PROJECT PROFILE

A121: Platforms for networked service delivery (PlaNets)

HIGH SPEED COMMUNICATIONS SYSTEMS

Partners:

Alcatel
Consulintel
CTTC
Deutsche Telekom T-Com
DS2
Fraunhofer Institute
Infineon Technologies
Philips
Robotiker
Siemens
Stollmann
Telefónica
Thales
Uni Madrid (UC3M)
Uni Paderborn (UniP)
Uni País Vasco (UBC)

Project leader:

Gerhard Packeiser
Infineon

Key project dates:

Start: January 2005
End: December 2007

Countries involved:

Austria
Germany
The Netherlands
Spain

High speed Internet access now depends on asymmetrical wireless and fixed line systems. The PlaNets project sets out to provide cost-effective symmetrical broadband access for all European citizens based on convergence of current heterogeneous networks, including fixed and wireless systems, to ensure much greater user interactivity. The project focuses on use of IPv6 – the next version of the Internet Protocol – and concentrates on specification, implementation and verification of all kinds of network delivery. The objective is to enable development of European-led global solutions that will make it possible to boost chipmaking and keep mass production of communications systems in Europe.

Current Internet access tends to be passive, with users selecting and downloading information. Future users will need to upload much greater amounts of information in a more interactive world. New high speed, broadband Internet access will build on the convergence of current heterogeneous networks, including wireless access, wide area (WAN), local area (LAN) and mobile phone networks.

The MEDEA+ A121 PlaNets project is developing platforms for high speed, networked service delivery, based on requirements emerging from various European projects. It is concentrating on the specification, implementation and verification of access network platforms, including the complete platform for the base station or terminal, and encompasses fixed and wireless solutions but not mobile phone networks. In addition to long-term developments, the project is also focusing on exploitation of existing networks.

Building on earlier results

PlaNets builds on the results of two earlier MEDEA+ projects: UniAccess, which focused on fixed access networks, and UniLAN, which concentrated on wireless transmission technologies in private networks. It is also extending work from the EU Sixth Framework Programme (FP6) MUSE project.

UniAccess anticipated future trends through work on a unified network with a lean protocol stack, effectively a converged network. It developed interoperable set-top box and portable wireless terminal prototypes, a specification for an industry standard home gateway (IAD) supporting data, video and voice services, a concept for universal network node platforms and a first prototype network processor chip implementing the concept together with an IPv6 introduction scenario.

UniLAN provided wireless networking scenarios, particularly specific requirements for content-rich multimedia services. It developed a portfolio of architectures, building blocks and platforms for a variety of wireless technologies, including wireless LAN (WLAN) standards such as IEEE 802.11x, Bluetooth and the newly emerging ultra wide band (UWB) technology.

The FP6 MUSE project, which has strong operator input, extended the work of UniAccess through a unique solution for access networks.

Public/private convergence

Key goals of PlaNets cover implementation of new functions on all platforms in the access network, particularly introduction of IPv6 and convergence of WAN and LAN access. Verification will be carried out in test site and field trials. A special challenge is implementation of protocol translation in the home gateway between converged network functionality on the public side and LAN protocols on the private side.

PlaNets will extend the end-to-end QoS scenarios developed in MUSE with an IPv6 solution. Migration from asynchronous transfer mode (ATM) to Ethernet is essential, because of the massive investment required for ATM equipment. Introduction of new services exploiting MUSE QoS capabilities will give network operators extra income with low additional investment.

The MEDEA+ project is also developing MUSE's concepts to offer a converged broadband network with enhanced functionality that supports multiple services and service providers. MUSE defines Ethernet and IP network models with options for both. PlaNets will implement one model and one option. And it will provide equipment for common laboratory trials with MUSE.

Broadening access

The range of access technologies to be integrated in the converged network will be broadened by including fixed wireless technologies. Implementation concepts will be evaluated based on future trends in fixed wireless technologies to assess the potential and benefits for provision of broadband access. The feasibility and techno-economical aspects will also be studied, as such approaches can only be beneficial to operators if simple, cost-efficient and secure solutions are achieved.

On the private network side, PlaNets is developing transmission techniques in the domestic environment in line with the Home Gateway Initiative. These include tip/ring wiring for telephone, CAT5 wiring for Ethernet, and Bluetooth and WLAN for wireless links, as well as new technologies such as UWB and power-line communication. While similar to the public network side, the challenges are different. Plug-and-play is a must and the rapidly evolving consumer market demands flexible solutions.

Finally, two reference sites will be established for integration tests and qualification around the access network. Shared use of test sites with MUSE will be possible at PlaNets' partners T-Systems and Telefonica. IAD and line cards developed in UniAccess will be verified in Deutsche Telekom test networks. If possible, a fully MUSE-compliant network will be built and additional functionality implemented.

New paradigms such as MUSE-compliant access networks only become successful if a complete solution is available. It is essential that the whole chain of systems is demonstrated in PlaNets: terminals, gateways and network elements. The German field trial is of key importance in deploying the MUSE concept as success will encourage further investment.

Easing transition to SoCs

The tremendous progress in silicon integration has enabled semiconductor manufacturers to provide system-on-chip (SoC) devices. This means that, while hardware functionality used to be defined mainly by the systems manufacturer, the task is now shifting to the chipmaker.

This changeover was accomplished for the IAD during UniAccess, with specifications written by STMicroelectronics and Infineon. For the telecommunications platform, the transition to a MUSE-compliant SoC device is likely within the timeframe of PlaNets, despite the low volume of such components and high investment required.

PlaNets' overall vision is to ensure the European next generation network (NGN) has global success similar to GSM mobile telephony by 2010. A large part of European citizens should then be connected to the European NGN with a growing number using it for new businesses. Broadband IPv6 access all over Europe will facilitate decentralisation, enabling incumbent local telecommunications carriers to increase income through value-added broadband services.

Development of a common telecommunications platform will also ensure cost-effective manufacture of broadband systems in Europe and enable European chipmakers to deliver complete SoCs for all types of broadband systems.

Several benefits are expected through PlaNets, not least that European companies can drive future improvements of the European broadband network. European chipmakers may gain additional market share in telecommunications, and there are good perspectives to maintain mass production of telecommunication systems in Europe as highly automated fabrication with high volume and quality makes it competitive with low-wage countries.

MEDEA+

MEDEA+ Office
140bis, Rue de Rennes
F-75006 Paris
France
Tel.: +33 1 40 64 45 60
Fax: +33 1 40 64 45 89
Email: medeaplus@medeaplus.org
http://www.medeaplus.org

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