

experience gained from the pilot use of platform in the Municipality of Thermi, three years ago, as well as on the users' feedback through PEOPLE project's open innovation process. Other important innovative characteristics are:

- It will be easily transferable to other cities.
- It will be based mainly on the state-of-the-art web technologies such as HTML5, CSS3, Media queries, Smartphones Frameworks, etc.
- It will offer to visitors seamless access through PCs, mobile phones and large touch screens.
- User's location will be used enabling the system to provide him/her information in accordance to his/her current position.
- QR codes will be used for the connection of Physical & Virtual World.
- Semantic Web technologies such as ontologies and micro formats will be used for the description of system's data (hCard, hMedia, etc.). This approach will allow data to be available as open linked data.

The above innovative characteristics will make the platform a unique solution for cities that want to promote their recreation facilities and points of interest.

2 Key Challenges

There aren't any key challenges during the creation of the service. URENIO has extensive experience on the subject because in addition to aforementioned platform has also created virtual tours for the city of Corfu and South Aegean islands.

The pilot's dissemination process will make the service well known into the city.

Images



5 Keywords (social, technological and other)

Tourism, Smartphones, recreation facilities, panorama views, virtual tour, interactive map

References (literature, web services, other people services, etc.)

Examples in the literature can be traced in separate applications as recreation facilities guide, virtual city tours and mobile museum tours:

- National Park Service of Massachusetts (<http://www.nps.gov/applications/state/ma/parks.cfm>)
- MyToursApp (<http://www.mytoursapp.com>)

- MoMA iPhone (<http://www.moma.org/explore/mobile/iphoneapp>)

Service name (and the specific application focus/branch)

Parking Spaces Availability

Problem to solve (including stakeholder groups)

Thermi’s commercial center is not regularly used by its citizens due to traffic and parking problems. Despite the fact that the municipality operates a large parking station under the city’s main square with free short time parking (1 hour), this remains unknown to most people. It will be very useful for Thermi’s visitors to know how many parking spaces are available there. Other free parking stations as well as garages that owned by private companies can also participate to the system. The specific application will encourage significantly citizens to use the local services and visit local shops and it will reduce traffic caused due to lack of parking seats.

Description

The application will provide real-time information about free parking spaces in selected parking stations that are located in city’s center. It will also inform about the available parking stations in the city. The supplied information includes location, capacity, price, estimated availability, etc. The information will be presented on the map.

The information flow to the system will be as automated as possible. The possibility of utilisation the existing systems in the participating parking stations will be considered. Where this is not possible (closed systems) or they do not exist sensors will be used. Private garage owner should update their property’s data manually.

Access to parking spaces availability application will be made through PCs, mobile phones and large touch screens. The website will be refreshed regularly to keep up with the latest information available. Visitors will know the capacity of each garage through a Green/Yellow/Red grade and a numerical update for the number of spaces available. Moreover, the number of free spaces in each parking station will be displayed in large displays mounted in selected spots near to city’s entrances.

Base Service(s)

The applications will be built from scratch.

Innovation through PEOPLE

The application does not exist prior to the project. Although there are a lot of custom free parking websites for various cities worldwide there isn’t any application that can someone buy, download and install it in another city. There are a few mobile applications like Google OpenSpot (available for Android in US, Canada, and the Netherlands), PrimoSpot (available for Android and iPhone in US), and iSpotSwap (available for iPhone in US) which help users to share parking information and find nearby public parking locations. The major drawback of these applications is the fact that they don’t aggregate any information from existing systems or sensors and they are only based on users input. Moreover, there isn’t an open API for any parking data.

The rise of such applications makes the development of an open API for sharing parking data mandatory. So, the innovative characteristics of the proposed application are:

- It will be easily transferable to other cities.
- It will propose and implement an open API for sharing parking data.
- It will be based mainly on the state-of-the-art web technologies such as HTML5, CSS3, Media queries, Smartphones Frameworks, etc.

- It will offer to visitors seamless access through PCs, Smartphones and large touch screens.

2 Key Challenges

The pilot has to address the following key challenges:

- To find the appropriate set of sensors that will allow the rapid data acquisition of free parking spaces with the minimum cost. The sensors should also provide their data in an open format.
- To create and distribute widely the open API for sharing parking data.

Images



5 Keywords (social, technological and other)

Smartphones, display panels, parking, traffic, mobility.

References (literature, web services, other people services, etc.)

Examples:

- Pittsburgh's Parking Finder Tool – ParkPGH (<http://parkpgh.org/>): ParkPGH provides real-time parking for garages in Pittsburgh's Cultural District.
- Toronto Parking Authority (<http://parking.greenp.com/parking-info>) : The Toronto Parking Authority is a local Board of the City of Toronto which owns and operates the system of Municipal off-street parking lots ('Green IP') and the on-street metered parking.

Service name (and the specific application focus/branch)
<h2 style="margin: 0;">Citizen Requests</h2>
Problem to solve (including stakeholder groups)
<p>Smart cities recognize citizens as important data sources. As such, these cities are making it easy for the public to deliver real-time comments online or via mobile devices, which is a stark contrast to the time-consuming processes of calling or visiting city hall. Adding citizens to vast sensor networks of cameras, smart meters, and other data-collection systems gives local government a more detailed understanding of a community.</p> <p>The Municipality of Thermi needs an application allowing its departments to receive immediate feedback from citizens including reports of incidents, suggestions, and general comments. A person walking through a street can pull out a Smartphone and provide a real-time report on problems or ideas for improvement. Casting a wider net for citizen input, this application helps government know what’s happening on the ground in the city so it can maximize existing resources and improve services.</p>
Description
<p>The application will allow citizens and Municipality’s personnel to report and track non-emergency issues in public spaces. Common issues include potholes, broken streetlights, garbage, vandalism, and other problems that compromise public spaces and infrastructure. Using a mobile device or a computer, someone can enter information (ideally with a photo) about a problem at a given location. This report is then routed to the relevant authority to address the problem. Issues that are reported through the website are recorded on a map for everyone to see and interact with. Anyone can receive email alerts on the issues based on a filter by geographical area and keyword.</p> <p>In addition, the tool will allow citizen to not just report what is broken, but to make suggestions for improving the environment of their neighbourhood; starting a conversation about the overall health and liveability of a community: reporting intersections that feel unsafe, marking where a new waste bin is needed, or even suggesting how a vacant lot could become a park. Citizens can vote on open issues helping in this way Municipality to hierarch the priorities. With this form of community activism, residents are encouraged to become active citizens by reporting and improving aspects of the civic environment.</p> <p>By enabling collaboration on these issues, the open model makes it easier to collect and organize more information about important problems. By making the information public, it provides transparency and accountability for those responsible for the problem. Transparency also ensures that everyone’s voice is heard and in-turn encourages more participation.</p> <p>The application will be use through PCs, mobile phones and the large touch screens.</p>
Base Service(s)
<p>The application will be built from scratch. URENIO has developed a quite similar service in the “e-Governance Module” of “Digital Cities Open Platform”. This platform has been developed three years ago and it was based on Joomla open source content management system. The old citizens’ requests application offered limited functionality allowing users to submit issues without geographical reference. There isn’t also a voting procedure. Moreover Joomla has evolved from version 1.0.x in which the platform was built; to current version 1.7.</p> <p>The Digital Cities Open Platform is presented in a separated service card.</p>
Innovation through PEOPLE

Applications like the proposed are among the most favourite smart city application today. Thus, during the last 2-3 years a number of solutions offering similar functionality have been developed around the world. The most well-known are SeeClickFix and FixMyStreet. Unfortunately none of them are available in Greek language.

The development of our proposed application will be based on the following four pillars:

1. URENIO's experience gained from the pilot use of the existing quite similar service in the Municipality of Thermi, three years ago
2. Analysis of similar solutions such as SeeClickFix and FixMyStreet
3. Use of the latest open standards in the field like Open311 (<http://open311.org>)
4. Users' feedback through PEOPLE project's open innovation process.

The result will be an innovative new service that can be easily offered to other cities in Greece or worldwide. Other important innovative characteristics are:

- It will be based mainly on the state-of-the-art web technologies such as HTML5, CSS3, Media queries, Smartphones Frameworks, etc.
- It will offer to visitors seamless access through PCs, mobile phones and large touch screens.
- User's location will be used enabling the system to provide him/her information in accordance to his/her current position.
- It will support Open311 API (<http://wiki.open311.org/API>). Open311 refers to a standardized protocol for location-based collaborative issue-tracking. In this way, application data could be used by other applications.

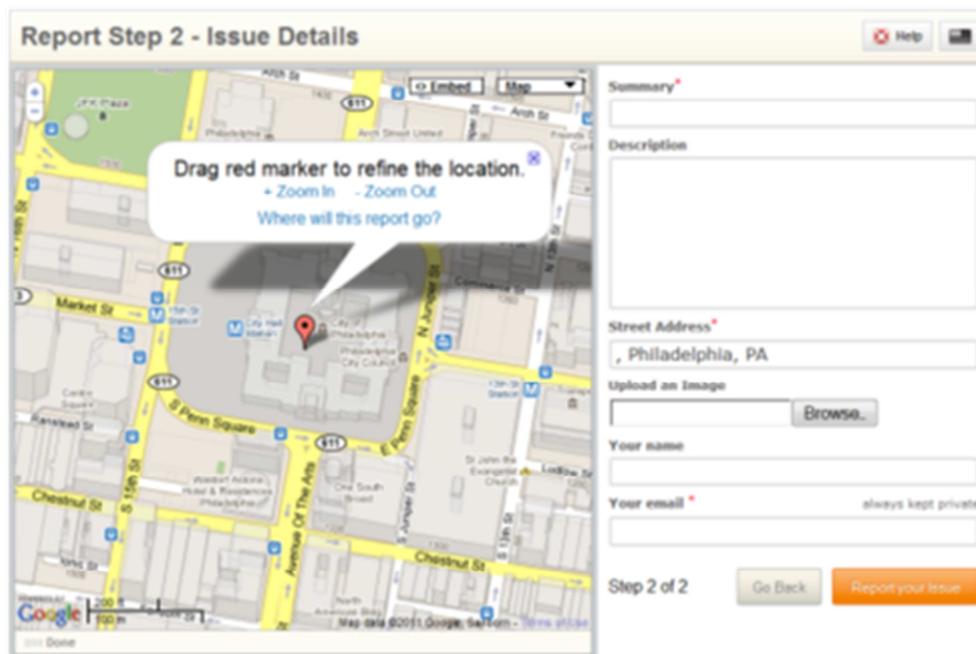
The above innovative characteristics will make the platform an ideal solution for municipalities that want to receive immediate feedback from citizens including reports of incidents, suggestions, and general comments.

2 Key Challenges

The pilot has to address the following key challenges:

- To stimulate the interest of the citizens in order they report the first issues. Once a critical mass of citizens is been created the attraction of new will be easier. The identification and stimulation of lead users is very crucial. The pilot's dissemination process will make the service well known into the city.
- To ensure acceptance of services by the responsible staff of the municipality. The role of Mayor and other city's officials is very supportive for this service.

Images



5 Keywords (social, technological and other)

GPS tracking, Smartphones, alert, community involvement, open311

References (literature, web services, other people services, etc.)

- SeeClickFix (<http://el.seeclickfix.com/new-haven> , <http://en.wikipedia.org/wiki/SeeClickFix>)
- FixMyStreet (<http://www.fixmystreet.com/>)

Baseline Service name (and the specific application focus/branch)

Digital Cities Open Platform

Description

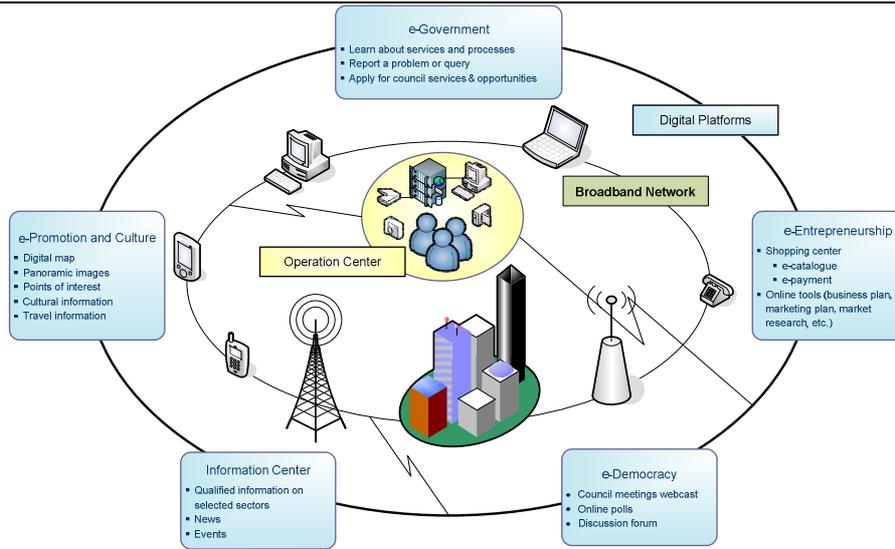
The Digital Cities Open Platform has been developed by URENIO Research Unit and Emetris S.A. under the “Innovation Pole of Central Macedonia” research programme, funded by Greek General Secretariat for Research and Technology. It consists of a kernel and five modules each of them covering a basic component of the city, such as: democracy, governance, business operations, information, and tourist promotion. In particular:

- **e-Democracy** Module provides information regarding the activities of Local Government or Municipal Authorities and allows the on-line attendance of the Municipal Council’s or committees’ meetings (webcasts). The citizens’ participation in the decision-making process is achieved through their contribution to an on-line discussion forum and to public opinion polls.
- **e-Governance** Module provides information regarding the services and processes of Municipality. Citizens can report a problem or query and apply for council services & opportunities (i.e. marriage certificate, birth certificate, etc.).
- **e-Entrepreneurship** Module provides companies with on-line tools (such as business plan tool, marketing plan tool, and market research tool) aiming to enhance their efficiency. Furthermore, the module supports e-commerce services by permitting the promotion of their products through the city’s electronic marketplace.
- **Information** Module provides updated information about the developments in selected sectors of interest, depending on the particularities of each city. The information applies to the residents as well as to the entrepreneurs that are activated in the city. It also covers the city’s events.
- **e-Promotion and Culture** Module provides a virtual tour to the city, with the use of digital maps and panoramic images. Furthermore, contains information about the city’s culture (e.g. monuments, places of interest, events etc.) that help the city’s residents or visitors to organise their spare time according to their special interests.

The kernel of the Platform contains applications which ensure the secure and effective communication between all modules as well as between modules and the end user. Each module is to a large extent independent from the others. Platform’s architecture is secure and open, while its implementation is based on the principles of systems’ interoperability and on modern standard web technologies.

This platform has been developed three years ago and it was based on Joomla open source content management system. Municipality of Thermi used the platform during a six month pilot phase. It should be rewritten almost from scratch as Joomla has evolved from version 1.0.x in which the platform was built; to current version 1.7. Version 1.7 is completely different and the update of the system is impossible because of the large amount of patches to Joomla code.

Images



www.dimosthermis.gov.gr
Ο επίσημος ιστότοπος του Δήμου Θέρμης

Διακυβέρνηση
Διακοσμητικά
Επιχειρηματικότητα
Προβολή Τουρισμός
Πληροφόρηση

Ο Δήμος

Βιτοριά (Βιτορία - Μεγάλη)

Εκπαίδευση και Έρευνα

Παράδειση

Διαρκής

Πρόσβαση

Πολιτισμός

Μουσείο Πολιτιστικά κέντρα Κέντρα πολιτισμού Πολιτισμικές οδούς

Πολιτισμός

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Service name (and the specific application focus/branch)
<h1>Bike Sharing System</h1>
Problem to solve (including stakeholder groups)
<p>This application is connected to Thermi's two basic problems: increased traffic and poor connect ability between points of interest (MED cosmos, NOESIS, Thermi's city center). Its development is also complementary to the Municipality's planned cyclist road and to the efforts made over the previous years for car free commercial axes within the city center.</p> <p>The idea behind bicycle rental systems is to provide free or economic access to bicycles aiming to the reduction of traffic in the urban fabric, the facilitation of public transport and the limitation environmental pollution and noise. Municipal governments have also promoted bicycle sharing for intermodal transport, allowing people to shift easily from other transport to bicycles and back again. However, for years community groups have promoted bicycle sharing as an easily accessible alternative to motorized travel, hoping to reduce the carbon footprint of commuting as well as enable residents to become healthier through exercise. Some consider bicycle sharing to be part of a larger sharing movement known as "collaborative consumption".</p>
Description
<p>The system will allow access to bicycles and will calculate the actual time of use of bicycles and the corresponding costs. There are a lot of automated bicycle sharing systems which allow access to bicycles in an automated way, and calculate the actual usage time of bicycles and the corresponding costs. These systems can serve both permanent users who have a special electronic card to receive bicycles and occasional users who can have instant access to bicycles by using a mobile phone and a credit card. In general a bicycle sharing system consists of the following elements:</p> <ul style="list-style-type: none"> • Electronic outdoor paying stations using RFID tags, credit cards, smart cards or special coupons. • Bicycle locking and parking terminals that are connected to the paying stations. • Control software that operates the system. • Wireless connection to the control center. <p>The system can serve subscribers and occasional users. Subscribers will use a special smart card to use system which contains usage time according to the billing fixed. After successful registration subscribed citizen can take a bicycle from any rental terminal by simply approaching the smart card in it. Smart cards allow the bikes to be returned to any station in the system, which facilitates one-way rides to work, education or shopping centers. Occasional user can buy short term membership (for a single day, a week or a month). The rental terminals should be able to communicate in real time with the control center. The system can also be supported by a smartphone application</p>
Base Service(s)
The application will be acquired / procured.
Innovation through PEOPLE
The application exists in many cities in Europe and North America. It has emerged in recent years as environmental concerns have increased and the requests for better and new services from the cities to the citizens have risen. It is innovative as it combines an old technology – the bicycle – with modern digital technologies such as the RFID and wireless ones.
2 Key Challenges
The Bike Sharing system has two major challenges that are related to the administration and

operation of the system and to the use of the system by the citizens:

- It will be a challenge for the city to conduct administrative tasks including maintenance both of which require personnel and funding.
- It is also a challenge to motivate the citizens to use the system as there are no special bike lanes in the city center roads.

Images



5 Keywords (social, technological and other)

Urban transportation, wireless, RFID, traffic, environmental friendly

References (literature, web services, other people services, etc.)

There are many examples related to this application:

- City of Boston Bike Sharing System, <http://www.thehubway.com/>
- Denver Bike Sharing System, <http://www.denverbikesharing.org/>
- Montreal Bike Sharing System, <https://montreal.bixi.com/>

Service name (and the specific application focus/branch)

Wireless Atmospheric Pollution Monitoring

Problem to solve (including stakeholder groups)

Thermi’s commercial center is usually congested by traffic. Also Thermi is very close to the City of Thessaloniki and the Thessaloniki industrial areas. These facts raise some environmental concerns related to the air quality in the city’s center. The proposed service that aims in the environmental data gathering has a dual purpose. On the one hand, monitor pollution levels may be used as a reference point in order to start public awareness campaigns. For example, showing the levels of NO₂ and CO₂ emitted by vehicles before and after a campaign “Don’t take your car, use public transport” helps citizens to understand the environmental impact of their actions. On the other hand, the fact of knowing these levels can lead the decisions such as tolls on congested areas by traffic, as it has been done in cities like London, Stockholm, Brisbane and Singapore.

For the city of Thermi this application is extremely significant as the Municipality of Thermi has signed the Covenant of Mayors, a mainstream European movement involving local and regional authorities, voluntarily committing to meet and exceed the EU 20% CO₂ reduction objective by 2020. Beyond a mere statement of intentions, the covenant foresees the setting of individual targets and the deployment of local strategies.

Finally, it should be mentioned that Wireless Atmospheric Pollution application can be complementary to other applications, such as the Bike Sharing System and the Tourism and Recreation Facilities Guide.

Description

Through the proposed application a wireless sensor network consisting of five measurement stations (also called nodes) will be deployed at specific locations in the Thermi’s City center. These nodes that will consist of a ZigBee (802.15.4 protocol) transceiver module and a sensor board will communicate with a dual ZigBee / Wi-Fi gateway so that the measured data to be collected and analyzed. The system will use the existing Wi-Fi hot spots that are provided by the City to transfer air quality measured data to a central point where these are going to be analyzed and presented to the public via a user friendly web application.

The wireless sensor network will collect data for concentrations of Carbon Monoxide (CO), Carbon Dioxide (CO₂), Nitrogen Dioxide (NO₂), Air contaminants (C₄H₁₀, CH₃CH₂OH, H₂, CO, CH₄), volatile gases, NH₃, H₂S, CH₃-CH₂-CH, C₆H₅CH₃ and Ozone (O₃). Each node will be powered up from the mains 220V AC public network so that there is no interruption of data collection and to avoid any node being “down” due to low batteries or other power related cause.

Base Service(s)

The application will be built from scratch.

Innovation through PEOPLE

The application although proposed from many experts and organizations, has not yet been applied to Europe’s major cities that face an air pollution problem. The reason behind this is that the wireless and sensor technology that is usually used in wireless sensor networks was not mature in the sense that the cost was not low enough to invest in the required hardware and software. Recent developments in both technological areas made the application feasible as the cost dropped tremendously due to new innovations that led in the manufacturing of low cost sensors especially MEM’s. Also and environmental concerns increased throughout a city’s population demanding in some cases means of monitoring air quality. So the innovative characteristics of the proposed

application are:

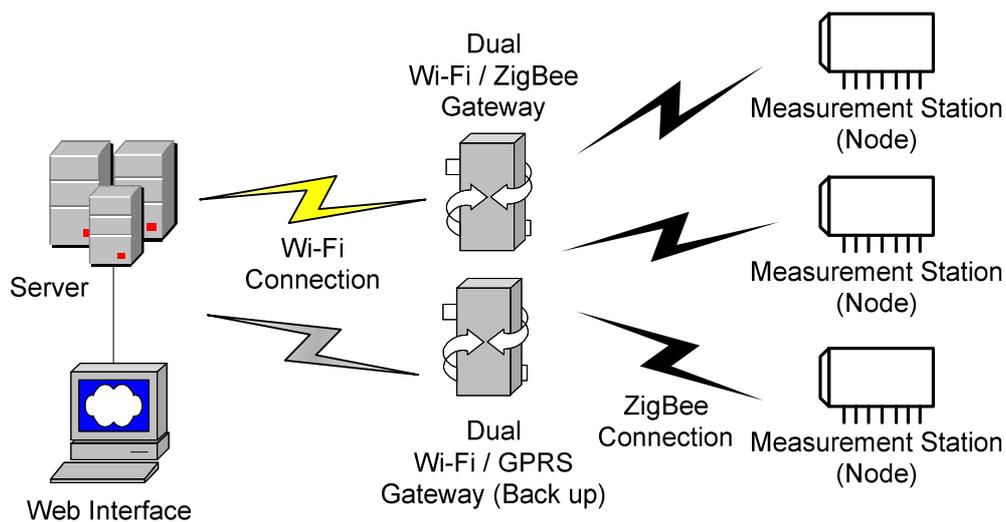
- It is based on recent developed state-of-the-art sensor technology.
- It will be easily transferable to other cities.
- The hardware is of low cost and easy to install and operate.
- It will be based mainly on the state-of-the-art web technologies such as HTML5, CSS3, Media queries, Smartphones Frameworks, etc and state-of-the-art emerging technologies such as the ZigBee protocol and its applications.
- It will offer to visitors and citizens seamless access through PCs and Smartphones.

2 Key Challenges

The pilot has to address the following key challenges:

- To find the appropriate set of sensors that will allow the measurement of the concentration of all the gases that affect air quality in an open data format.
- To create and distribute data in a way that through the information available, the awareness of the citizens in environmental related issues and specifically to the avoidance of use of cars in the City center.

Images



5 Keywords (social, technological and other)

Urban air quality, WSN, nodes, ZigBee protocol, Wi-Fi, sensors

References (literature, web services, other people services, etc.)

Examples:

- London Air Quality Network <http://www.londonair.org.uk/LondonAir/Default.aspx>
- Eye on Earth, Air and Water Quality Observatory
<http://www.eyearth.eu/Home.aspx>
- Air Quality Monitoring, City of Cambridge,
<http://www.cambridge.gov.uk/ccm/content/environment-and-recycling/pollution-noise-and-nuisance/air-pollution/monitoring-air-pollution.en>

5.4 Vitry sur Seine

At **Vitry-sur-Seine**, the Pilot goal is the creation of a network of smart bus stops and services related to urban information management.

There will be two main objectives for this Pilot within this pilot:

- **Urban Social Network for Mobility Information and Social Inclusion and Awareness:** The objective is the mapping the social network of the town, helping identifying groups in risk of exclusion and aiming at facilitating citizens to identify and get in contact with potential “mates” both in terms of social life and businesses. Implementing search functions for allowing finding people, places and services. These functions will be mainly deployed on embedded interactive panels and advertisements in the smart bus stops from the previous scenario. The use of smart phones, web 2.0 and related Future Internet technologies and Internet of Things technologies will also be important. One example service could be the possibility to publish personalized announcements (urban social networks of the city) posted by people¹¹
- **Citizen security and safety services:** This objective concerns the integration of monitoring services for citizens’ safety by proving new technological means that allows risks and hazards related events detection and triggering that are based on the active participation of citizens instead of using non reliable and very costly complex events detection systems. In this pilot we consider hazards and risks that can be captured only in the bus stop area. When an incident occurred in this space citizens present in this place can trigger in a reliable and seamless way events that contains a description of the current context. The event can be sent using SOS application that can be downloaded from an app store, from the urban social network portal or from the bus stop hot spot web server.

5.4.1 Current situation

Geographically the municipality is located in the south-eastern suburbs of Paris and exactly around 7.5 km (4.7 miles) from the centre point of Paris. Since many years, the municipality operated a strong development policy of bringing high education facilities, social services and culture to all. For this reason, the municipality contains university campus that hosts two technology institutes respectively for chemical engineering and telecommunication and networks labs. It hosts also LISSI research lab. Concerning culture and art, Vitry-sur-Seine hosts the Val-de-Marne's Museum of Contemporary Art. Opened on 18 November 2005, this museum offers in addition to the workshops of plastic arts, an auditorium and a cinema for art and experimental film. It hosts also one of the well known theatre places of Paris. Vitry-sur-Seine is one of the cities that contributed to the development of the Hip hop movement in France. Consequentially, urban art has a very important place in the city. Population in Vitry-sur-Seine is composed in it major part of people under 30 years age. Social development and high integration is one of the main challenges that the city is trying to leverage. Since it classification as High national interest Zone, the city is renovating its public

¹¹ I.E. Details could be downloaded or NFC UWB when the user places his/her phone on the screen, or someone could post a warning and upload video from their phone (after identification and authentication).

transportation infrastructure in collaboration with the STIF organization for the publication transportation management of Paris region.

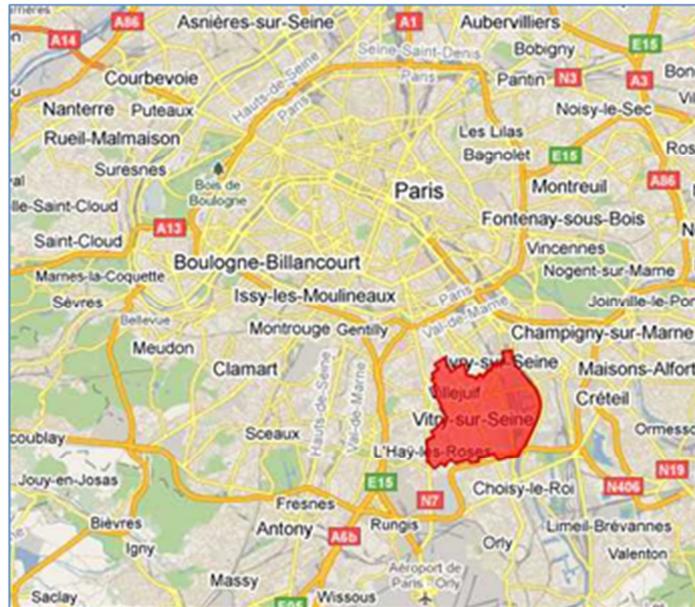


Figure 16: Vitry-sur-Seine location, south-east of Paris

The experimentation will be operated for specific periods in the public area of bus stops governed by the municipality. The bus stops are chosen according to three criteria: (i) Proximity to the LISSI and Municipality of logistics and management issues; (ii) Bus stops with high and frequent occupation of passengers of specific age categories, such teens at the university campus, aged people at the municipality social service, etc (iii) communication infrastructure facilities. In this perspective the services will be experimented in three main areas. They will be preliminary created next to LISSI’s experimental facilities, behind the bus stops of the university campus and the bus stops in the area near the Town Hall of Vitry-sur-Seine on the National Road Number 305. In a second step, it will be deployed also in tramway stops on the new tramway line under construction behind the National Road Number 7, which will link Villejuif Metro Station and Orly Aeroport.

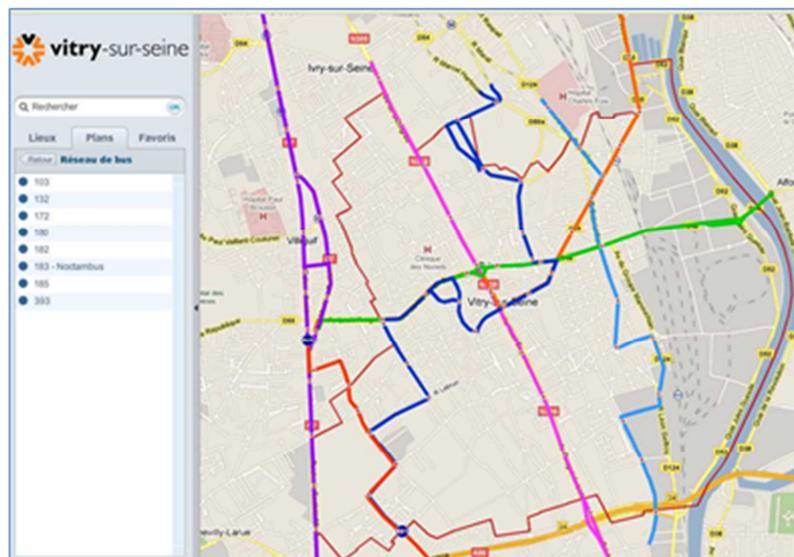


Figure 17: City Bus Network

Several public administrations are involved in the management of bus stops and bus circulation roads: the RATP public transport company, municipality of Vitry-sur-Seine, general consul and the prefecture of the Val de Marne department, etc. The municipality will handle the communication with the different involved administration to support the experimentation of the pilot in the three selected areas.

Furthermore the fact that the unemployment rate for the city is 29.5%, while national average is 14%, and with a non-EU immigration rate equal to 16%, make Vitry-sur-Seine an interesting Pilot in relation to a scenario on social integration.

The need for security in urban environments has been increasing during the past years. Indeed less and less human means is devoted to security and safety. So one main objective regarding urban security is to use, in an efficient and optimised manner, sensors and computer analysis in order to improve security response. The goal is to shorten the detection time by using sensors to automatically detect events and communicate them to the operator, and by providing means to validate/acknowledge the threat/incident. Direct services for the citizen are also needed so that they can send information to the authorities (alert button on a smartphone).

Pilot Location. Located in the city of Vitry-sur-Seine (in the southeastern suburbs of Paris, France, approximately 7,5 km from the centre of Paris), the French Pilot will be preliminary created next to LISSI's experimental facilities and in an area near the Town Hall, on the National Road Number 305. In a second step, it will be deployed also in tramway stops on the new tramway line under construction behind the National Road Number 7, which will link Villejuif Metro Station and Orly Airport.



Figure 18: LISSI's experimental facilities in Vitry-sur-Seine

LISSI's experimental facilities are located on the Paris-East Créteil University's campus which gathers several different research institutes. The campus is composed of approximately 1000 students. These persons are the most likely to be involved in the pilot and identified as the main users.

Description of the Bus Stops. The bus stop has similar design and equipments in all Paris regions. We denote two types of bus stations. A pylon bus station and fully covered bus station. The pylon bus station is a simple pylon installed behind the road to indicate bus stop point. It offers no facilities for passengers. Generally this bus stop is installed when there is no available place to install the fully covered one. The fully covered bus stop is available with different facilities such online time

indication of the next buses, roof to protect from weather inclemency. This bus stop has facilities that can be used to connect pilot experimentation equipment to city power grid. It will be then possible to deploy infrastructure such Motes of Sensor Networks (CrossBow), Active RFID Tokens and One Reader, Cricket Location beacons, Axis PTZ Cameras, Wifi hot spots.



Figure 1: Pylon bus stop & fully covered bus stop in front of the IUT

The connection of the bus stop to the internet will be done using 3G Wireless interface, wifi, or ADSL if applicable.

Stakeholders identification and involvement. Different stakeholders will also take part of the Vitry-sur-Seine pilot. During the open innovation loops, LISSI will involve students of the Institute of Technology of Vitry-sur-Seine. Concerning the security issues, the municipal police department and the Pilot Center for Urban Security will provide their knowledge and request in order to develop services in the pilot which will be related to the security.

and aims to form students that are able to install, maintain and participate in the marketing of telecommunications systems and communication networks. This is done in close collaboration with many industrial partners. The graduate students may hold positions in network administrator, consultant, architect of communications systems and information. The IUT of Créteil-Vitry is interested to be involved in the PEOPLE project through students' participation in order to validate the proposed scenario of the Vitry-sur-Seine city. Teachers of the IUT judged interesting the PEOPLE project since students will be in direct touch with advance technologies (Sensor Motes, Active RFID Tokens, Package of Cricket Location Infrastructure, Axis PTZ Cameras, Wi-Fi Interfaces) and their implementation through the proposed scenario. The project will provide some practical implementation of the theoretical issues shown at the IUT course lectures.

The objective is to involve a large number of students by putting their feedbacks on the service provides at the bus stops. A small number of students will be in charge of organizing the feedback records and their storage. IUT students will be mainly useful for the social network scenario. They will be invited to try and test the services, and therefore to give their feedback on these offered services. The various feedbacks related to the different moods, age, expectations, etc. will enhance and enrich the proposed scenario upon the student's degrees of satisfactions.

With the security services that will be integrated in the French pilot, the **Municipal Police Department of Vitry-sur-Seine** has expressed interest in being involved in the project and are motivated to participate. By involving them in our pilot, we aim at reinforcing public services related to citizens' safety, another of the key challenges / needs faced by developed cities, especially from the citizens' perspective. As the main beneficiary of the pilot concerning security and safety issues, the Municipal Police Department will be involved in the definition of the security needs which will be provided by the French pilot. In collaboration with the French partners, they will elaborate a clear vision of the technical expectations and improve the added value of the pilot.

Working jointly with the Municipal Police Department, the **PPSL** (*Pôle Pilote de Sécurité Locale – Pilot Center for Urban Security and Safety*) will test the feasibility of having a shared common operating picture (COP), which centralizes the information from the bus stop, especially towards security and safety stakeholders, as police or fire department. In case of incident, information are then available in real time to assess the situation and to provide means to deal with it.



Figure 19: Locations of PPSL facilities and Vitry-sur-Seine bus stop

The goal is to test the interoperability of the bus stop pilot with security and safety services, in order to improve the reaction and means' deployment regarding the situation and the intervention's needs. PPSL is involved in many activities with police and fire department to test new technologies in an operational environment. PPSL's contacts will facilitate the involvement of such stakeholders. Their involvement in the project perfectly matches with their own objectives. As for the Municipal Police Department of Vitry-sur-Seine, the engagement of the PPSL implies a strong cooperation during the definition of the pilot and an effective contact during the implementation phases to collect feedbacks and new requests from them.

In order to add value to the pilot, the French partners identified the **RATP**, the major transit operator in Paris and its surroundings, including Vitry-sur-Seine, as a potential stakeholder. It's operational division include the Paris Métro system, three tram lines and the extensive bus system. The PEOPLE project aims to improve the service that is delivered to their customer and is therefore of a great value for their interest. With the active involvement of the RATP, the objective is to deliver the best service that would match the needs of transport services providers and the expectations of the users/customers in terms of quality of service and offered services. Their support and cooperation would be an added value for the technological development of the pilot and would enable to extend the pilot.

And finally, as for the RATP, the Vitry-sur-Seine pilot we identified the **JCDecaux** group as an interesting stakeholder that would be able to bring added value to the pilot. In fact, the interest to involve the world largest Outdoor Advertising Corporation and bus-stop infrastructures deliverer is to benefit from our feedback and technology intelligence. They will provide information and valuable advices on how to physically implement the pilot in the existing street furniture. No need for an active involvement of this stakeholder.

5.4.2 Scenario description

At Vitry-sur-Seine pilot the goal is the creation of a network of smart bus stops and services related to urban social connection, mobility information management and security. All the services will be

integrated in the urban Social Network Portal that is accessible from the bus stops and through city private virtual network backbone. It will be divided in two scenarios: citizens' portal and public authorities' portal.

The citizen's portal will provide the following functionalities:

- Interactive search function of objects and persons in the urban social network based on semantic registries. A registry will contain references and description of physical and people and their contexts (presence, location and how they can be reached). The profile can be extracted from standards registries such LDAP, XML Standard profiles or FOAF. A physical object can be the bus station or other objects in the proximity (e.g. water fountain, garden, office building or shop).
- Information service that provide the current situation of specific location or object: weather or friends presence in bus station
- P2P communication and messages posting for a person or a group
- Message publication in the social network

The public authority portal will provide the following functionalities:

- Interactive search of objects and persons in the urban social network based on semantic registries.
- Event Context Service: It allows to get the current situation of specific location from where an event was triggered. For example control the cameras to a specific direction.
- Real time communication and messaging: for example sending message on the bus stop display to guide persons present on the location and communicate with the public agents that will intervene.
- Official Information publication in the urban social



Figure 20: Bus stop interconnection schema with city digital objects and persons

The portal will be accessible from: Smart displays in the bus stops or citizens/agents smart phones or laptops through wireless secured communication based on secure web protocols using zero conf.

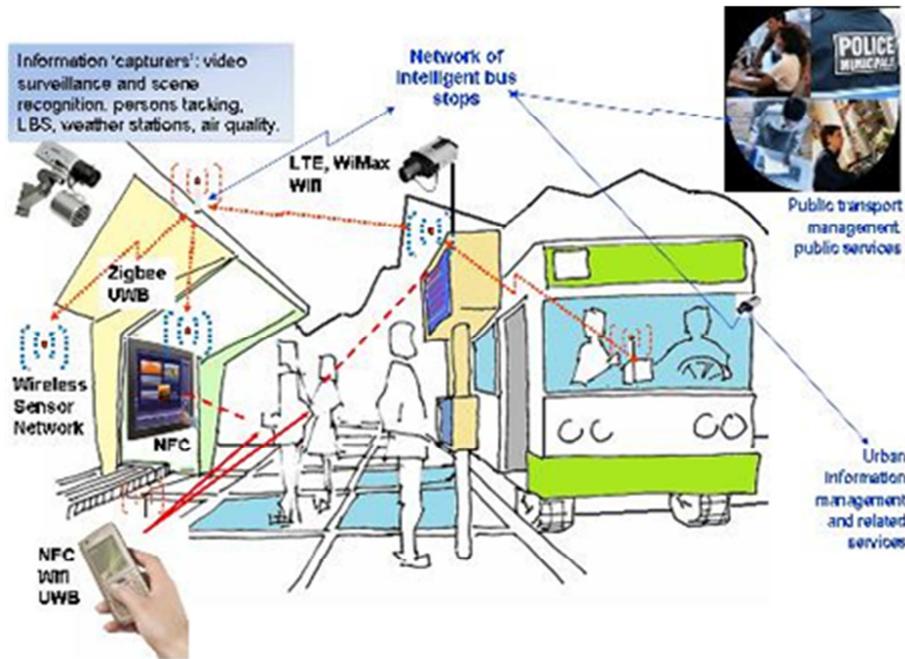


Figure 21: Data exchanges in the bus stop infrastructure

Content sharing will be handled through a privacy and security policy that will be established in compliancy with European and local law and city governance policy.

Concerning the security services that will be integrated in the French pilot, we aim at reinforcing public services related to citizens' safety, another of the key challenges / needs faced by developed cities, especially from the citizens' perspective. Within PEOPLE pilot, in the event of an incident captured at a bus stop, a signal will be sent (using SOS application on smart phones, SMS, MMS, display panels, WiFi, Bluetooth, etc.) to be processed within the integrated system merging information from different stops and civil security services at the city. The signal can be used by a civil protection to appreciate the urgency of the situation and then decide to trigger rescue actions and the intervention of public forces. A decision-related signal could be distributed via the network of bus stops.

The Municipal Police Department and the PPSL are the main stakeholders for the safety and security concerns taken into account by the Vitry-sur-Seine pilot. Therefore, they will be a great contributor for these services.

Service cards

Service name (and the specific application focus/branch)
<h1>Local Information Service (for citizens)</h1>
Problem to solve (including stakeholder groups)
<p>The goal of the service is to provide local information to users: indeed Internet gives global information, which are not directly applicable to the local situation or the user needs to provide more information to access. For example in the case of weather information, the user must write/choose his city and then he will have the weather. With these services, as the users is physically connected in the city, he will access only weather data he needs.</p>
Description
<p>The application provides user-directed information related to the city where he is. It means that when the user is connected, this service will provide only local information related to his location.</p>
Base Service(s)
<ol style="list-style-type: none"> 1. Current Weather and forecast: the information will be based on the service of Meteo France. Meteo France provides a full range of weather-based information calculated from 440+ stations around the country. Thankfully to the 5 weather stations located around Vitry-sur-Seine, the service will then display local information such as the current weather, weather forecast, wind and temperature. 2. Pollution indicators in the city: Airparif is an association that provides pollution information on different kinds of gaz. There is a station located in the center of Vitry-sur-Seine that provides indicators over the following pollutants: PM10, NO2, NO, O3, PM25, SO2. The pilot will display on global indicator in order to warn the citizens in case of anomaly. 3. Map of the area: who never faced problems to find a map while walking in an unknown area? Google and IGN propose maps which are easily and freely accessible through internet and 4. Real-time traffic situation: Located right in the centre of Ile-de-France area, the mobility is an important factor of the lifestyle but also a strong issue. Vitry-sur-Seine is subject to recurrent traffic jams. Sytadin is a famous website that gives real-time traffic information of Ile-de-France area. Google Maps also proposes a service to check in real time the traffic situation in the area of Vitry-sur-Seine. 5. Itinerary service: based on Google Maps services previously stated, the Google offers a free itinerary service for pedestrians that covers Vitry-sur-Seine city. This service can be coupled with the service " Interactive Search for persons and facilities" in order to offer the location of any facilities and an optimized way to reach it. 6. Public transportation timetables: Bus timetables will be made available directly on the portal, enabling everyone who owns a Smartphone to get easily access to the information. 7. Real-time public transportation situation: who never faced the situation where the bus you were expecting to bring you to an important meeting didn't show up after a 10min wait? Collaboratively with RATP, any user located around the bus stop will have access to the latest information indicating in real-time the situation of the transportation and be aware of any issue or lateness.

Innovation through PEOPLE

The innovation in this local information service is based on the fact that, even if all these services already exist, we have to do some manipulations to access to the information that concern a specific area. Within the "local information service", the appropriated elements of each service are automatically selected for the *specific area*.

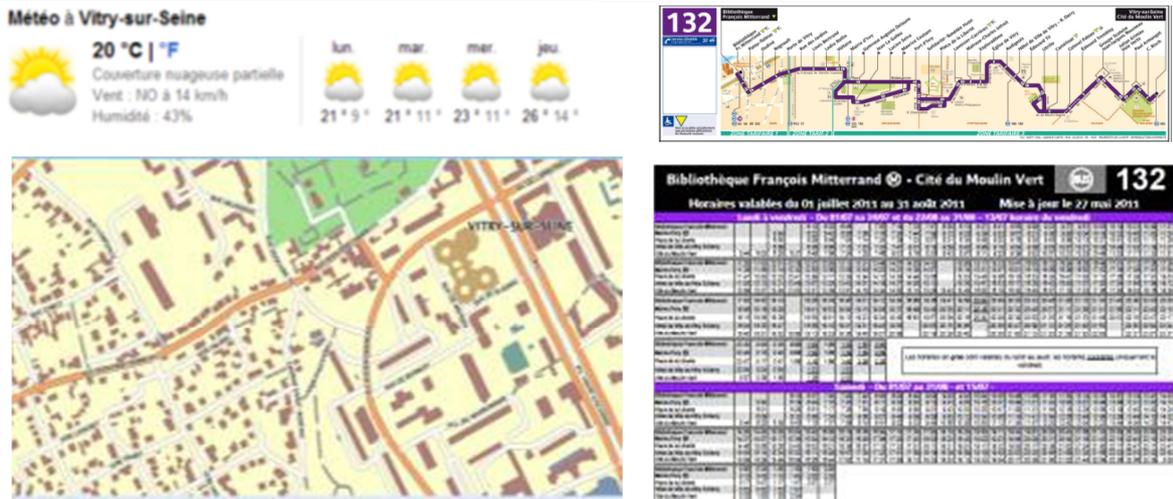
The service will **gather and display**, on a same page, these useful but heterogeneous information for citizens. Otherwise, the user would have to visit each service independently and to do each time the manipulations.

2 Key Challenges

In this service, the pilot will face two main challenges:

- **Extract the right information** concerning a specific delimited area. This will be possible if we find the right way to access to the data, select information based on the context and location of the user, and extract the needed information required by the user.
- Interest and satisfy the user who might already have habits to use other application. This challenge can be fulfilled by paying a special attention to the **ergonomic display of this heterogeneous information from various sources**.

Images



5 Keywords (social, technological and other)

Local information, weather, timetables, environment, car traffic

References (literature, web services, other people services, etc.)

- Météo France: https://public.meteofrance.com/public/donnees_gratuites
- Air Parif: <http://www.airparif.asso.fr/divers/mentions-legales>
- IGN maps: <http://www.geoportail.fr/visu2D.do>
- Google Maps: <http://maps.google.fr/>
- Sytadin: <http://www.sytadin.fr/>
- Bus network information: <http://www.transport-idf.fr/>

Service name (and the specific application focus/branch)
<h2>Private Information Service (for citizens)</h2>
Problem to solve (including stakeholder groups)
Users who are connected want to know if their friends or contacts are connected, and eventually determinate their approximate location (if the targeted person allows that functionality, regarding privacy issues).
Description
The service allows to display and edit the user profile. It allows also to display and manage the list of friends' profiles, location and their connexion context (available, online, etc). The user profile is a collection of personal data regarding identity, activity and preferences.
Base Service(s)
<ol style="list-style-type: none"> 1. The Profile webpage allows to display and edit the user's profile i.e. to provide a template which the user can fill with the desired information It contains usual information concerning the identity (name, email, etc.) but also activities and hobbies i.e. all information the users wants to share. 2. The user will benefit from a privacy management function which will help the user in dealing with his privacy, by providing some automatic levels of privacy (private, free, etc.) or by allowing the user to manage himself manually the privacy for each information in the profile or regarding the lists or groups of other users 3. The service will display a list of connected users. Each person who is in the friends/contacts' lists of the user can allow him to see whether they are connected or not (connection status). And if so some new functionalities will be available automatically (email to, phone to, etc.). 4. In the same way of the list of connected users, the location of connected users will be displayed on a GIS (Geographical Information System) or on a simple map, if the concerned user allowed this kind of information to be published. Location of friends will also provide new functions to the users as ("find the nearest friends", etc.)
Innovation through PEOPLE
The difference with tradition social network is the display of list of friends who are currently in the city. Indeed the local aspect of the service is emphasized in order to provide useful information to the users.
2 Key Challenges
<ul style="list-style-type: none"> • Nowadays in the social networks, a key challenge is based on the privacy information management which is one of the main concerns of any user using a social network tool. • This tool will also enable the user to update his/her profile online and from anywhere.

Images



5 Keywords (social, technological and other)

Friends, connected, location, privacy settings

References (literature, web services, other people services, etc.)

Facebook: <http://www.facebook.com/>

Google+: <https://plus.google.com/>

Myspace: <http://www.myspace.com/>

Service name (and the specific application focus/branch)
<h2 style="margin: 0;">Interactive Search for persons and facilities (for citizens)</h2>
Problem to solve (including stakeholder groups)
<p>In order to access to local and private information or get context services, a search function is requires to target objects or persons. This is performed using the interactive search function of objects in the urban space based on context aware semantic search queries. A registry is used to store the references and description of friends, virtual and physical objects of interest that are present in the city space such as gardens, public offices, etc. The result of search is a set of useful information such as profile description, contacts and contexts (presence, location and how they can be reached). The profile can be extracted from standards registries like LDAP, XML Standard profiles or FOAF. A physical object can be the bus station or other objects in the proximity (e.g. water fountain, garden, office building, shops, accommodations, etc.).</p> <p>Furthermore this search function addresses a wide public (from student to elderly people) and thus should provide helpful characteristics. Indeed the search should be semantic, so that the results are more accurate and it allows the user to have a better flexibility. Also, it should help the user during his search with interactive functions.</p>
Description
<p>The application provides a search function among the information published by the portal. This search is semantic, which means the request is analyzed to understand what the goal of the request is and to adapt it (no direct matching). Furthermore the user will be helped interactively.</p>
Base Service(s)
<ul style="list-style-type: none"> • Search for people (user's contacts and friends): This service allows users to make simple queries in the portal in order to find where their friends are in the city, in order to join them physically or contact them through the messaging service. The privacy friends location should be managed to avoid tracking problems. • Search for shops/services in the area: This service allows users to make simple queries to find shops and services. The idea is to rely on the google mapping facilities and a database to find such entities. The search result will be a set of shops or services with short description.
Innovation through PEOPLE
<p>The innovation comes from the semantic and interactive functionalities that are included in this advanced search tool for local information.</p>
2 Key Challenges
<ul style="list-style-type: none"> • Semantic Search: It concerns how to take into account the semantics of key words used by users in their search queries. For example taking into account users current location. User will not need to fill complex search forms. • Interactive Search: The main challenge is how to simplify services search criteria in order to match users preferences.
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