COMANCHE: Ambient intelligent software configuration management

The main objective of the COMANCHE project is to develop and validate a generic framework for Software Configuration Management (SCM), which will pave the way to the realisation of technically and commercially viable private spaces incorporating ambient intelligence features.

As microprocessors keep entering into more and more devices around us, there is a growing potential for services accessibility, innovation, and individualisation. However, there is also a growing amount of complexity around us leading to increasingly challenging needs in terms of configuration management. On the other hand, the largest segment of present (private space) networked services environments only affords a modest amount of administrative support. Market experience has demonstrated that the inadequacy of existing technologies for software configuration management has considerably slowed down the take-up of truly user-centric services environments in the user private spaces.

Revealed by the participation of some of the largest industries (ALCATEL, INDESIT, GORENJE, INTRACOM) in the digital equipment market for the Home, COMANCHE has a strong business orientation.

The projects aims at consolidating an innovative software deployment and configuration framework that will stimulate the emergence of a new breed of products, such as residential gateways, digital networked devices, and networked white goods.
The convergence of digital entertainment devices, domestic appliances and information will be an important issue for a new innovative market, where only inexpensive, easy-to-use products will enjoy consumers acceptance. This means for instance, easy to install (just plug and play) and use, and no unneeded interoperability problems among the various vendors.

Regarding the foreseen standardisation impact, the project is focused on the OSGi Alliance, UPnP Forum, Liberty Alliance, FIPA, and CECED.

COMANCHE directly relates to the “Adaptive Software” component of the Ambient Intelligence vision. While ambient intelligence should not be promoted as a universal panacea for social problems, it certainly represents a new paradigm for how people can work and live together and it provides radically new opportunities for both individual fulfilment and social discourse.

**The COMANCHE Approach**

The realisation of the COMANCHE SCM services framework will be built on the software engineering and knowledge management infrastructure that the project will deliver. The main components of this infrastructure are the following.

- The COMANCHE Knowledge Management Framework, which will provide the means for effectively conceptualising, organizing, discovering, and exploiting the tremendous amounts of (currently unorganised and scattered) attribute information, pertaining to software configuration management.

- A modular component-based software architecture, and an adequate design methodology and tool, which will effectively address the engineering and run-time management of reconfigurable software for ambient intelligent networked services environments.

- A formal modelling methodology and a consistency validation framework for capturing and analysing the structure and run-time behaviour of distributed software systems. This approach will aim to preserve the integrity of the target networked services environments in terms of allowing software-configuration error detection and recovery across present complex, and multi-vendor private spaces.

In order to prove the concept, the project will design and develop the different enhanced instances of the components that will reside in real-world private services islands (residential gateways, domestic appliances, digital entertainment equipment, etc).

COMANCHE will also realise a unified identity management and security framework, which will enable flexible and secure man-to-machine and machine-to-machine interactions, serving the purposes of software configuration management. Protection of user privacy will be one of the key drivers.

**Partners’ Expectations**

**ALCATEL SEL** will exploit the components of the COMANCHE architecture on its residential gateway products. Furthermore, ALCATEL will use COMANCHE business-domain knowledge models for enhancing its XML-based data integration portfolio of solutions.

COMANCHE will enable **INTRACOM** to enhance the automatic configuration capabilities of its Content Delivery Platform and offer advanced configuration features to network operators that aim at custom and personalized installations.

**GORENJE** is particularly interested in exploiting the COMANCHE SCM concept for developing user-centric white-goods. This will allow the company to provide more attractive products embedding advanced control and self-configuration capabilities.

Through its participation in the project, **INDESIT** will endeavour to enhance its home-appliance platforms and improve its market positioning in the networked home business.

It is envisaged that through the extensions of **TELETEL**'s third-party software provider solutions in order to support the emerging applications in COMANCHE, significant new market opportunities will further strengthen the company market status. In addition, **TELETEL** is expected to benefit as a user of the COMANCHE design methodology and (open source) tools in terms of improving its productivity, flexibility and competitiveness.

**SOLINET** will exploit the COMANCHE results mainly through extending the reach of the company SAFIRE-SDL development environment product (currently used for telecom systems specification and validation) into the market of service development tools for in-home and personal area networked services.

The expectations of **APEX** through the participation in this project are to keep pace with edge-technology trends in the area of in-home networked services, and enhance its portfolio of applications in the domestic appliances market.

Plans for **CEFRIEL**, **COM** and **RWTH** are to obtain research results with high practical and theoretical value. Results, which may be regarded as open to the public, will be published at appropriate conferences or in scientific journals.