Beyond 3G, communications services of the future

July 11 2008

(PhysOrg.com) -- Europe's telecommunications industry became the world leader in the 1990s. Now European researchers are working to maintain that lead by developing an innovative services platform for 'Beyond 3G' communications.

European researchers at the EU-funded SPICE project are putting the final touches to a total solution that advances wireless telecommunications services beyond that of current 3G technologies.

3G is the third generation of standards and technologies for mobile phones and enable telecommunications providers to offer a wider range of advanced services – such as video calls and wireless data transmission – than the previous 2G standards.

The SPICE platform responds to the growing needs of network operators, service developers and providers and consumers for an even wider range of services by creating an overall architecture for a new set of standards.

The development will mean dramatic advances in mobile services. Users will be able to transfer movies, music or any media, on the fly, from one device to another as they go through their daily routine.

Mobile devices will also be aware of both the location and context of their owners, and can make appropriate suggestions. Consumers will be able to develop their own custom services.

Universal architecture

The researchers also sought to define a universal architecture for advanced communications services, one that could work seamlessly with any device, on any network.

They also sought to develop the appropriate tools and middleware to make it easy to develop and deploy compelling new services. And they created a middleware framework that handles service roaming, billing and digital rights protection, among others tasks.

SPICE was an ambitious research programme, both in the range of stakeholders the technologies are aimed at, and the degree of technological innovation required.

But then the SPICE project is large in every sense. Its 24 partners, who include France telecom-Orange, Alcatel-Lucent, Nokia Siemens Networks, and the Fraunhofer Institute, are leaders in Europe's telecoms research and industry.

Compelling services

The SPICE team have already demonstrated services that give just a hint of what will be possible in the near future. In one demonstration, a user watches a movie in her hotel room. Once she leaves her room, the movie starts playing on her mobile device.

“But we can also split media, so the image appears on your mobile screen, or on your laptop or TV, but the audio comes through your headphones or your stereo, for example,” says Christophe Cordier, the project’s coordinator.

In another demonstrator, a mobile device becomes a security token for a user’s internet passwords. With all the internet services available, passwords multiply rapidly. It is easy to forget which password applies to which service. Even back-up solutions, such as a text file with the password or security questions, can fail.

But with the SPICE solution, the proximity of a Bluetooth-enabled mobile device acts as proof of a person’s identity. Security can be improved by using the phones PIN code as a universal password.

The advantage is that a PIN and the device will replace dozens of passwords, making the system both simpler and more secure.

User-created services

Another demonstrator shows a remarkable service development tool for end-users. Using a graphic display, users can select a series of basic logical functions – such as those to determine location and time, or to send SMS text messages – and quickly develop services tailored to their needs.

For example, one demonstration creates an air quality alert that activates whenever the user drives to designated city or location. Another creates a 'wake up' SMS if the user is still at home when he or she should be at work.

These are very simple examples, but they illustrate the potential of the service. In the demonstration, the tasks took less than a minute to set up and test.

Another compelling SPICE component is called the 'Attentive Services Layer'. The service pays attention to a user's location, habits and the time. If a user is at a cinema, Attentive Services can give details about the current movies available at the time.

If the user leaves the cinema at dinnertime, the device might suggest some local restaurants and, if the user likes sushi, Japanese restaurants appear at the top of the list.

Similarly, the researchers improved back-end functions, like service discovery and lifecycle management, to make service development, deployment and delivery faster and simpler.

The researchers created the demonstrators to show that the underlying technology works. The demonstrators only cover a tiny part of the dozens of technologies and protocols that the SPICE team defined or implemented, but they offer a tantalising hint of the potential services in the near future.

Beyond 3G, agnostic

"We're aiming these services for 'Beyond 3G', a term we use to describe what happens next," Cordier says. "It is not 4G. Instead, it is an evolution of currently available technology.

“Right now, we’re finalising the integration of various elements of the platform, so that they all work together, and we will have a unified demonstrator in September [2008],” he says. ‘After that, some of these services or enablers will be adopted by partners, but it is unlikely that the platform as a whole will be deployed by a single operator.”

Nonetheless, the SPICE platform does hint at the next evolution of communication services, one that is device agnostic and serves consumers, operators and service providers.

The SPICE team has also fed into the standardisation efforts at an international level, and in this respect their work could be key to maintaining Europe’s telecoms leadership.

Setting the standard

In the 1990s, the adoption of GSM propelled Europe to world mobile telecoms leadership.

“GSM was complete. [It defined] the radio, core network and service delivery standards,” says Cordier. “In this sense, it was more complete than SPICE, which focuses purely on services. But SPICE could be regarded as a pre-standardisation exercise for the services layer of next-generation communications.”

SPICE is part of a wider European effort in telecoms research called the Wireless World Initiative (WWI). WWI’s partners cover all aspects of mobile communications.

For example, the Ambient Networks project focuses on the development of future core networks, while the WINNER project looks at radio technology. Combined with SPICE, the three projects tackle all of the elements that are needed for a future telecommunications platform.

And together the three projects help ensure that Europe continues to set the standard and stay at the forefront of telecommunications development.

SPICE received funding from the EU's Sixth Framework Programme for research.

Source: ICT Results