SCAMPI - Service platform for soCial Aware Mobile and Pervasive computing

The Future Internet will be characterised by an increasing diffusion of devices with heterogeneous capabilities and resources. The main goal of SCAMPI is to empower end users through a combination of pervasive and opportunistic networking capabilities for a more effective access to a variety of services in a secure manner.

Main Objectives

The SCAMPI project envisions a future networking environment populated by users carrying an increasing variety of personal mobile devices such as cameras, smart phones, PDAs, notebooks, etc. embedding diverse components, such as sophisticated wireless interfaces, greater memory, powerful CPUs, which will generate a significant amount of multimedia content.

Through an experienced and committed consortium, SCAMPI aims to enable end users to benefit not only from the resources available on their own devices, but also to opportunistically exploit resources offered within their environment, including those on other users’ devices, in a trustable and secure way. In particular, the core idea is to design and deliver, through an experimentally-driven approach, a service platform for mobile networking environments capable of dealing with:

- a pervasive diffusion of devices either carried by users or present in the environment, with heterogeneous capabilities and resources, and
- turbulent networking conditions (i.e., it will not be possible to establish stable network topologies encompassing the devices of the network).

The SCAMPI platform will allow opportunistic service creation and/or consumption for nomadic prosumers. Through the implementation of a novel distributed architecture exploiting both mobile and pervasive networking elements the aim is to enable the creation of a new generation of social networking services. As a matter of fact, including social awareness as contextual information within the service-oriented context will be the basis to develop innovative social-oriented services. This is expected to trigger significant innovation in both the fields of mobile computing and social-aware networking.

Through the close coordination of key partners with strong experience in these core domains, the SCAMPI consortium will deliver theoretical and practical results which will strengthen Europe’s position and boost innovation in the areas of future Internet technologies, including mobile, opportunistic and social-aware communication. This should open up new opportunities for innovative SMEs of peer-to-peer market.
Technical Approach

The SCAMPI project is positioned at the intersection corner of pervasive computing, opportunistic communications and social networking.

The core idea is to move from a pure networking perspective and put in place a service-oriented platform for mobile and pervasive networks. Instead of addressing pure networking issues, such as efficient message delivery between end-points, SCAMPI will investigate collaborative ways to enable shared services by exploiting in an opportunistic way hardware and software resources embedded and accessible within the environment.

The “human factor” is a key aspect of the underlying approach. On one hand, because the project will investigate novel examples of social-oriented services enabled by the SCAMPI architecture, and, on the other hand, because information about the social behavior of the prosumers (i.e., users producing and/or consuming services) will be exploited as core contextual information for the development and refinement of the solutions offered and enabled by the SCAMPI service creation environment.

The proposed service platform can be seen as a generalization of conventional distributed systems architectures, which extends them towards the pervasive and opportunistic networking domain. As in conventional distributed systems architectures, SCAMPI abstracts physical resources so that services can be built in a transparent and unified way. The key innovation of SCAMPI, however, is to provide a platform for the distributed use of remote resources in pervasive and opportunistic networking environment. This is a major departure from conventional distributed systems schemes, which assume that remote resources can be accessed through wireline, high-capacity networks. From this standpoint, SCAMPI will thus bridge the gap between distributed service architectures and pervasive/opportunistic networking.

Key Issues

In order to successfully do so, there are a number of challenges SCAMPI will address:

- Analyzing the performance bounds of the opportunistic service provisioning paradigm in pervasive and opportunistic networks.
- Analyzing probabilistic service guarantees in unstable mobile networking environments.
- Designing proper algorithms and implementing an overall service architecture capable of effectively addressing the reference application requirements.
- Prototyping such a service delivery platform and experimental evaluation - with feedback on the design of models and algorithms.
- Understanding the advantages and potential drawbacks of the use of social information in the SCAMPI technical solutions.

Expected Impact

The SCAMPI project is a great opportunity to unify strong competences and interests in Europe in the domain of mobile access networks, mobile services and interoperability issues and to provide a platform that will support the creation of new services and business models. Through the involvement of a critical mass of academics and industrials, SCAMPI will help European actors to have a strong impact in ongoing pre-standardization efforts (such as DTNRG). This impact will be complemented by stimulating the growth of the FIRE facility and community.

Summarizing, SCAMPI is expected to:

- Strengthen the position of European industry in the field of Future Internet technologies.
- Reinforce European leadership in mobile and wireless broadband systems.
- Contribute to global standards, interoperability and European IPRs leadership.
- Widen market opportunities for new service and applications providers.
- Accelerated uptake of the next generation network and service infrastructures.
- Make end users better aware of their role within the service creation and delivery chain.