

SUS

(ITEA 2 08010)

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Smart urban spaces

The benefits of interoperability for e-city services

In the context of ongoing globalisation and fiercer competition, most European cities are confronted with the need to attract investment, a qualified workforce, tourists and consumers with high purchasing power as well as improve the quality of life for their residents and optimise internal productivity. To do this, cities have to differentiate themselves by enhancing their local identity, consolidating their regional positioning and boosting their international profile. All this requires optimum infrastructures that foster the ever changing needs of their stakeholders.

The aim of the ITEA 2 SUS (Smart Urban Spaces) project was to bring suitable design frameworks and urban standards that will enable European cities to introduce easily and seamlessly the most advanced mobile technologies in new interoperable e-services for their citizens. Such services target improving not only the daily lives of European citizens but also the productivity and efficiency of local administrations, especially in terms of their relationships with both citizens and urban service providers. Other targets included linking the users and use cases directly with the latest technology concepts and designs pertaining to mobile ubiquitous computing. To achieve these goals, the SUS project linked nine cities from three EU countries that were strongly committed to offering pilot sites for the project together with providers of technology, connectivity and services as well as research organisations.

INTEROPERABILITY THROUGH URBAN STANDARDS

The project employed a global development strategy to identify and develop scalable and interoperable technological building blocks on the city scenarios. This interoperability of services between European cities raised specifically the aspect of service standardisation (for example, in mobile payment and mobile ticketing, which still tend to be proprietary initiatives, or electronic poster, e-city tourist guides and loyalty programmes) and resulted in a proposal for a set of associated “urban standards” and a first network of interconnected cities aimed at sharing best practices, tools and platforms

at European level. In brief, the project has provided software technology bricks and design frameworks that can be used for designing and adopting mobile, context-based, local and interoperable services in cities/urban spaces. Furthermore, a start has been made on building a network of European cities aimed at specifying, clustering and validating those local and interoperable services through pilot experiments in line with their e-administration strategy, promoting this at European level. Consortium contributions to international bodies and intense discussions with the cities involved in the project led to an initial set of European urban services standards.

The common interest business verticals for the cities in the consortium was initially very large and included mobile payments, mobile ticketing (with a specific focus on transport, especially for cancelling costly and inefficient paper tickets for tourist visitors), smart posters, couponing and loyalty, taxi services, city event and building management, and tourism (interactive visit). In some cases, the project delivered specific mobile interfaces for elderly or disabled people and, as such, contributes to the global European effort on e-inclusion. Of course, specific attention was paid to privacy and identity management in the urban context, with the objective of providing the minimum set of information on service users to enable cities to continuously monitor quality improvement in respect of European privacy and security regulations. The ITEA 2 project SUS supported the e-city vision by

providing a new service infrastructure and delivery platform using the latest mobile contactless and context aware technologies available, and prototyping the resulting platform on a set of local and innovative or cross-city interoperable services representing the needs of modern cities in an integrated Europe.

CENTRALITY OF PILOTS

Eight work packages provided the stepping stones to both establish and improve the proof of concept of the SUS architecture and related technology blocks, and to ensure that clear progress was achieved in finalising the project’s deliverables. The technology developments work package finalised the SUS Administration Platform (SUS-AP) with clear improvements in the service provider perspective to enable easy integration of new services. Defining the methods for personalising the services for the final user in the SUS-AP interface was done through data collection and analysis from user interface, privacy and identity management pilots. The evolution of the end-user perspective, contained in the end-user framework WP, improved usability, self-registration and reuse of existing profiles while the scalability and interoperability of the implementation was assessed in terms of the city perspective.

The pilots being run in all the countries were monitored and candidate pilots selected for integration in the SUS-AP architecture and for the interoperability review. In all, there were 47 pilots proposed that were clustered



MUSEUM QUEST MUSÉE DE NORMANDIE



CE JEU VOUS A PLU ?

Alors prolongez l'expérience avec le parcours Guillaume le Conquérant à Caen. Sept des trente-trois étapes du parcours sont équipées de la technologie NFC et de QR Codes vous permettant d'avoir accès à un supplément d'information sous forme de vidéo et de texte.

Facilitez aussi vos déplacements, les arrêts de bus et de tram Twisto sont tous équipés de tags NFC et de QR Codes : vous pourrez ainsi connaître les horaires de passage en temps réel.

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MODE D'EMPLOI

Jouez avec vos enfants et (re)découvrez le Musée de Normandie grâce à votre mobile



in four main areas: ticketing, education and day care, transport and city visits. A common e-city service delivery framework was developed, providing identity management, privacy management, user profiling creation and management, and social networking. The development of a SUS Administration Platform provided the user interface to the end user, the city and the service providers. Furthermore, a set of recommendations was

produced for both pilots and future rollout of e-city services concerning compliance with European and national regulations.

In addition to regular monitoring and contributions to the relevant standardisation bodies, some specific contributions were brought by the project; e.g NFC antenna reported issues from the pilots were dealt

with and relevant standardisation and certification programme explored. The definition and measurement of interoperability criteria spanned many of the work packages whereby input from almost all the work packages, involving multiple perspectives (technology, societal, legal, and experience from pilots) was integrated, resulting in a paper published in a scientific review and an internal interoperability review of selected pilots.

DEMONSTRATING THE BENEFITS

In terms of innovation, the SUS project has especially proposed an extensive NFC service delivery environment to extend it from single applications to the clustering of services in one single "bouquet". This technology is very clearly experiencing a powerful surge and half of all smart phones are expected to contain NFC by 2015 thereby enhancing the market for new services and applications as well as a strong increase in NFC ticketing and payment. Below are a few of the demonstrations that reveal the benefits.

Museum Quest is an NFC-based quiz game for museums that demonstrates how interactivity, immersion, fun curiosity and interest can encourage kids to get back to museums and people to talk together. Everything works offline and foreign tourists are therefore not subject to any extra connection fee. The museums gain effective added value as the contents can be enriched through cutting-edge technology and the application, which is unique for each museum, can be extended and refined through regular updates.

Another demonstration concerns e-ticketing for small events that often need a cheap, simple and lightweight e-ticketing system; this is enabled by NFC and mobile applications, with one client application to browse through a list of events, download and present tickets at the event entrance and one validator application. With the secure element not involved and no internet connection needed at validation time, no expensive infrastructure is required, just smartphones. This is cheap, fast and easy to deploy.

EXPLOITATION PROSPECTS

Important international technology events have provided a showcase for the SUS project to present and profile its aims and achievements. The broad audience at such events in 2012 makes possible multiple contacts between SUS partners and many interesting companies and corporations. This boosts the prospects for exploitation.

The results of the Smart Urban Spaces project are already on track for fast exploitation by most of the industrial partners. This is a result which has been enabled by the very close cooperation established between the industrial or academic partners and the cities involved in the project. Equally, the project results will be exploited in Finland through companies such as Fara, Bonwal and While on the Move as well as in cooperation with VTT and other partners. VTT as an R&D provider will help cities to

identify the services that could benefit from mobile solutions. In the second phase VTT will do research on multi-application micro-services in general and in education and ticketing in particular. Some large-scale deployment based on project results has also started in all Spanish cities involved in the consortium, in most cases initiated by the prototypes developed by the local SME members of the consortium. Within this context, service interoperability emerges as a major challenge: the results of the Smart Urban Spaces project will be a real support to the process of demonstrating the relevance and the feasibility of service interoperability.

A good part of the success of the SUS project can be attributed to the way in which the innovation has been propelled close to the market and the benefits from the strong involvement of end users. There are many instances of exploitation, beginning with Gemalto. In Europe, Gemalto provides Mobile Network Operator Trusted Service Management (MNO TSM) to three of the five largest mobile network operators including Vodafone group, T-Mobile group and Telecom Italia. Gemalto is also TSM for Orange France, 4 additional European MNOs and provides the SP TSM for 8 service providers. In October 2012 in the USA, Gemalto launched a commercial MNO TSM service for ISIS, which is the joint venture of three of the four largest MNOs: Verizon, AT&T and T-Mobile. In addition, Gemalto is providing SP TSM services to three major US banks, including Chase. In Singapore, Gemalto has been delivering commercial TSM services to Singaporean customers since August 2012, including local banks/SPs and mobile network operators. StarHub, M1 and Singtel. Finally, in Japan, Gemalto has announced that it will release its TSM solution to KDDI, one of the country's leading mobile network operators, for the deployment of the world's first commercial NFC airline boarding service. This will enable quicker and more convenient flight boarding for more than 37 million passengers who fly with Japan Airlines (JAL) each year.

Another example is NXP Semiconductors in France; the SUS project represents the opportunity to accelerate the deployment of its technologies (MIFARE and NFC especially) and to enlarge the number of applications through the testing of business models and the solving of interoperability issues between the cities. NXP is in discussion with the French national railway transport system to eventually connect its service to the SUS proof of concept. NFC chips have enabled several applications to be successfully tested in Caen: information, ticketing, identification and payment. National certification as a "Digital Town" early in 2012

promises to accelerate the deployment of contactless mobile services. Viacités, the Caen conurbation's public transport mixed syndicate, will be equipping its entire network with a new ticketing system, associated with a Twisto application, by the year end. Caen la Mer is concurrently working, in partnership with the Caen Chamber of Commerce and Industry and the professionals involved, on the development of a Pass Tourisme (Tourism Pass) and a Pass Commerce (Shopping Pass), both mobile versions of existing services.

CBT (Spain) developed a SUS service, called MUGI65+. In Basque it means "moving the over 65s". This SUS service has been developed to assist elderly people to make city itineraries within Bilbao, events or municipal facilities, using public transport. It is an Android App and it uses a leaflet with POIs (Points of Interest) of the city of Bilbao. The MUGI65+ leaflet also includes NFC tags, QR Codes and a customised front end designed for older people. NFC tags have also tactile information detectable in the surface texture for helping elderly or disabled people to use SUS technology.

A final example relates to the public transport field, the FARA Inspector. On-board passenger ticket inspection in the public transport arena needs highly operable, reliable and ergonomically designed equipment as well as a modern mobile solution. Inspection is very profitable for authorities, so more inspection means more profit and reduces the number of passengers travelling with an incorrect ticket. The prototype developed in SUS has been industrialised and is ready for market commercialisation. The SUS derived solution will be compatible with all standard ticket products including ISO 14443 RFID card products, NFC, 2D-barcodes (QR-codes), contactless-EMV. Expectations of this business case are very high. Solutions have already delivered to the first customer and a second delivery has been started.

Within this context, service interoperability emerges as a major challenge: in order to be of genuine interest to users, mobile services must enable them to validate a transport ticket, access the local swimming pool, order a taxi. With several challenges in mind – enrolment (identification), multi-support (telephone or multi-service card), the services portal and, ultimately, the payment system that will need to be set up with them – the results of the Smart Urban Spaces project will be a real support to the process of demonstrating the relevance and the feasibility of service interoperability.

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