

Project Achievements



Next Generation Home

The GENIO project has defined a platform enabling the next generation home network. Such a platform makes it possible to cope with the rapid growth in the number of connected users, devices, services and user-generated contents, which turns the home into an increasingly complex and hostile environment for telecommunication operators and service providers. GENIO has solved all those problems and also other challenges like access to the content from everywhere, user interaction, personalization of the services, network automation, management of events and alarms, and energy consumption control.

Main focus

GENIO has defined the home network of the future, focusing in the following main areas:

- ◆ **Advanced self-management of the home network.** GENIO applies autonomic technologies to the home network configuring, service organization, supervision, diagnosis and healing tasks, aiming at maximizing home network automation and intelligence to deal with events and alarms that may arise and taking into account the energy consumption of devices.
- ◆ **Heterogeneity of the devices and their interactions:** GENIO enables the interconnection and intercommunication of different devices in the home network.

- ◆ **Ubiquitous access to home contents.** Main aspects tackled by GENIO are the access to content from everywhere.
- ◆ **Energy Management of the home devices.** GENIO integrates an energy monitoring and management component in the next generation home. The concept developed is based on the use of smart plugs and enables users to specify their preferences and get alarms on the best home interface.
- ◆ **Personalization.** GENIO works on subscription identification solutions for device configuration personalization, so that users are able to carry their home with them using the same authentication mechanism in any Home Gateway, giving support to the concept **"My home moves with me"**.
- ◆ Reusing existing wiring in the home premises and providing hybrid networks to the home: PLC+WiFi, ONT+PLC, Coax+PLC, xDSL+PLC,

Approach

The project has specified a Home Network Architecture to deal with user requirements, mainly addressing the capacity of the network to satisfy all the services requirements. This home network allows the connection of a heterogeneous set of devices.

Another aspect of the project involves dealing with self-managing and self-



GENIO

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Partners:

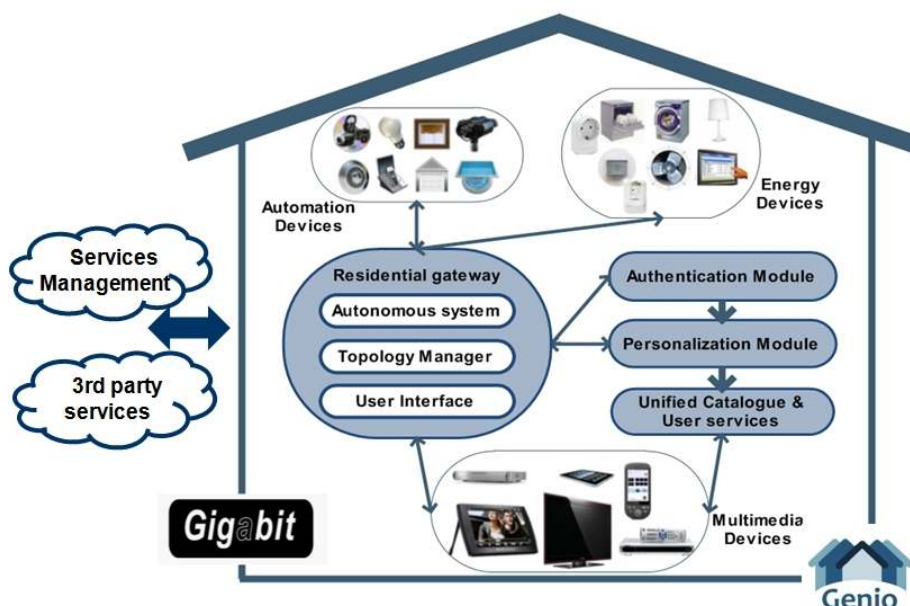
- ARANTIA 2010 S.L., Spain
- EtherTrust, France
- InAccess Networks, Greece
- Instituto Tecnológico de Aragón, Spain
- iSOCO, Spain
- Broadcom Networks Spain S.L., Spain
- LIP6 (Université Pierre & Marie Curie Paris), France
- Telefónica I+D, Spain
- Ucopia, France
- Vestel Electronics, Turkey
- WARP Networks S.L., Spain
- FTW Forschungszentrum Telekommunikation Wien GmbH, Austria

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Project Website

www.celticplus.eu/projects/celtic-projects/call6/GENIO/genio-default.asp



controlling systems. With GENIO the user defines policies and rules that serve as inputs for the processes of self-management and self-controlling instead of controlling the system directly. The project provides an autonomic platform capable of handling control and management aspects of autonomic networking seamlessly and integrating the user in the final decisions when it is necessary. The same approach is used for controlling the energy consumption of devices which are connected through smart plugs. The user defines his/her preferences regarding energy and these are used by the autonomous system for complex reasoning and finally to make decisions or to ask for user decisions. But there is a limitation of the device management systems: the lack of a unified and portable user interface. GENIO offers a system that allows the user to use all the devices of a same class in a unified way using a common interface for TV, mobile, tablet or PC.

The authentication mechanisms, access to content, and personalization of the systems, are other issues dealt in GENIO. The project looked for a solution to guarantee authentication in efficient bandwidth utilization, allowing it from a local or a remote location. The user, once he is in the system, has the necessity of accessing to different contents in any device and in any location. Moreover, the personalization of the services, devices, and platforms should be done once, so GENIO implements a standard solution to allow interoperable profiles across different devices, services and platforms.

Achieved results

The major results produced by GENIO cover different issues:

- ◆ A (multi) standards-based management platform for a cost-efficient provisioning and lifecycle management of the Next Generation Services from Any Provider to Any Consumer Electronic Device within the home network.
- ◆ A standard-based solution that enables the unified representation and Easy & Secure access to Any type of multimedia content from Anywhere and for Any device.
- ◆ The proposition of a standard-based user authentication and profiling solution for the provisioning of services in a personalized and mobile way.
- ◆ A proposal for an energy management home system and its integration within the service layer in order to improve the capabilities of the energy management consumption decisions.
- ◆ A high bit rate hybrid infrastructure reusing the existing wiring inside the house and allowing service providers to connect using either xDSL, Fiber, WiFi or Satellite.

These results have been demonstrated by setting up a final demonstrator that has allowed the end-to-end validation of the project. The results have been provided to several standardization committees as a suggestion to extend the existing standards with these new contributions.

There have been some dissemina-

tion activities directed to industrial partners, stakeholders and Special Interest Groups, Research Community, European Industry and the wider public involving international conferences like CES, CeBIT, COMPUTEX, NEM Summit, BROADBAND World Forum, etc. Besides, research results from the GENIO project have been reviewed and accepted by the Research Community through several conferences including ICAART 2012, PAAMS 2012, etc.

Furthermore, GENIO contributed to standards regarding Hybrid Network like IEEE 1901, IEEE for PLC, 1905.1 for PLC, MOCA and WIFI, ITU-T G.hn over Powerline, Coaxial Cables and Phoneline, and Homeplug AV2.

Some partners, like Telefónica I+D and Vestel, have elaborated an exploitation strategy of GENIO's results.

Impact

As the number of services provided for the end users at home through the broadband connection and the number of connected devices in the home network are increasing, there is a strong need to provide management solutions in the home network, which allow users to be *unaware of technology*. The implementation of self-configuring, self-monitoring, self-diagnosing, self-healing concepts done in GENIO, allows that the end users only have to "plug&play" to enjoy their services, and mitigate the risk of not achieving a massive services adoption in the home environment because it is very complex to use them.

The management solutions allow operators and service providers to reduce the OPEX (operating expenses) of the services delivered to the users. This leads to user satisfaction, and in turn to better loyalty.

GENIO also proposes solutions to satisfy users' demand of easy-to-interact-with services using portable / ubiquitous interfaces, an intelligent multimodal virtual agent, through voice, image recognition or natural language processing capabilities. These solutions are the foundations of new services for the operators and manufacturers which would generate new revenues, and help traditional Telcos & Electronics companies enter into new markets.

The GENIO users can also actively control their energy consumption and contribute to the overall sustainable energy use.

About Celtic

Celtic is a European research and development programme, designed to strengthen Europe's competitiveness in telecommunications through short and medium term collaborative R&D projects. Celtic is currently the only European R&D programme fully dedicated to end-to-end telecommunication solutions.

Timeframe: 8 years, from 2004 to 2011

Clusterbudget: in the range of 1 billion euro, shared between governments and private participants

Participants: small, medium and large companies from telecommunications industry, universities, research institutes, and local authorities from all 35 Eureka countries.

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