COMANCHE

Scope

Imagine a user sitting in his living room and switching on the new mini laptop PC that was purchased the same morning. Among others he wishes to use it for controlling and monitoring the operational status of his domestic appliances, managing the content stored in the hard disk of his multimedia entertainment system, viewing images taken by the security cameras, participating in multimedia sessions, etc. How will this be achieved? First, he will have to find the various CD-ROMs that were purchased together with the different in-home devices (domestic appliances, multimedia entertainment system, security system, residential gateway, etc) and follow a variety of serial numbers, and keys for installing the concerned SW applications. In addition he will have to check across the different Web sites (of device manufacturers) whether a software/firmware update is required for his devices, download the required updates and install them. He will also have to configure/customise the SW applications on his mini-laptop PC, as well as the settings of the different devices following the manual instructions supplied. Finally, he will have to suffer the different bugs, interoperability problems, and safety hazards resulting from poor configuration. A similar procedure will have to be performed each time a new device is purchased and installed.

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.

Advances

The Comanche main advances can be identified as follows:

- Presently, the knowledge pertaining to the actual roles, relations, and interactions between users, providers, software, services, and hardware (devices), is currently unorganised and scattered across a multitude of private/business spaces and Internet locations. We will address present deficiencies through the development of a knowledge management framework, which will enable the organisation of the diverse knowledge required for SCM and the effective resolving of potential knowledge conflicts.
- Up to now, "zero configuration" capabilities have been confined to the networking and communications aspects of services. Present schemes largely exclude the efficient and effortless configuration of services logic. We will address present deficiencies through the introduction of a component-based software architecture, which will allow the efficient engineering, deployment, and run-time management of services.
- Existing schemes for software configuration management have only proven sufficient in terms of preserving the integrity of rather simple services architectures (frequently comprising products from the same vendor). We will address this shortcoming through the development of a standard framework for modelling software runtime aspects across distributed services environments.

Positioning in global context

The project addresses the needs of a variety of market players including service providers, software developers, equipment and service infrastructure manufacturers, third-party (SME) software providers, etc.

Contribution to standardization and interoperability issues

Cross-vendor interoperability among devices and services is a key project objective. Comanche actively participates in the following standardisation bodies:

- The UPnP Forum is an industry initiative designed to enable simple and robust connectivity among stand-alone devices and PCs from different vendors. Comanche contributes to the initiation of a new Working Committee focused on the definition of requirements, use cases, and technology choices that relate to device and software management.
- CECED (Conseil Européen de la Construction d'appareils Domestiques) represents the household appliance industry in Europe. One of the activities CECED is mainly involved in, CHAIN (Ceced Home Appliances Interoperating Network), defines the protocol for connecting appliances in a single multi-brand system. As specifications within CHAIN have not reached the low-level implementation aspects, Comanche provides contributions in an effort of raising component-oriented implementation awareness within the working group members.

COMANCHE Tested Architecture
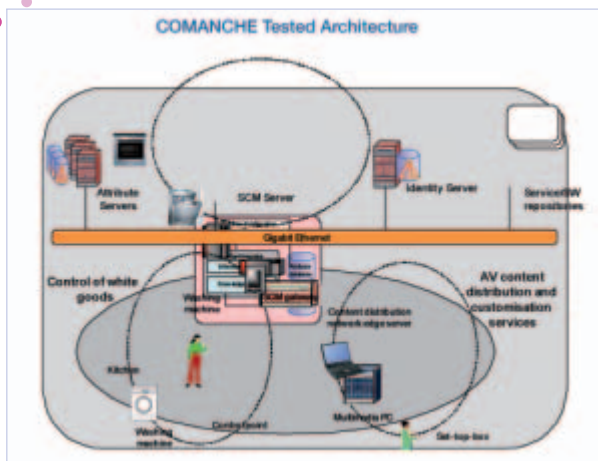
Target users / sectors in business and society

The users of the Comanche results can be identified as follows:

- The average citizen
- The manufacturer of home equipment, appliances, and service infrastructure
- (Medium-sized) third party software provider
- Service provider

Overall benefits for business and society

The Comanche exploitation strategy is focused on facilitating the emergence of new business opportunities for a variety of players. The home appliance manufacturers will benefit from an increased demand for standardized, higher-end devices. In addition, the project will contribute towards the improved market positioning of the (medium-sized) third-party software providers by realising programming abstractions and development tools that are expected to facilitate third-party developments. Comanche is also expected to promote the competitiveness in the service provisioning market. The project will pave the way to a more competitive customer-centric landscape, whereby the solutions offered by different players will be highly customisable, open, interoperable, and manageable across different domains.

Examples of use

Two Comanche representative use cases are realized through the set up of the project industrial trials. These are (1) automated / user-assistive configuration of home appliances and home-control software services, and (2) configuration of audiovisual content distributions services. The challenges to be addressed mainly relate to promoting the convenience and safety of the end user in a cost-effective manner.

Achievements

The project main results/products are identified in the sequel.

- Comanche Reference Architecture
- Comanche Ontology
- Middleware and APIs of the Comanche Knowledge Management Framework and SCM Services Framework
- Component-oriented software engineering methodology and tool
- Methodology, middleware, and APIs of the Comanche Service Consistency Validation Framework

Beta releases currently exist for all the above results. For further information please refer to the contact service of the project site http://www.ist-comanche.eu/

COMANCHE Reference Architecture