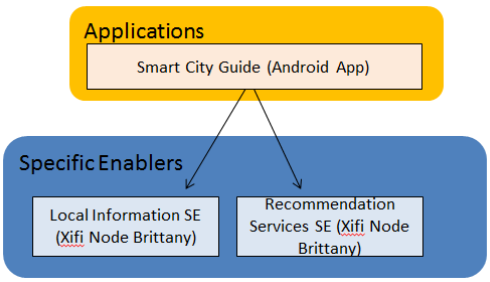
2.2.2.1 - Infrastructure

Brittany experimentation site is based on the technical infrastructure provided by ImaginLab in Lannion (dedicated infrastructure which is currently evolving toward a XIFI Node).

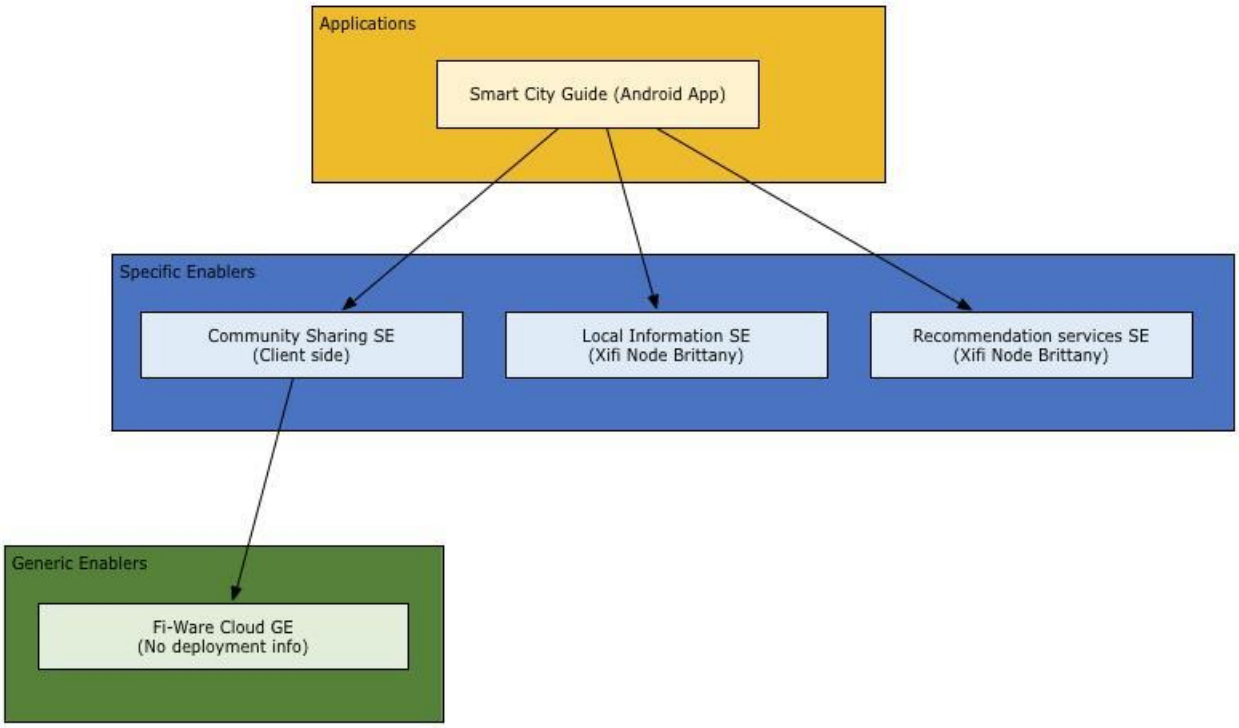
For the need of the experiment, ImaginLab provided 15 Smartphones (Samsung Galaxy S4 for which the application has been developed and tested) 4G compliant.

Orange provided SIM cards with unlimited data access and 4G Live Network.

The smart city guide application infrastructure for the 4 weeks experimentation could be described this way:



The community sharing SE has been tested through end user test at the end of the 4 weeks experimentation:



2.2.2.2 - Users

Specifics of Experimenters, Targeted end users, criteria and recruitment

Targeted end users for this experiment were students from Brest University. They were selected according to the following criteria:

- Android users;
- Half of them were students living in Brest since more than 2 years (group 1) et half of them were just arriving in Brest (group 2);
- Students who agree to spend 2 week-ends or more in Brest during the experiment;
- Half of users were men and half were women;
- Students who form groups of 3 or 4. The idea is to have groups of 3 or 4 friends who meet regularly and do activities together;
- App users on their Smartphones;
- Students from various disciplines (technic, art, literature, law, marketing,).

ImaginLab conducted recruitment through its networks of contacts in the local University and Institutes, which permit to collect more than 80 candidatures. This task was greatly facilitated by the implementation of a portal: ImaginLab aired ads in universities with the link to the portal so that interested students can register themselves on the portal and provide information about themselves. Based on criteria defined by Orange, ImaginLab recruited about 80 users, from which 30 of them were selected.

The 30 users have been divided into two groups of 15 persons.
In the first group there were people who were new in the town and did not know the city.
The second group was composed with people who lived in Brest for a rather long time (two years or more).
Note that the second groups had some more functionalities integrated in the applications: search and filtering of Point of Interests and finalize integration of the recommendation part.

A collaboration agreement between the 3 partners (Orange, ImaginLab, Experimenters) was signed with each user during the launch meeting, in which was specified Terms and Conditions of the experiment (particularly with regards with ethical matters).

User management and support: Thanks to the helpdesk set up for the duration of the experiment, the users were able to easily report malfunctions and request information on the application. Thus 13 tickets have been processed, which helped to improve the application based on user requests.
Thanks to the portal exchanges with users were facilitated, especially when it comes to organizing focus groups and user testing.

2.2.2.3 - Data

Description of Data integrated

- Concert halls: http:*www.brest-metropole-tourisme.fr/*
- Shows: http:*www.brest-metropole-tourisme.fr/*
- Camping grounds: http:*www.campingfrance.com/*
- Events, festivals: http:*www.brest.fr/agenda.html/, http:*www.brest-metropole-tourisme.fr/, http:*www.letelegramme.fr/tag/Brest/*
- Theme parks: http:*www.parcsetloisirs.fr/*
- Theaters: http:*www.brest.fr/agenda.html/*
- Points of interest: Wikipedia, OSM points of view
- Fairs, trade shows: http:*www.brest-metropole-tourisme.fr/, http:*www.letelegramme.fr/tag/Brest/
- Museums: http:*www.culture.gouv.fr/documentation/museo/*
- Conferences, discussions: http:*www.brest-metropole-tourisme.fr/*
- Exhibitions: http:*www.brest-metropole-tourisme.fr/, http:*www.letelegramme.fr/tag/Brest/
- Libraries: http:*www.culture.gouv.fr/*
- Car parkings: OSM Parking, parking PMR
- Bus: http:*www.bibus.fr/*
- Taxis: OSM Taxis
- Public administrations: http:*lannuaire.service-public.fr/*
- Places of worship: OSM Worship places
- Post offices: OSM post office
- Waste collection centre: http:*www.sinoe.org/*

- Mail box: OSM Boxes

Data Management: About data privacy management, data were stored on an ImaginLab server inside the ImaginLab private data center, under Images & Réseaux responsibility. Data were not hosted in the cloud and our organization has defined its own security policy with an appointed CISO (Sergio Morant). Raw data were not shared with other experimentation sites or other entities, only the results of the experimentation (which do not include personal data) were shared with Orange. ImaginLab commits to erase these data at the end of the project.

2.2.2.4 - Logistics and support

Summary of Logistics and support

2.2.3 - Summary on Planning and running the trial

2.2.3.1 - Dates (Start/end) of the experiment

From October the 21st to the 18th of December 2013 the application has been tested by 30 users in Brest. These 30 users have been divided into two groups of 15 persons who used the application during 4 weeks in their environment.

2.2.3.2 - Role (involvement) of partners

Imagin'lab has hosted the application, help to find Open data and Professional data, made experimenters recruitment, insure their contribution to questionnaires and focus group and technical support during the experimentation.

Orange has developed the application, analysed, adapted and integrated data, define the usage feedback methods, apply it and analyse these feedbacks and insure technical support linked to the application itself.

2.2.3.3 - Short Report

The complementarity between both contributions works well. The most difficult part was to set up a contract that could take into account all constraints. We finally set up a third party contract between Orange, Imagin'lab and the experimenter.

2.2.3.4 - Summary of Empirical findings and evaluation

The analysis of the first and the last questionnaire and of the logs shows that all experimenters have used predominantly service several times a day or once daily. Only one experimenter was used once or twice to try. They are well motivated: they all declare to be still interested in the service at the end of the experimentation.

The SUS shows a good score of usability, attractiveness and appearance with 78.5 average score.

In terms of usage no main difference has been observe between both groups, native and foreign students. This convergence is very interesting to observe in terms of perceived interest.

Users were truly interested by finding events on the application: not only the current ones (spectacles, concerts,..) but the upcoming events in the city as well. Both groups would like the application provides more “administrative” information: city’s infrastructures (location and opening hours), public services, health services. Then, another key success factor rests on the participative aspects: post comments, recommend. In other words, they want to appropriate themselves the application and contribute to its enrichment in terms of content.

To both groups, the application is clear and handy, so a good perceived ease of use. The diversity of POI categories and filters was particularly appreciated as well. Geo-location and navigation features were claimed as important features depending on their quality.

The 5 most attractive functions:

- Getting itineraries
- Ability to add images or videos to comments on a point of interest in order to enrich comments
- Position of bus or tramways or metros in real time
- Global note based on users' opinion for each point of interest
- Recommendation of points of interest regarding your situation / context (weather, current needs, current interests …)

Potential macro features: Finally, during the Focus group, three potential macro features were submitted to the users: Filers and paths / itineraries, sharing and enriched content. Users had to imagine how these features would be implemented in the application, how they would work and give details to make them fit with users' needs.

Filters and paths / itineraries: This feature was the most valued by both groups, foreign and native students.

Sharing: Given that users consider the app has to rest on a community, sharing content was well perceived by users.

Enriched content: In this part groups focused on three aspects: the content itself, the devices used, and the displaying.

Users imagined three different kinds of pushed enriched content, linked to POIs:

- Short anecdotes (limited text);
- Short videos (less than 30 seconds);
- Unordered List Item* Augmented reality content.

To both groups, whatever the way the content is pushed, it has to be light and filtered by users.

2.2.3.5 - Summary of Outcomes

- Testers are well motivated: they all declare being still interested in the service at the end of the experimentation. The SUS shows a good score of usability, attractiveness and appearance.
- In terms of usage no main difference has been observe between both groups, native and foreign students showing that it make sense to propose a convergent offer to this both segments.
- They clearly position the application to be different from existing offer and find an added value.
- Dynamic data such as events are clearly the one that is highlighted first. Transportation data associated is perceived as interesting completion. Position of bus and tramway or metros in real time appears to be one of the most important functions according the Kano analysis.
- The richness of POI, which is a combination of various data integration such as Open Data, Professional Content, and some UGC has a clear added value.
- Contribution is clearly a missing point of the existing proposition as it has been tested.
- Filters, paths / itineraries was the most valued features by both groups.
- Users consider the app has to rest on a community, sharing content was well perceived by users. Two main categories of content can be shared according to them: POIs (which include events according to our definition) and Paths. However they qualified two levels of privacy in terms of sharing: publicly for POIs and restricted audience for paths. This point out a sensibility while treating with personal contents, contextualization …
- Considering content enrichment three structural aspects has been identified to determine which type of enrichment: the content itself, the devices used, and the displaying.

2.3 - Experimentation in Barcelona

From February the 13st to the 28th of February 2014 the application has been tested by 28 experimenters in Barcelona. These 28 experimenters used the application during 2 weeks in their environment.

2.3.1 - Specifics of the scenario

2.3.1.1 - Specifics of tested application

The Smart City Guide Android application developed by Orange allows the user to access in a single mobile service to diverse local information: practical information, event, culture and tourism, where the user is connected to the service using his or her handheld device.
Following dedicated searches or by using GPS position, the application allows you to display on a map all the available local geo-localized information, sorting it by categories and subcategories. The service also allows the user to link with the original data sources, and add information, comments or photographs associated with specific points of interest.

2.3.1.2 - Summary of test Objectives and expected outcomes

The experimentation was centred on evaluating the Smart City Guide scenario "Local Content and Recommendation functionalities", and generating useful user recommendations on advanced functionalities for the next experimentation cycle.
In the framework of the user trials, the 1st release of the Smart City Guide Orange app was regarded as a workable prototype of a wider scenario, that of a local content recommendation application that would help both tourists and residents to interact more fully and in a richer way with the city. This empirical reality helped experimenters to anchor the discussions of users on something tangible, something that they had all experienced, and provided a solid experiential standpoint from which to launch co-creation workshops.

2.3.1.3 - Specifics of application of Methods and evaluation tools

The trial consisted in a 12-day period in which the testing volunteers were instructed to use the Smart City Guide application in their everyday life, in a way as natural and context-oriented as possible. The trial period was opened with an initial physical meeting, where the volunteers were informed of the purpose and structure of the trials, signed the required informed consent forms, installed the Smart City Gide app, and given the necessary information and guidelines for the testing period.
The evaluation plan of the user trials adopted a mixed-methods approach, involving a combination of quantitative and qualitative tools. On the quantitative side, three questionnaires were prepared. First, an initial questionnaire measured the first experiences with the application. This questionnaire inquired about the users' perception of the usefulness, attractiveness and features of a local content recommendation application. Then, a mid-test questionnaire followed. The items of this questionnaire were derived from the Kano questionnaire, a proven method to prioritise functions in product development. Finally, an end questionnaire closed the testing period. This questionnaire was an adapted version of the initial questionnaire, and its purpose was to capture the final user experience after the testing period in a way that would enable a meaningful comparison with the responses of the initial questionnaire.
On the qualitative side, a series of co-creation workshops were held just after the closure of the testing period, to capitalise on the participants' experiences with the application and harness this knowledge to develop a series of insights, recommendations and suggestions to improve and enrich the Smart City Services applications based on this and other scenarios.

2.3.2 - Experimentation Infrastructure

2.3.2.1 - Infrastructure

The experimental infrastructure for the tests involving the Smart City Guide Android application consisted in a set of user-contributed mobile devices (one per involved tester). The connection to XiFi Brittany was maintained over the user devices' 3G mobile internet network.
The deployment information for the specific and generic enablers in the experiment is detailed in Figure 1:

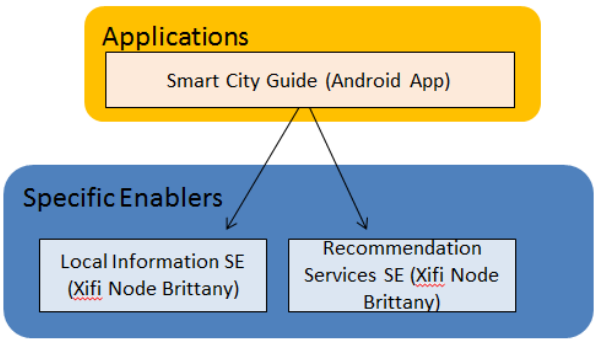


Figure 7 Smart City Guide (Android app) deployment information

A range of testing devices and Android versions was sought to test the app's performance in out-of-the-lab, real-world conditions. The complete list of testing devices and Android versions is detailed in Table x:

Table 1 List of user-contributed devices and Android versions for experimentation

Device	Android version	Device	Android version
Sony Xperia U	2.3.7	Sony Experia	4.0.4
nexus 5	4.4	sony xperia L	4.2.2
Sony Xperia T	4.1.2	fnac 5, bq	4.2.1
Samsung Galaxy SII	4.1.2	Lenovo A820t	4.1.2
Samsung Galaxy Ace (S5830i)	2.3.6	lg nexus5	4.4
LG Nexus 4	4.4.2	LG Nexus 4	4.4.2
Samsung S3	4.1.2	LG Nexus 4	4.4.2
Sony Xperia ST21i	4.0.4	HTC Desire	2.3.7
LG NEXUS 5	4.4.2	Samsung Galaxy s4 zoom	4.0.3

Device	Android version	Device	Android version
LG Nexus 5	4.4.2 Kit Kat	NEXUS 4	4.4.2
LG Optimus G	4.1.2	Jiayu G4 Advance	4.2.1
LG Nexus 4	4.4	Huawei G-510 (Orange Daytona)	4.1.1
samsung GT I9505	4.2.2	HTC One	4.4.2
samsung	4.1.2	Sony Xperia Go	4.1.2
GT- I9100 SAMSUNG GALAXY SII	4.1.2		

2.3.2.2 - Users

For this experiment, the main goal in recruiting was to achieve a mix of enthusiastic students of developer background with a few senior developers and frequent traveller end users. The rationale for this mix was to get a balance

The target profile for recruitment was of users fulfilling the following criteria:

- Users above the age of 18;
- Availability to attend two physical meetings at the beginning and at the end of the testing period;
- Willingness to test a prototype of a cutting-edge application in the area of Smart City Services.

The experiment was publicised through I2CAT's website and social media accounts (Twitter). Direct mails to target users in I2CAT's contacted user database were also sent.

The recruitment target was set between 25 and 30 experimenters, in the understanding that no-show and dropout participants could very likely make the initial and final figures of the group of testing users fluctuate. A total of 44 users responded to the call. A final group of 28 users was selected. The final criteria for selection was to get a group of mixed socio-demographics (in terms of sex, age and occupation), to get a range of different perspectives. Of these 28 users, 24 completed all phases of the experiment successfully.

2.3.2.3 - Data

The data integrated in the Smart City Guide test application came from two main open data sources:

- Wikipedia: first source used, provided a first set of approx. 50 POIs to test integration procedures. These were integrated manually (by adding each POI to the backend).

- OpenDataBCN : Barcelona city council open data service, provided the bulk of POIs to furnish the SCG with the amount of content needed for testing purposes (see Table 3 below)

Table 2 OpenDataBCN sources integrated in tested Smart City Guide app

Categories	Sources / Themes	Last actualized	File format	Link
List of culture and leisure equipment in the city of Barcelona	Types of Culture and leisure facilities to be found in Barcelona: libraries, cinemas, bookshops, museums, parks, viewing points, beaches, theatres, concert halls, auditoriums, etc.	30/08/2013	ZIP/RDF	http://opendata.bcn.cat/opendata/en/catalog/CULTURA_I_OCI/equipamentculturailleure/
List of restaurant equipment in the city of Barcelona	Types of Restaurants to be found in Barcelona.	30/08/2013	ZIP/RDF	http://opendata.bcn.cat/opendata/en/catalog/CULTURA_I_OCI/equipamentrestaurants/#
List of transportation equipment and related services equipment in the city of Barcelona	Types of Transport and related services to be found in Barcelona: car parks, cycling lanes, petrol stations, car hire; air, sea, land and private transport; car-sharing etc.	30/08/2013	ZIP/RDF	http://opendata.bcn.cat/opendata/en/catalog/TRANSPORT/equipamenttransportsiserveisrelacionats/
Wi-Fi hotspots	Wi-Fi access points, or hotspots, located in various municipal amenities and public access points. Coordinates UTM31 ED50. Barcelona has long offered a Wi-Fi service that allows you to connect to the Internet through public access points located in various parts of the municipal facilities and public roads.	08/09/2013	CSV, OData & XML	http://opendata.bcn.cat/opendata/en/catalog/CIENCIA_I_TECNOLOGIA/puntswifi/
List of accommodation equipment in the city of Barcelona	Types of Accommodation to be found in Barcelona: youth hostels, apartments, camping sites, hotels, boarding houses, student residences, etc.	30/08/2013	ZIP/RDF	http://opendata.bcn.cat/opendata/en/catalog/TURISME/equipamentallotjament/

2.3.2.4 - Logistics and support

The sessions for presenting the user trials were held at two venues:

- Castelldefels, Campus Tecnològic de la Mediterrania (edifici C4);
- Barcelona, Edifici Nexus I (Fundació Privada i2CAT, C/Gran Capità, 2-4, 2a planta, oficina 203).

Throughout the experiment, Orange and ImaginLab provided technical support to the testing users. A user helpdesk was set up, to assist users with any technical problem they might encounter during the testing period. The task of this helpdesk, which could be reached by mail at any time of the week, was to make a first assessment of the technical problem, and to act as a liaison between the testers and the dedicated Orange technical staff until the problem was solved.
Two technical problems were encountered. The first, the Lenovo A820 device had problems during installation and could not install the SCG app. The issue was solved when the user was supplied another device (an LG Nexus 4).
Second, the server went down for two half days, starting on the afternoon of the 22nd of March and regaining normality on the noon of the 23rd. To make up for this unforeseen circumstance, an extra day of testing was allowed.

2.3.3 - Summary on Planning and running the trial

2.3.3.1 - Dates of the experiment

The experimentation actions spanned from February the 13st to the 28th of February 2014.

2.3.3.2 - Short Report

To facilitate attendance for the testing volunteers, a flexible approach was followed for the scheduling of the physical meetings (see Figure 3). A few Doodle forms were sent to the testing users to learn about the most convenient times overall. Based on this information, four groups were set for each session, two at each location. Users were then presented with four time and location choices for the initial session, and four time and location choices for the final session. Users were instructed to confirm their presence at one initial and one final session.

Figure 8 Testing users taking part in Smart City Guide co-creation workshops, 25-26th February 2014

The time, location and number of confirmed participants for each of the Smart City Guide user trials physical meetings and trial actions are detailed in Table 4 below:

Table 3 Summary of actions in Barcelona SCG user trials

Testing action	Date	Location	Nº of testing users involved
Initial session – intro, testing guidelines & app troubleshooting	February 13th, 11:00 – 11:40	Castelldefels	7
	February 13th, 12:30 – 13:10	Castelldefels	5
	February 13th, 18:40 – 19:20	Barcelona	11
	February 14th, 10:30 – 11:10	Barcelona	5
First questionnaire	February 14th	Online	28
Mid questionnaire	February 20th	Online	28
Final questionnaire	February 24th	Online	28
Final session – co-creation workshop	February 25th, 9:20 - 11:00	Castelldefels	9
	February 26th, 12:30 - 14:10	Barcelona	4

Testing action	Date	Location	Nº of testing users involved
	February 26th, 18:30 - 20:10	Barcelona	8
	February 28th, 10:00 - 11:40	Castelldefels	5

2.3.4 - Summary of Empirical findings and evaluation

The main recommendations that arise from the experimentation in this scenario in the Barcelona site are:

1. Users are excited and interested in the notion of a local content and recommendation application, and expect high levels of user experience satisfaction and innovativeness from such applications. The applications developed in the framework of the Smart City Services platform should strive to deliver results that meet this high level of user expectations, even in prototypes for experimentation.
2. In special, users expressed the desire to “make the application more social”, by including more user-to-user interaction and social network functionalities (make friends, stay in touch with them, given them recommendations... before, during and after the visit).
3. A key takeout of the user trials is the need to potentiate the creation of user-generated content. Users must be able to create POIs, add all kinds of contents to these POIs, A good UGC rating system (with stars or scales) and search functionality (allowing search of POIs, events and routes by date, hour, location, category, user tags, user rating, climate/weather conditions, and user type) would allow the users themselves to highlight quality content, adding value to the application and showcasing it to potential users.
4. Recommendation of contents should be based on several mechanisms (user top-rated POIs and browsing history, friends top-rated POIs and browsing history, and of the type “users liking this also liked X”), and be fully customisable by the user (adjust level of real-time popup recommendations, adjust level of privacy, adjust level of application monitoring of his own activity).
5. Gamification of moderation, POI information updating and other non-automatable tasks. A badge and point system for top users, in which users performing useful tasks in the application are honoured with several ranks and distinctions in a hierarchy of top users and rewarded with special offers and other prizes, is a good candidate of such a system.
6. In the light of several user-generated insights, the possibilities for monetisation of user activity should be seriously explored. A “freemium” business model may be an option, in which end users would use the application for free and professional users (both tourism sector agents and POI business owners) would purchase premium accounts to access additional functionalities (POI and route promotion, tools to embellish the POI page, ticket sale/table reservation through the POI page, the chance to reach nearby users with special limited offers, and so on).

2.3.5 - Summary of outcomes and conclusion

Recommendations for SCG development after results of first experimentation cycle and give feedback to Task 3.1 to change scenarios and applications and/or create new scenarios for second cycle.

Which user scenarios for experiments will motivate the creation and sharing of user generated content?

Plan and conduct large-scale experimentation on a new user scenario with very attractive specific versions of the Smart City Guide platform, developed for a unique event (i.e. in Barcelona, the Museum Night or the World Mobile Congress) should motivate the creation and sharing of UGC. Feedback from 1st cycle experimentation also shows that it should be important to offer end users the possibility to have different communities and different level of sharing. The same as the “real time view” on what the user have done.

How sociability is bringing in services mixing contents and communications?

No specific conclusion

How to create community with citizens and tourists?

In terms of usage no main difference has been observe between both groups, native and foreign students. This convergence is very interesting to observe in terms of perceived interest. The first group interviewed, mainly made up with foreign students, focused on three main points that were adding value compared to an application such as Google Maps: discover nearby locations through geolocation, a community and upcoming events.

The native students group more focused on two factors that would make the application successful. To them, Smart City Guide has to be primarily based on a POI adding feature, what highlights their willing to contribute to the application. If they showed less interest for the cultural aspect than the foreign group because they “know the city”, they put the stress on “citizen information” and in terms of leisure they wanted to find “not touristic” establishments (bars, restaurants) but their “own”.

So enable user-generated routes (resident users can thus share local knowledge about little-known locations and events), enable user-generated private events (concerts, plays, parties) and give the option to the creator to invite visiting users with similar interests App must find ways to connect resident and tourist users. Connect users based on shared categories of interest, shared POIs visited or commented on, shared bookmarked POIs, etc.… should facilitate.

However it has to be careful and transparent with the use of contextualized data. The app can allow users to adjust desired level of interaction with other users.

How real time information can foster sociability and sharing?

Users focused on the different ways available to share content: email, social networks, in-app. Actually, sharing POIs was not only considered as creating a new POI and share it with friends or the community, but also as a way to create events linked to a POI and gather people.

Two main ideas emerged from this concept:

- They wanted the application to find a place or path that could fit several people preferences, regarding their profile.
- Create events linked to POI and be able to invite friends.

In both cases, they focused on privacy:

- Availability to create “circles” (small communities among friends)
- Manage levels of privacy of information stored in users’ profile

Some concrete proposition has been made such as allow users to post comments with hash tags and integrate these with Twitter.

What type of open data can make sense? How can end user use it?

Enabling and potentiating all kinds of user-generated content (POIs, events, routes, ratings, categories, comments, images, audios and videos) is a must.
Then, users were truly interested by finding events: not only the current ones (spectacles, concerts,..) but the

upcoming events in the city as well.
Leisure and cultural aspects are determining.
“Administrative” information such as city’s infrastructures (location and opening hours), public services, health services, … has to be present.
The preferred categories are entertainment, everyday life and learn and finally move.
Integrating existing APIs for transportation can be an interesting option to better allow users to plan their trips (via Transports Metropolitans de Barcelona API, or Google Maps API).
Another proposition is about displaying time length information at routes. The app could calculate how long does it take for each user to complete a route. Then, it could show the average and range of time spent by users to complete that route. Display estimated queue time at that time for POIs. The app could calculate the queuing time of each user at a venue for each day of week, and each week of year, and display the average for the particular day that the user has been searching for. The estimated queue time could be adjusted upwards or downwards depending on the current user density at that moment (more density = more queue; less density = less queue).

Which impact has pushing a “person centric” approach rather than “user centric” approach on services conceptualization, on business?

Personalization capacities and contextualization were highly supported and asked when perceived as not enough present in the application.
Some remarks concerning the suggested improvement of the service:

- Would like to catalogue more points of interest;
- Would like to customize and add points of interest.

This was particular highlighted by both groups, native and foreign experimenters. To go even further, some users claimed these features as compulsory to the application. Actually, they express the need to contribute to the application and enrich the database.
Some new functions to foster contributions and personalization of the application have been suggested:

- Add POI update system. Users passing by an existing POI may be asked to validate if the POI is still operative, and to validate if opening times, price range and other information are still accurate. If they stay for more than 20min, ask them to rate the place and leave comment Add filter to detect duplicate POIs (when user wants to create new POI, system can detect if in very nearby coordinates there is another POI with similar name and description and category).
- Add new POI validation system. New POIs have to pass a ‘quarantine’: to become definitive they have to be validated by a minimum threshold of users. Users passing by a quarantined POI may be asked to validate that POI
- Add a comment moderation system: users can rate POIs, comments, pictures, audios and videos as offensive/inadequate. If a threshold of users has rated a POI as inadequate, then it is no longer displayed. The POI creator then has a few days to present allegations. If the allegations are not up voted by users, the POI is erased.
- Allow users to add video and audio comments on POIs. This will enable users to post “audioguides” and short public domain clips with historical and cultural information.
- Add gamification elements. Users performing useful tasks are rewarded with points. Users get points for creating popular POIs and routes, posting top-rated comments, updating POI information, and uploading popular videos, audios and pictures. Gaining points confers higher user status and moderator permits to achieving users. These points can be exchanged by special deals at selected POIs and other rewards.
  Enable users to buy tickets for locations and events via the app’s POI page. Users can buy museum tickets, pay via mobile, and receive a virtual ticket with a QR code or a barcode. This way they do not have to queue.
  Some business model proposition has been made as the freemium business model: free user

account for end users, premium business account for POI business owners (ADD) and tourism professionals (ADD).

For tourist guides, allow them to post curated content (audio guides, video guides, brochure images), to promote their POIs and routes, and to have other users access this content for a small fee.

For business owners, allow them to promote their businesses to nearby or visiting users, give them premium tools to enhance their POI pages (daily menu updates, online reservation, personalized feedback form for visiting users, etc.) and allow them to post special limited offers.
Allow POI owners to pay to get their POI displayed higher in search results and recommended in real-time to more nearby users. Also, POI owners could display real-time special limited offers (a bakery could advertise 50% off in that afternoon's batch of cereal bread; a cinema could offer 2×1 tickets in that afternoon's under booked session). These notifications should be very locally and temporally restricted (only to the users currently there and for a few hours).

Which "continuum" makes sense between presence and distance, collective and individual, multiple services, devices and technologies?

Offline mode is important for international visitors (to avoid roaming costs). Users can activate this offline mode, then download the POIs in a given city or range from a chosen POI. In offline mode the app displays and recommends only within the downloaded POIs; also the app waits for a free Wi-Fi network to make another update. This is useful for tourists trying to avoid high roaming costs.
Add a translation service for POIs (in restaurants, display popup with common phrases to order food, names of common foods, and so on) has been suggested.
Allow users to get their route to a POI in Augmented Reality: When the user gets close to a POI, an arrow can be displayed in AR pointing him the direction in which he should be going (useful for labyrinthine old towns)

Auto generate visit album: on a template (several kinds available), ordered collection of pictures taken, POIs visited, comments made, videos posted. Then deliver a PDF printer-friendly version, and digital interactive version.

What is the acceptability of profiling in regards to the service?

Users seem to be willing to accept several search and recommendation mechanisms based on profiling (user selected categories of interest, user top-rated POIs and browsing history, friends top-rated POIs and browsing history, and of the type "users liking this also liked X") if this leads to more personalized recommendations.
But the level of user activity tracking and privacy setting must be always known to the user and easily adjustable. Profiling is very sensible but accepted when users understand the linked with the application and its functions.
However when this is perceived as not clear they questioned it. For example, the "to discover" mark proposed in the application, because they didn't really know what was hidden behind this notion.
We also observe that the Kano Brittany results were not clear while concerning profile, personal data and contents, contextualization, public / private:

- Creating an account with some profile's attributes
- Public and private contribution
- Modifying personal profile's data in the account
- Modifying the profile's photo
- Geolocate persons on a map
- Seeing other persons' profile that have the same interests

How to recommend and support the connection between people based around a common media experiences?

Display comments, pictures and audio-visual files ranked by rating (top rated first).

Multi-screen: what is appropriate for which device? In presence and in distance? At home and on the move? Complementarity and similarity?

During the focus group, experimenters talk about devices that could be used to broadcast enriched content. In the light of this, Mobility was mentioned as the core of the application. Therefore, users restricted the list of devices that should be implied:

- Smartphones (the native device of the application)
- Google glasses: to access augmented reality content
- Laptop: to prepare a path or read enriched content

TV was not perceived as very interesting device and doesn't come naturally.

How to recommend and support the connection between people based around a common media experiences?

Some functionalities seems to have main interest such as:

- Enable users to create and search for routes by different criteria: category, user tags, length, weather, time of the day, price range, user type (explorer, family, etc.)
- Give POI recommendations based on whether you are in your stated city of residence (hence, a resident) or not (thus, a tourist)
- Enable search by data range ("I'm coming to the city from the 23rd to the 27th of June, I'm interested in categories X, Y, Z… which events and activities can you recommend me?) raining; outdoors when sunny; swimming at the beach when temperatures are hot, ice skating when temperatures are low")

Some are perceived as very intrusive. Geolocate persons on a map and seeing other persons' profile that have the same interests did not have a clear interest and when evocate it during focus this was not very well accepted as it is linked to geolocation and profiling. They did not see the utility of having these capacities.

How to combine open data, UGC and professional content in cross-border experiments?

The richness of POI, which is a combination of various data integration such as Open Data, Professional Content and some UGC has a clear added value. Contribution is clearly a missing point of the existing proposition as it has been tested. When asked what would encourage testers to connect more often here are their answers:

- Identify more POI;
- A more intuitive map search POI.

Which tools (enablers/ functionalities) are necessary? Secondary but necessary? How different technologies coming from different providers can fit together?

Here are the 5 most attractive functions suggested by Brittany experimenters:

- Getting itineraries
- Ability to add images or videos to comments on a point of interest in order to enrich comments
- Position of bus or tramways or metros in real time
- Global note based on users' opinion for each point of interest
- Recommendation of points of interest regarding your situation / context (weather, current needs, current interests, …)

Linked to this recommendation function, enable real-time notifications to users: If a user is passing by a top-rated POI that hasn't been recommended or searched by the user yet, but that that might really interest him, the app could notify the user ("you're only 50 mts away from X, do you want to check it out?"). Similarly, if the user is passing by an area rated as dangerous, the app should notify the user ("this is a pickpocketing area,

please be careful with your belongings”).
Users must be able to adjust level of notifications (more or less interruption).

3 - Scenario On Site Visit

3.1 - Description of tested application

In Berlin, the 1st version of the Smart City Guide web application was developed and tested by FOKUS as part of the on site visit scenario. The mobile web app is optimised to be used in web browser on a smartphone. The main content in the app comes from the Open City Database (OCD) specific enabler; this contains a collection of cities and their Points of Interest (POIs). The app offers users functions ranging from access to the Open City Database to receiving information on sights, a map to find and localize POIs, as well as the opportunity to create and add user generated content. Users can extend the OCD by adding a new POI to the database. For the first experiment in Berlin, the IFA was established as a “city” and various booths could be created as POIs. The test users were given the Smart City Guide and asked to complete a number of tasks.

The home screen of the Smart City Guide web application offers the user four opportunities to choose from:

- Cities
- New Point of Interest
- Map
- Settings

Figure 9 SCG home screen

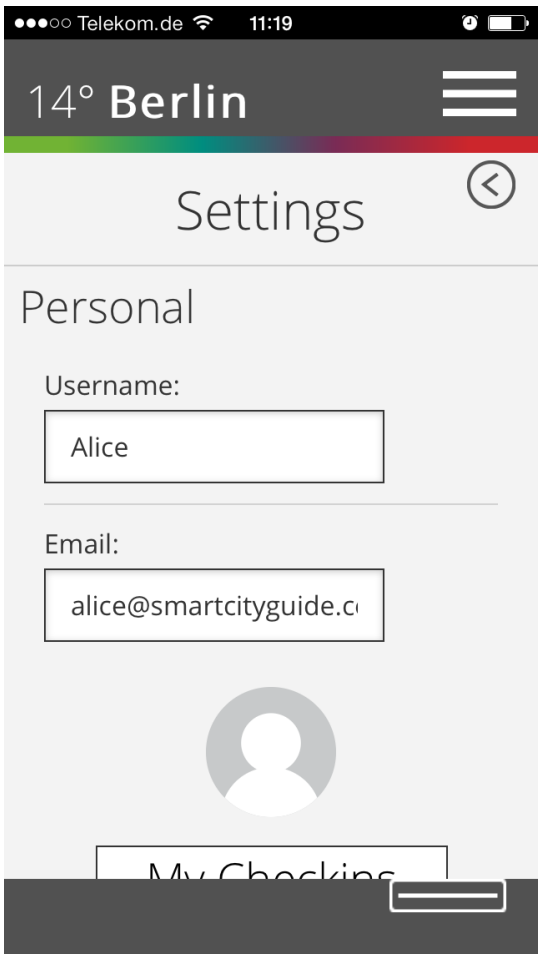


Figure 10 SCG settings screen

The second level of navigation is on the bottom of the screen, called slider. It allows users to slide to a different layer of the app, for example:

- Content (list) layer

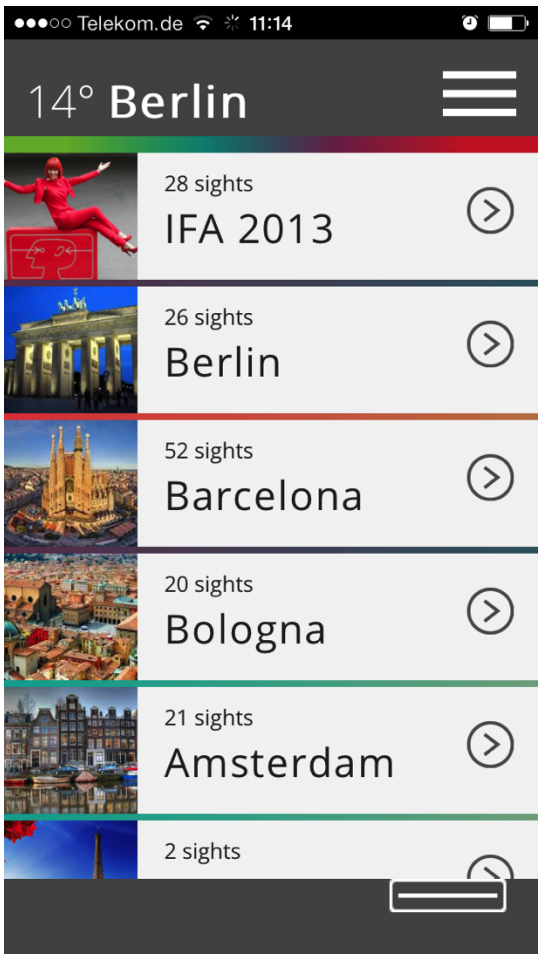


Figure 11 List of cities

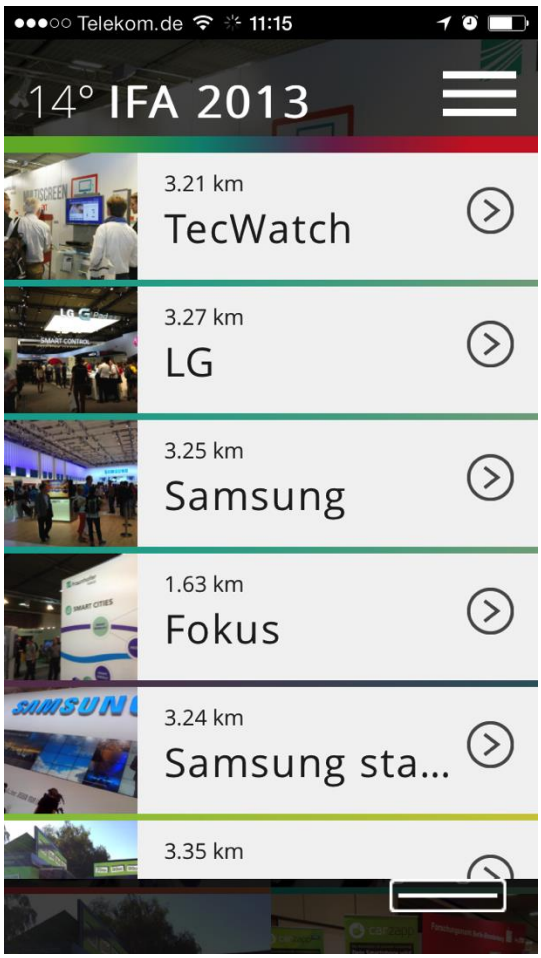


Figure 12 List of POIs

- Gallery layer
- Map layer

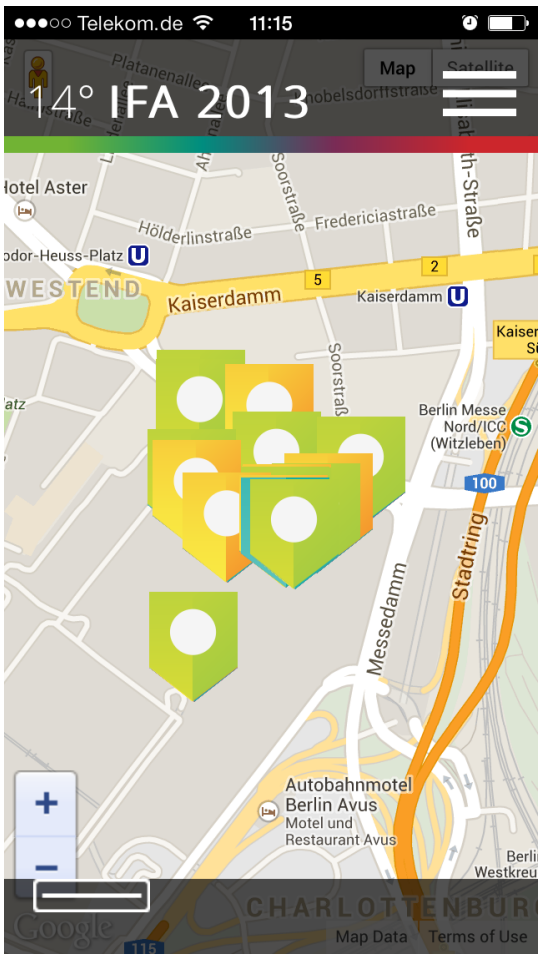


Figure 13 Map layer

By swiping with a finger on the dark area the layers switch.

3.2 - Test objectives and expected outcomes

- Testing of the usability on a mobile device
- Navigation usability testing
- Touch experience
- Testing of design
- Icons, Control
- Interaction design

3.3 - Specifics of application of methods and evaluation tools

- Questionnaires and interviews

3.4 - Experimentation in Berlin

The first experimentation cycle of the Smart City platform in Berlin tested the Smart City Guide Web App Release 1, which is built on top of the Open City Database (OCD) and the SCG reference design. A group of students was equipped with smartphones with the SCG app installed and asked to test the application during the IFA Trade fair together with visitors. The app offer several functions ranging from access to the OCD to receive information on sights, a map to find and localize POIs as well as the creation of user generated content. Thus, the students and visitors tested the content creation feature of the SCG app by creating new points of interest and uploading photos.

3.4.1 - Specifics of tested application

- 1st release of the “Smart City Guide” Web App
- Collection of different cities (or shows like IFA) and their POIs from the Specific Enabler “Open City Database”
- Browse for POIs and expend the OCD by add a new Point of Interest to the database
- IFA was established as a city and the various booths could be created as POIs

3.4.2 - Experimentation infrastructure

3.4.2.1 - Technical Infrastructure

- Web app was hosted on “mashweb” Fraunhofer FOKUS server Port 3008

- Open City Database was integrated in the app

3.4.2.2 - Users

- Targeted end users of this field trail: IFA visitors

3.4.2.3 - Data

The following Data was integrated:

- Open City Database SE
- HTML5 Geo-location
- Google Maps API

3.4.2.4 - Logistics and support

The experiment was conducted during the IFA trade fair. Visitors to the FOKUS stand were recruited to test the app, fill in questionnaires and be interviewed. Students from the Beuth University conducted the interviews. FOKUS staff were on-hand at all times to oversee the process and answer any questions or deal with any technical problems that arose in the course of the experiment.

3.5 - Summary of planning and running the trial

Dates (Start/end) of the experiment

- Experiment has taken place during the IFA 2013 (September 6th -11th 2013)
- On 2 days visitors tested the app, filled out questionnaires and were interviewed about the app

Role (involvement) of partners

- FOKUS was the only partner involved in this experiment

Short Report

- 19 questionnaires were filled out
- The questionnaires contained a mix of open and multiple choice questions and consisted of two sections:
- Use & content
- Control & design
- Interviews were conducted by students

Summary of Empirical findings and evaluation

- The first open question asked the user what he expected from a SCG. Most of the users expected a guide that would help them when in an unknown city, possibly including some interesting information

about what he can do while his trip, or what to look for. However, most testers had no real notion of what they themselves could create with a Smart City Guide.

- The second open question asked what type of information about POI was missing from the guide. Most respondents found that nothing was missing. Some would also like to have events around the current location displayed. One respondent would like to have next to public transportation information other options on how to reach a POI (like car, bike, by foot, etc.). It was also stated that in addition to the images they would also like to watch videos.
- The third open question asked users what they are interested in a city besides places and events. Here the answers varied greatly ranging from toilets and secret places to styling in the city.
- The last question was an open question, allowing the user to praise, criticize or comment on the guide. Some users believe it would be good if the guide also provided information walking routes through the city. Insider tips would also be a good idea. Other users liked, that the app is a web app, not a native one. Another plus point for many users was the smart and clean design; they liked the buttons and the colours.

The following are the results of the multiple-choice questions:

Preferred device: (multiple answers possible)

- Smartphone: 18
- Tablet: 5
- Computer: 2
- TV: 2

Understanding of footer navigation:

- Yes: 8
- No: 10
- No answer: 1

Favourite view/layer:

- List view: 5
- Gallery view: 3
- Map view: 9
- No answer: 2

3.6 - Summary of Outcomes

- The design was particularly well received by the users.
- Similarly, the usability of the app was rated very positively thanks to the simple operation of buttons.
- It was noted that there is strong interest to use such an app.
- The app was judged to be most useful on a smartphone, but there was also interest signalled in using it on a tablet, PC and TV.
- A lot of changes were needed, especially with the slider. Users did not understand that they could navigate through the different layers of the app.
- Items were misinterpreted.

4 - Scenario Social Network

4.1 - Introduction

The Cologne Experimentation Site has performed one Smart City Service experimentation in the first experimentation cycle for the Social Network Scenario, distributed by PIX. The preparation for the experiment started on February 2nd and the experiment itself was performed on March 4th, 2014. A focus group of 15 pupils from a Cologne school performed the experiment at a street parade during the Cologne Carnival. The open source Social Network Enabler used in the experiment was deployed at FI-Lab.

Date	Site	Scenario
March 2014	Cologne	Social Network

4.1.1 - Description of tested application

The Social Network Enabler creates a private social network that can be used to connect people on events in a secure way independent from proprietary networks. After authentication users can log in to the secured application. It implements a status view where people can post texts and pictures. Users can also comment and add a like-attribute to posts.

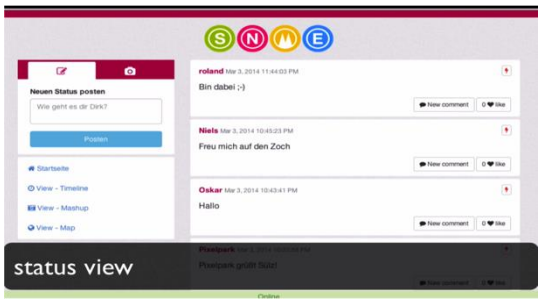


Figure 14 Social Network Enabler: Status View

In addition, the application implements three different views on the same data: a timeline view that shows the postings in a given time frame, a mash-view that show only the pictures, and a map-view that shows the postings super-imposed on an open street map.

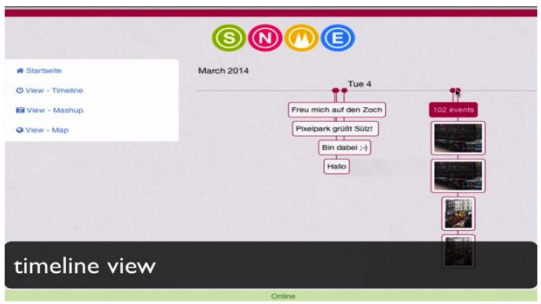


Figure 15 Social Network Enabler: Timeline View

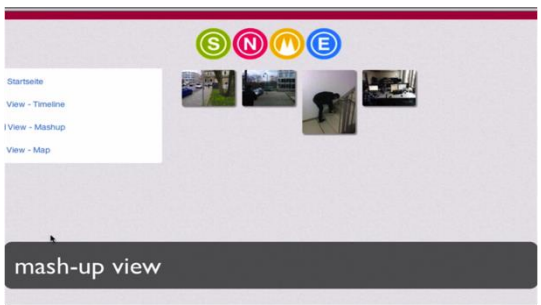


Figure 16 Social Network Enabler: Mash-Up View

Figure 17 Social Network Enabler: Map-View

4.1.2 - Test objectives and expected outcomes

The test objectives were defined with the focus group in a co-creation process to develop a novel course project module for the meaningful use of Future Internet in education and culture. The idea was to perform together an experiment and get afterwards recommendations from the students, how to improve this novel FI pilot project, so that in the future any high school may perform the experiment during a live cultural event in Europe.

The expected outcome is therefore a meaningful and constructive recommendation list of our student as experts how to improve the next experiment.

4.1.3 - Applied methods and tools for evaluation

The carnival experiment was conducted in three stages in cooperation with the local focus group (15 pupils of School in Cologne): In the first stage (before the event) pupils were briefed about the planned experiment, the planned functionalities of the application and their role at the event in a group discussion. During the event, the group performed with the tool and collected different kinds of media data in a live setting. After the event, anonymously questionnaires serving to collect feedback and recommendations from the participants were filled out.

4.2 - Experimentation in Cologne

The Social Network Scenario has been performed by students under 18 years during a street parades at Cologne Carnival.

4.2.1 - Specifics of the Experiment

Already in Phase 1 of FI-CONTENT GAR has developed with their focus group the user scenario called *"Active experience of live cultural events"* during the Carnival in Cologne in order to test the social network. The idea is to use the social network enabler to collaborate in a school team to share their active experiences during the live carnival parade and create a non-linear story in real time, using an audio-visual mash up, time line and map views to document in real time the carnival event.
As preparation for the experiment on March 4th, PIX performed for the students and school teacher an open source and java script programming course introduction with the duration of four weeks to be able to use and change the open source software social network enabler for their own purpose after the experiment. This java script introduction is now an online tutorial on YouTube, which can be accessed by any teacher and students now and in the future.

4.2.2 - Specifics of tested application

The recommendation of our Focus Group Experts in FI-CONTENT Phase 1 has been to provide an open source social network enabler, which the experiment owners and test users can use during experiments to self-control their own social network and to be independent of commercial social networks. The request for

such a self-controlled community management tool came directly in the FI-PPP Phase 1 of FI-CONTENT from the recommendation of our Expert Focus Group meeting of teachers, professors and school directors on January 2012 in Cologne to protect the students as test users during experiments (see Deliverable D2.2, FI-CONTENT Phase 1, Section 5: Focus Group Finding). The main recommendation of the focus group has been to enable the students to create a self-controlled community network with special focus on data security and privacy in the first experiment. The aim of the experiment is to develop a new model for a school project; so any high school may perform this project by them.

4.2.3 - Specifics of application of Methods and evaluation tools

The evaluation methods followed our user centric approach; questionnaires to evaluate the experiment were co-created with the School Teacher.

Pixelpark's Data protection officer and External Ethical Advisor Klaus Brisch from Bridgehouse Law, the parents, teachers and PIX and GAR decided not to record any audio-visual material of the students during the experiment as the experiment was run by students under 18 years.

In order to apply to parents and student had to sign consent forms, to declare that the questionnaires were filled out by free will after the experiment. Only final results and recommendations were given to GAR.

4.2.4 - Experimentation Infrastructure

4.2.4.1 - Technical Infrastructure

The technical infrastructure of FI-Lab is used for all active server components.

All enablers were deployed to FI-Lab. The 'Keyrock' GE is used for the authentication part of the service. The offline/online synchronization is achieved by another FI-Lab server that holds a CouchDB noSQL Database. The client apps replicate against this server component making it the only active server component and thus results in a very slim, performant client-server application.

For the map display in the map view of the application we use the Open Street Map services as the only external component, because Open Street Maps is not available yet form the FI-Lab infrastructure.

The cell phones are equipped with an Android native app (created with Phonegap) which is running on Android 4.4.2 ('KitKat').

All server components used for the experiment run on FI-LAB infrastructure. A m1.small instance is running on FI-LAB which holds the CouchDB database instance. Another m1.small instance holds additional web components and the GE Keyrock for OAuth2 authentication.

Pixelpark provided the app on Smart Phones including SIM cards and network to each of the students and the teacher to prepare and run the experiment.

4.2.4.2 - Users

The Elisabeth von Thüringen Gymnasium of Cologne is collaborating with FI-CONTENT since 2011 and collaborated with the teacher and 15 students of the computer science class in 11th grade as part of their regular school curriculum working towards the final exam.

4.2.4.3 - Data

Pixelpark integrated Open Street Map data of Cologne and Grassroots provided pre-recorded Points Of Interests, located in the surroundings of the Carnival Parade.

4.2.4.4 - Logistics and support

Pixelpark provided the technical training and support for the students and Grassroots provided the trustful contact and relationship to the teacher and students, the co-creation of the experiment and the evaluation.

4.3 - Summary on Planning and running the trial

4.3.1 - Dates (Start/end) of the experiment

The preparation for the experiment started on February 2nd and the experiment itself was performed on March 4th, 2014.

4.3.2 - Role (involvement) of partners

Pixelpark provided the technical training and support for the students and Grassroots provided the trustful contact and relationship to the teacher and students, the co-creation of the experiment and the evaluation. Both were present on site during the experiment to accompany and support the students.

4.3.3 - Short Report

GAR and PIX met the students and teacher before the start of the carnival parade on March 4th and handed out the smart phones with the social network enabler. The students were asked to create several teams to act like photo/video journalists and to document and share audio-visual material about their favourite themes like beautiful carnival costumes and girls, music bands as well as alternatives places to escape from carnival. The students had 3 hours to experience actively the live carnival event and create the audio-visual presentation. They moved around in their different teams and communicated through the social network enabler with the other teams. They created a non-linear story in real time using an audio-visual mash up, time line and map views to document in real time the carnival event. Here is the link on YouTube to find a short excerpt from the experiment.

www.youtube.com/watch

Afterwards we had a short debriefing with the student about their live experience, while serving finger food and soft drinks. The students liked the experience and compared it to a gaming experience, such as treasure hunt in the streets. The next day at school, the students filled out the anonymous questionnaires and the teacher handed over to GAR the results and recommendations. They expressed the wish to perform a follow-up experiment in the next future.

4.3.4 - Summary of Empirical findings and evaluation

Find in the following, the survey on the questionnaires, filled out by all students participating in the experiment:

Student could give grades ranging from grade 1 (very good) to grade 6 (very bad).

Part A

1. How do you judge the software application called social network? Average grade: 2,1

1a. Please give recommendations for alternative software applications:

Suggestions:

- Games (multiplayer games, flash games) embedded in the social network to share the experiences with the other players
- A Design Website
- Live streams, which are not edited
- An alternative YouTube

2. How do you judge the event Carnival for performing the experiment? Average grade: 2,8

2a. Please give recommendations for new / alternative events and places for conducting experiments:

- Gamescom and other fairs like the bookfair
- Phantasialand (our local Disneyland)
- Sport Event
- Music Event like the Cologne Rock on the Ring (Rock am Ring)
- Carnival direct on the Market Place in the old City, where Carnival gets kicked off each year
- Cologne Night of Lights
- Visit of the Zoo or the main place before the Cologne Cathedral

Part B

Technology*1. How do you judge the functionalities of the mobile social network?*

General functionality
Average grade: 2,2

Photo Upload
Average grade: 2,1

Communication
Average grade: 2,1

1a. Please make recommendations for the improvement of the application

The following functionalities were suggested to include in future versions:

- Personal messaging
- Refresh button
- Shorten the load time
- Allow to send comments with photos
- Zoom-in functionality for Photos
- Video streaming, Video sharing
- Text messaging
- Live updating
- Optimization for all Mobiles
- Upload Photos including descriptions
- Like-Button for Comments
- Create personal profiles
- Higher bandwidth
- Optimize Mash up-view up for large amount of photos/videos
- Optimize alignment of menu-bar (parts are cut off)
- Avoid scrolling when posting
- Add notifications for comments and @

2. How do you judge the interface design?

General interface design
Average grade: 1,7

Alignment of control elements
Average grade: 1,5

Navigation
The average grade: 1,5

Graphical control elements
the average grade: 1,7

2a. Please make recommendations to improve the interface:

Suggestions:

- Include simple graphic patterns
- Colours are not convincing
- Align user generated content after criteria (e.g. likes, views)
- Activate zoom in the timeline
- Avoid scrolling up
- Improve Map View, so it does not get overcrowded with Point of Interest
- Include Navigation at the top and not as a new tab
- Include mash up view in timeline
- Logo with new colour
- The colours shall be more neutral
- Include profile view

Part C

1. How do you judge the java script introduction with the help of online tutorials on YouTube?
Average grade: 1,8

1a. Please make recommendations to improve the java script introduction

Suggestions:

- Create a longer and more detailed introduction with better and more complex programming examples
- Allow self-programming by the students
- Change language from English to German or French (?)
- Add subtitles for non-English speaking people
- Make the tutorials more exciting
- Give more examples
- Produce it more professional in HD and better screen resolution
- Explain slower
- Include more programming exercises for the class room
- Include more videos
- Explain technical terms
- Declare right from the start of the tutorial clear goals to the students for more incitation
- Three people answered they like the tutorials as they are and they need no improvement

1b. Please make additional comments about the experiment.

Comments:

- Altogether a successful experiment, even if games with social network would be even better
- Include the students as co-creators even more in the programming and design of the experiment
- The purpose of the project is not completely clear

4.4 - Summary of Outcomes and Conclusion

4.4.1 - Outcomes

Most students enjoyed the experiment and give us concrete instructions to improve the java script course and the social network enabler and gave us following main recommendations for the next experimentation cycle:

- Co-create with the users more experiments around live cultural and sport events and exciting places;

- As use case scenario for next experiments combine games with social network application;
- Train the participants of the experiments to develop their own application for the experiments.

4.4.2 - Conclusion

- Recommendations for SCG development after results of first experimentation cycle and give feedback to Task 3.1 to change scenarios and applications and/or create new scenarios for second cycle.
- Our goal in the SCG DOW and hearing was to link in real time events, people, dynamic (open) data and places. Which recommendations do users as advisory/experts give to increase innovation (not only technical, but especially social and service innovation). What do we have to improve for second cycle to come closer to this goal?
- Which exciting experimentation scenarios do the users suggest for 2nd cycle?

5 - CONCLUSION AND OUTLOOK FOR SECOND EXPERIMENTATION CYCLE

As a conclusion the small scale experiments the first experimentation cycle were a success and our technology is stable enough to stage now large-scale experiments with +1000 users in Europe and even South America.

Due to the withdrawal of the WP3 Leader Orange we are currently in a restructuring phase that will see the inclusion of new partners and a new WP3 leader. Currently we are preparing a large scale experiment with all partners of WP3 around a cultural event in Barcelona called Festival La MERCÈ with more than 1000 Participants and more than 500.000 visitors as rehearsal in Sep 2014 as well as the final event for September 2015 as the show highlight of FI-CONTENT 2. We are in negotiations with the Barcelona City Municipality representatives for their final official commitment and will update the Commission as soon we have official news.

In November 2014, as part of the fall of the Berlin Wall 25th anniversary celebrations we plan to run a Smart City Guide experiment. Ideally this experiment will involve close WP3 and WP2 collaboration.

Starting in 2014 we will also run as rehearsal large scale experiments in all other FI-CONTENT 2 experimentation sites as well as in South America around cultural and sport events to attract a large scale user attention as well as third parties SMEs and Web developers from phase 3 to test our technology and co-create a media ecosystem around the FI-CONTENT 2 and FI-PPP enablers.

REFERENCES

[1] https://www.youtube.com/watch?v=EaUyQX5dWIU

Annex A FIRST QUESTIONNAIRE

1. Have you ever used the service?
|__| 1 Yes
|__| 2 No

2. A how often do you use Smart City?
|__| 1 Several times per day
|__| 2. Once per day approximately
|__| 3. Less than once per day
|__| 4. Once or twice to try

3. Are you still interested (e) by this service?
|__| 1 Yes
|__| 2 No

4. Do you have any comments about the previous question?

Next questions are relevant only if interest in service among 'Yes; No'

Are you interested to:

5. Modify your categories of interest?
|__| 1. Never
|__| 2 1 times
|__| 3 Several times

6. Watch POI sheets in detail?
|__| 1. Never
|__| 2 1 times
|__| 3 Several times

7. Use the search on the map?
|__| 1. Never
|__| 2 1 times
|__| 3 Several times

8. Contribute to a POI by the addition of a post or an image?
|__| 1. Never
|__| 2 1 time
|__| 3 Several times

9. List of POI to put in one of the 3 lists proposed?
|__| 1. Never
|__| 2 1 time
|__| 3 Several times

10. That is what makes you connect more often on Smart City?

11. Have you encountered any technical problems?
|__| 1 Yes
|__| 2 No

12. If Yes, what problems did you encounter?

13. Did you encounter other types of problems (battery consumption, place application memory, blocked application requiring a shutdown/restart it...)?

14. You need to use your personal phone since the beginning of the experiment?
|__| 1 Yes
|__| 2 No

15. Among these identified needs, what are your 3 favourite ones? (Rank in order of preference)
|__| 1. I Entertain
|__| 2. I learn
|__| 3. I move
|__| 4. I manage my daily life
|__| 5. I shop
|__| 6. I travel

16. Do you have comments on identified needs?

17. Under what circumstances do you use or do you most often use?

18. I would like to use Smart City frequently.
|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

19. I found Smart City unnecessarily complex.
|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

20. I found easy to use Smart City.
|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

21. I think I will have (s) need the help of a technician to use Smart City.
|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

22. I found that the various features of the Smart City were well organized or incorporated
|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

23. I found that there were too many inconsistencies in Smart City.

|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

24. I imagine that most people will learn quickly to use Smart City

|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

25. I found that the Smart City was painful to use

|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

26. I felt (e) confidence when using Smart City

|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

1. I would have had (got) need to learn many things before you start using Smart City.

|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

Annex B END QUESTIONNAIRE

1. Do you still use the service?
|__| 1 Yes
|__| 2 No

2. If not, why?

3. If Yes, how often do you use it?
|__| 1. Less than once per day
|__| 2. Once per day approximately
|__| 3 Several times per day
|__| 4. Once or twice to try

4. Since the beginning of the experiment how evolved your use?
|__| 1. My usage has much declined
|__| 2. My use has slightly declined
|__| 3. My frequency of use has not changed
|__| 4. I used more and more service during the test

5. Among these identified needs, what are your 3 favourites? (Rank in order of preference)
|__| 1. I entertained me
|__| 2. I teach me
|__| 3. I'm moving
|__| 4. I manage my daily life
|__| 5. I am stores
|__| 6. I travel

6. After four weeks of experimentation, what is now your motivation level on the application? Would you say you are
|__| 1. Very few motivated
|__| 2 Little motivated
|__| 3. Pretty motivated
|__| 4. Highly motivated

Satisfaction of the service

Can you give us your feelings over the use of the application concerning the following qualifiers?

7. the interest
|__| 1 Very low
|__| 2. Weak
|__| 3. Loud
|__| 4. Very strong

8. ease of use
|__| 1 Very low
|__| 2. Weak
|__| 3. Loud
|__| 4. Very strong

9. the aesthetic
|__| 1 Very low
|__| 2. Weak
|__| 3. Loud
|__| 4. Very strong

10. the practical side
|__| 1 Very low
|__| 2. Weak
|__| 3. Loud
|__| 4. Very strong

11. the innovative aspect
|__| 1 Very low
|__| 2. Weak
|__| 3. Loud
|__| 4. Very strong

12. the desire to know the application to other people
|__| 1 Very low
|__| 2. Weak
|__| 3. Loud
|__| 4. Very strong

13. When testing is complete, what features will miss you?
|__| 1. The information on the
|__| 2. The list of points of interest, geo-located
|__| 3. The list of the points of interest in connection with entertainment
|__| 4. The list of the points of interest in connection with the statement
|__| 5. The list of the points of interest in connection with travel
|__| 6. The list of the points of interest in relation to the management of everyday life
|__| 7. The list of the points of interest in connection with the travel
|__| 8. No

You can check several boxes (3 maximum).

Technical problems

14. Since the first questionnaire, have you encountered any technical problems?
|__| 1 Yes
|__| 2 No

15. If Yes, have what problems you encountered?

16. Have you encountered other problems? (Ex: battery consumption, consumption of the data...)

Balance sheet

Can you give your feelings over the following proposals:

17. I like to use Smart City frequently.
|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

The answer is mandatory.

18. I find Smart City unnecessarily complex.
|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

The answer is mandatory.

19. I find Smart City easy to use.
|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

The answer is mandatory.

20. I think that I would need the help of a technician to use Smart City.
|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

The answer is mandatory.

21. I find that the various features of Smart City are well organized and integrated.
|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

The answer is mandatory.

22. I find that there are too many inconsistencies in Smart City.
|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

The answer is mandatory.

23. I imagine that most people will quickly learn to use Smart City.
|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

The answer is mandatory.

24. I find that Smart City is painful to use.
|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

The answer is mandatory.

25. I feel confident when using Smart City.
|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

The answer is mandatory.

26. I needed to learn a lot of things before you start using Smart City.
|__| 1 Not at all agree
|__| 2. Rather not agree
|__| 3 Neither agree nor disagree
|__| 4 Somewhat agree
|__| 5 Totally agree

The answer is mandatory.

29. In the follow-up to this experiment, would you recommend the use of Smart City to a 'friend'?
|__| 1 Not at all
|__| 2. Rather not
|__| 3. Rather Yes
|__| 4. In the

30. As a whole, on a scale of 1 (low) to 10 (strong), how would you rate the application with regard to your satisfaction?
|___| 1
|___| 2
|___| 3
|___| 4
|___| 5
|___| 6
|___| 7
|___| 8
|___| 9
|___| 10

31. Do you have suggestions for improvement or comments to us? What is - missing you the Smart City application?

Annex C KANO'S METHOD

	Satisfied	Indifferent	Dissatisfied
1 - If the application offers to create an account with some profile's attributes, how do you feel?			
2 - If the application offers to modify your profile's image, how do you feel?			
3 - If the application offers to disconnect to the application, how do you feel?			
4 - If the application offers to geolocate points of interest on a map, how do you feel?			
5 - If the application offers to remove account, how do you feel?			
6 - If the application offers to gain point of interest in the form of a list, how do you feel?			
7 - If the application offers to modify your personal profile's data in the account, how do you feel?			
8 - If the application offers to geo-locate people on a map, how do you feel?			
9 - If the application offers various categories of points of interest, how do you feel?			
10 - If the application offers to see the position of bus or tram in real time, how do you feel?			
11 - If the application offers the ability to create a list of points of interest for preservation, how do you feel?			
12 - If the application offers the ability to add a note to a point of interest, how do you feel?			
13 - If the application offers to comment on a point of interest, how do you feel?			
14 - If the application offers to create points of interest to contribute to the service offered by the application, how do you feel?			
15 - If the application offers to search for points of interest close to you, how do you feel?			
16 - If the application offers to filter points of interest to narrow the search, how do you feel?			
	Satisfied	Indifferent	Dissatisfied

17 - If the application allows to receive recommendations regarding points of interest which could satisfy you, how do you feel?			
18 - If the application offers a global rating of POI based on users' opinion for each point of interest, how do you feel?			
19 - If the application offers to share points of interest by mail, how do you feel?			
20 - If the application offers to share points of interest by Facebook, how do you feel?			
21 - If the application offers the ability to add images or videos to your comments on a point of interest to enrich your comments, how do you feel?			
22 - If the application enables to make public or private each of your contributions made on the application (comment, sharing photos, videos, create point of interest), how do you feel?			
23 - If the application offers to calculate itineraries, how do you feel?			
24 - If the application offers you to see other persons' profile that have the same interests as you, how do you feel?			
25 - If the application offers to access newspapers' articles or documentations related to the point of interest you are reading the description, how do you feel?			
26 - If the application recommends you points of interest based your current situation (weather, current needs, current interests), how do you feel?			
27 - If the application allows you to get in touch with voluntary people to introduce you to their neighborhood history, anecdotes, etc., how do you feel?			
28 - If the application offers mysterious and funny trail on a town, how do you feel?			
29 - If the application offers you to discover a place (history and anecdotes), how do you feel?			
30 - If the application offers to see the history evolution of a place (construction, modification of a place over time), how do you feel?			
31 - If the application offers to share contents offline, how do you feel?			
32 - If the application offers to see image and videos archives of a place, how do you feel?			
33 - If the application offers to receive notifications when you are close to a recommended place, how do you feel?			
	Satisfied	**Indifferent**	**Dissatisfied**
34 - If the application offers you to manage an agenda of events to attend or you have attended, how do you feel?			

35 - If the application enables you to create a souvenir album from trip and visits, how do you feel?			
36 - If the application does not offer to create an account with some profile's attributes, how do you feel?			
37 -If the application does not offer to modify the profile's image, how do you feel?			
38 - If the application does not offer to disconnect to the application, how do you feel?			
39 - If the application does not offer to geolocate points of interest on a map, how do you feel?			
40 - If the application does not offer to remove account, how do you feel?			
41 - If the application does not offer to gain point of interest in the form of a list, how do you feel?			
42 - If the application does not offer to modify personal profile's data in the account, how do you feel?			
43 - If the application does not offer to geolocate people on a map, how do you feel?			
44 - If the application does not offer various categories of points of interest, how do you feel?			
45 - If the application does not offer to see the position of bus or tram in real time, how do you feel?			
46 - If the application does not offer the ability to create a list of points of interest for preservation, how do you feel?			
47 - If the application does not offer the ability to add a note to a point of interest, how do you feel?			
48 - If the application does not offer to comment a point of interest, how do you feel?			
49 - If the application does not offer to create points of interest to contribute to the service offered by the application, how do you feel?			
50 - If the application does not offer to search for points of interest close to you, how do you feel?			
51 - If the application does not offer to filter points of interest to narrow the search, how do you feel?			
	Satisfied	**Indifferent**	**Dissatisfied**
52 - If the application does not offer to receive recommendations regarding points of interest that you could satisfy you, how do you feel?			

53 - If the application does not offer a global rating of POI based on users' opinion for each point of interest, how do you feel?			
54 - If the application does not offer to share points of interest by mail, how do you feel?			
55 - If the application does not offer to share points of interest by Facebook, how do you feel?			
56 - If the application does not offer the ability to add images or videos to your comments on a point of interest to enrich comments, how do you feel?			
57 - If the application does not enable to make public or private each of your contributions made on the application (comment, sharing photos, videos, create point of interest), how do you feel?			
58 - If the application does not offer to calculate itineraries, how do you feel?			
59 - If the application does not offer you to see other persons' profile that have the same interests of you, how do you feel?			
60 - If the application does not offer to access newspapers' articles or documentations related to the point of interest you are reading the description, how do you feel?			
61 - If the application does not recommend you points of interest regarding your current situation (weather, current needs, current interests), how do you feel?			
62 - If the application does not enable get in touch with voluntary people to introduce you to their neighborhood history, anecdotes, etc., how do you feel?			
63 - If the application does not offer mysterious and funny trail on a town, how do you feel?			
64 - If the application does not offer you to discover a place (history and anecdotes), how do you feel?			
65 - If the application does not offer to see the history evolution of a place (construction, modification of a place over time), how do you feel?			
66 - If the application does not offer to share contents offline, how do you feel?			
67 - If the application does not offer to see image and videos archives of a place, how do you feel?			
68 -If the application does not offer to receive notifications when you are close to a recommended place, how do you feel?			
	Satisfied	**Indifferent**	**Dissatisfied**
69 - If the application does not offer you to manage an agenda of events to attend or you have attended, how do you feel?			

70 - If the application does not offer you to create a souvenir photos album from trip and visits, how do you feel?			

Annex D WORKSHOP SMART CITY GUIDE

Welcome

Introduction.

Signature: permission to film.

Presentation of the participants: only the firstname.

Rules of the “game” (written on a white board or a poster):

Training

Objective: heat the group.

Purge

Co-design workshop

Brainstorming

o Useful / useless

o Effective / ineffective

o Interesting / boring

o Attractive / not attractive

Outcome: A non-organized list of remarks about the application and its framework.

Clustering

Introduction and work on the priority functionalities

To approach the three tracks, we will follow a simple scenario.

Idea 1: Very precise filters on rich content

- Description

What is your opinion on such functionality? What does it evoke for you?

After discussions, the design phase.

Reminders:

- What types of filters would you like?
- Who would create filters?
- Who would see what filters?
- How this would work?
- It'd be nice if...?
- We speak here of filters on the POI, but will you find an interest to filter something else?

Presentation of each group.

What are the main differences between your ideas? Preferences, disadvantages / advantages?

Idea 2: Contribution, sharing, social networks

- Description

What is your opinion on such functionality? What does it evoke for you?

After discussions, the design phase.

Reminders:

- How do you imagine their construction?
- What might look like a circuit?
- When I speak of use, I also talk utility. In your opinion, what would be of such circuits?
- Who would use them, and in what context?
- What form could take the addition of 'social' functions to these circuits?

Idea 3: Rich content - movies, etc.

- Description

What is your opinion on such functionality? What does it evoke for you?

After discussions, the design phase.

Reminders:

- What types of rich content would you like to see?
- In which situation would they appear? Localization system, after having fostered a point, etc.?
- What would be their "relationship" with the application?
- What do you think of the idea of bookmarking content interesting and reviewing them later on your Tablet? Or another similar method?
- How do you see this relationship with television? Is it interesting?

Conclusion:

General assessment

What do you remember? What are the remarks / proposals which touched you (five minutes)?

Have a look again at our proposals and try to list the weak and strong points.

Acknowledgements and administrative

end of the document