

INNOVATION REPORT

Mobile platform simplifies provision of personalised micro services on the fly



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The ITEA 2 uService project has developed a flexible service infrastructure to turn mobile users from service consumers into producers and providers of so-called 'micro services'. Its ubiquitous service platform makes it possible to provide – and charge for – a wide range of simple services for use by other consumers in real time and easily on their mobile devices. Applications range from value-added tourism information in map environments to personalised support for health and wellbeing.

User-generated content had already reached 12% of total fixed Internet traffic in 2007, with some 60 million personal blogs and around 100 million videos. This trend has now moved to the mobile environment, much more suited to the way people carry out social interactions – anywhere, anytime. It is boosted by the ever greater power of mobile infrastructures and mobile devices that encourages new business models.

In addition to the communications and contents of fixed networking, the mobile world manages context in a unique manner. Mobile devices allow users to generate contents which can be downloaded to centrally-provided services. uService set out to enable the ad-hoc generation of user-created services from mobile terminals able to act also as servers providing constantly-updated information relevant to other users instantaneous interests and current context.



The intention was to facilitate new services and application, simplify service creation and provision for mobile devices even on the move and to develop a comprehensive enabling implementation based on components for targeted advertising together with associated accounting and billing. A key element was to allow users to create services on their own and make them available to others. That is the user is no longer just a consumer but also an active provider of services – a so-called 'super prosumer'.

Small, focused applications

Resources, interaction possibilities and user attention are much more restricted on mobile devices compared with the fixed, traditional web environment. So uService proposed a new way to look at mobile information services to solve this problem and deliver services that users are expecting – above all for the non-technically skilled. The proposed micro services are small, sharply focused applications with their own graphical user interfaces that allow users to obtain and provide information – such as opinions, recommendations, location or speed – to fellow mobile users.

The project goal was to enable the resulting services to be consumed remotely by other users, in a simple way, with only their mobile devices. Mobile-to-mobile provision of this type of mobile user-generated services implies millions or perhaps billions of potential sources with valuable information for the same number of potential consumers.

Typical applications envisaged included providing a series of additional services in a map-based environment such as points of reference, picture and sounds. This would enable for example a local business to advertise its services to passers-by, tourists to find activities where they are or runners to meet up with partners en route.

While the idea was still novel when the project was conceived, several similar applications have emerged, not least Google Maps. But the majority of these applications involve passive users. The approach developed by uService opens up a wide range of possibilities for active service creation that have not yet been exploited. And the focus of uService has been not just on map environments but on any kind of open application which can obtain additional value from publically available data.

INNOVATION REPORT

Services are distributed for both personal use and for that of others. Super prosumers can exploit device capabilities such as geographical positioning or motion sensors, and have access to external sensors and actuators – for example for health monitoring. On the server side they are supported by intelligent, personalised search-and-recommendation engines with trusted security-and-identity management functions using the subscriber identity module (SIM) smart card in the mobile device. They also offer fair real-time mobile charging and billing functionality.

Based on new platform

A key to the success of the ITEA project has been the development of a new platform – the uService platform – to process the information concerned and let prosumers create services on-the-fly for their own needs or to sell to others.

Sensor and device intercommunication is based on a RESTful architecture. The project developed the constrained application protocol (CoAP) which makes it possible to leverage the necessary web-based communications. This technology can be used for any web-based project to provide additional functionality. CoAP is in the process of standardisation with the Internet Engineering Task Force (IETF).

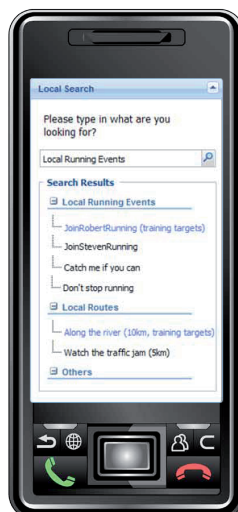
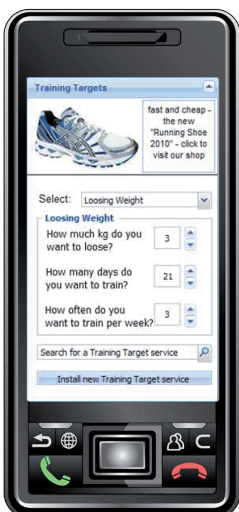
Service execution is based on the OpenSocial component hosting environment which provides interfaces for social networks, communication with the backend and inter-gadget communication. A service-accounting-and-billing component enables direct web-based payments as well as providing mediation, rating, charging and billing.

Security and trusted infrastructure are hosted inside the uService global architecture with security components for identity management and digital signature based on implementation of a public key infrastructure for uService end users to manage the whole life cycle of their digital certificates. Client-side security is enhanced by the integration of secure elements such as the universal integrated circuit card (UICC) smart card into the architecture to provide basic services enhancing security, privacy, and trust.

Offering enormous potential

There is an enormous opportunity for exploiting the market potential of this type of mobile micro service created, provided and consumed by mobile users with only their mobile devices. Network use as well as subscription services can benefit network operators. Prosumers can benefit from discounts from network operators. Third-party companies and even individual mobile users can provide targeted services with great accuracy to special interest groups or communities based on their current context.

A typical scenario demonstrated in the uService project is an e-health application dealing with running – supporting people in their sports activities. Such an application can enable users to collect data about their runs – such as the route, speed and pulse rate – and publish the information for authorised persons such as personal trainers or doctors. The application makes it possible to provide training plans as a personal trainer in the role of super prosumer, contact other members of the runners' community and find appropriate routes or running partners on the move.



INNOVATION REPORT

This uRun scenario also took in mobile advertising with the application scaling advertising banners to the size of different mobile device screens, offering the possibility of sponsorship using several uServices, allowing targeted advertising to be provided using user-profile information and enable location-based advertising using the current position of the user. Charging information and notifications can be supplied in real time and revenue sharing can be based on service use and advertising.

Overall, uService represents an enormous opportunity for the development of a wide variety of mobile micro services which will enable users without immediate access to computers and with only the use of their mobile devices to enter an entirely new domain. They will be able to go well beyond simple Internet consultation and become participants or controllers in their own network domains.

Results of this ITEA project will also facilitate the generation of services and applications which leverage new business opportunities and commercially exploit the new possibilities offered by the mobile industry. This will also help extend the current European leadership in mobile communications to the mobile software and services field. In addition, uService gives mobile users the power of creating their own mobile micro applications or services. Commercial applications are already being developed in Germany in the area of service infrastructures, while health and tourism service applications should be on the market in Spain within a year.

More information:

www.uservice-itea2.eu