PROJECT RESULT

High speed communications systems

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AI03: Unified network access for e-Europe (UniAccess)

Easing access to voice and data traffic

The MEDEA+ A103 UniAccess project has developed architectures for single-chip integrated access devices enabling cost-effective Internet access and a digital subscriber line access multiplexer that handles the requirements of voice and data traffic at the telephone exchange. By simplifying connection and configurations, these devices should boost the market for Internet-based communications in small or home offices. Currently, services such as telephony, web browsing, email and broadcasting are accessed using service-specific networks – whether terrestrial (xDSL, cable, etc.) or by satellite.

A typical small office or home office (SOHO) could have two or three forms of communications access that includes dial-up telephony, dial-up Internet, asynchronous digital subscriber line (ADSL) Internet and cable TV Internet connections. Within the home itself, Internet services could be distributed by power line connection (PLC), Bluetooth wireless network, Ethernet local area network (LAN), etc. Having such a choice can be a barrier to extending the range of services available because each option will inevitably require some kind of set up or configuration phase. Many would-be users are put off by the idea of having to become involved in configuration for each individual device.

The MEDEA+ A103 UniAccess project set out to provide the solution. The consortium comprised organisations from four distinct areas: public network equipment such as ADSL, symmetric high-bitrate DSL (SHDSL) and very high rate DSL (VDSL) line cards for DSL access multiplexers (DSLAMs), home gateway or integrated access device (IAD), SOHO networking technologies, and terminals. The partners had a unique mix of expertise in their particular fields and were well placed to develop the necessary specifications and architectures to provide a fully integrated networking environment. The scope of UniAcces architecture and specification encompassed the whole network chain. It also took into account the introduction of Version 6 of the Internet data networking protocol (IPv6), which is crucial in the convergence of Internet with mobile communications. The commercial benefits for the consortium are considerable. Each partner stands to gain in some way because the IAD and DSLAM will open up new applications and new markets.

Series of work packages

Work packages included:

- System architecture definition;
- ADSL-based IAD;
- SHDSL-based IAD;
- Switching and interworking; and
- Demonstration system.

Work was shared between 14 participants from eight European countries. At the beginning, the main drivers for the project were the major semiconductor manufacturer members: Infineon, Philips and STMicroelectronics. It was of strategic importance to have agreement on specifications and protocol sets if low-cost chipsets were to be produced.

Working in a consortium such as this means that companies that would normally consider themselves as competitors could work in a collaborative environment. It has

been described as a 'win-win' situation; the specification is agreed, interfaces and functionalities are standardised, and it makes it much easier to enter the global market subsequently – an important consideration for Europe.

One of the strengths of working in the UniAccess consortium was that partners were able to maintain their momentum and focus on the project objectives despite market difficulties. This is just as well, because there was a pronounced downturn in the telecommunications sector as a whole during the lifetime of the project. Interest in emerging mass markets, such as the one for Voice-over-IP (VoIP), was rather low.

Working demonstration

A demonstration of the work of UniAccess took place at the MEDEA+ annual review meeting in November 2003. Both the IAD and DSLAM were on display, and showed a full spectrum of services. Technically speaking, the IAD demonstration included:

- Support for multi-protocol encapsulation over asynchronous transfer mode (ATM) and point-to-point protocol over Ethernet (PPPoE) routed ADSL protocols;
- ATM and Ethernet LAN data links;
- Residential IP telephony – interfacing between analogue telephony and VoIP;
- Data connectivity and video playback over Bluetooth wireless links;
- MP3 audio streaming over Bluetooth;
- Distribution within the home of video broadcasting and video-on-demand (VoD) via ADSL links;
- LAN emulation;
- Layer two tunnelling protocol (L2TP) access integration for virtual private network (VPN) support;
- Data connection over ADSL and symmetric high-speed DSL (SHDSL); and
- Data over PLC.

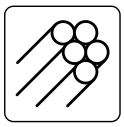
The DSLAM would normally be located in the telephone exchange building, and typically connect to an edge switch and an access server. Each DSLAM interface card handles up to 64 ADSL/SHDSL lines. There is also provision for ATM network interfacing.

The level of systems integration was illustrated by a video-on-demand demonstration that made use of an IAD interworking with an Internet-enabled set top box (STB). The STB normally provides the interface between the TV set and the satellite dish or cable termination, and is controlled by the user's remote controller.

In this case, the STB was used to make a connection, via the IAD and DSLAM, to an MPEG2 streaming video server. The user was able to choose a video from the list presented, and was then able to watch it with full control over play, pause and stop. In effect, the user's remote controller was connected to the VoD server through the whole access chain. The STB is also capable of generating a unified electronic programme guide (EPG) that combines information in MPEG2 video streams from both the satellite and ADSL networks.

Positive research environment

The three-year project received a lot of support from MEDEA+. It was a very positive environment in which to work, and helped the European telecommunications industry at all levels – including operators, manufacturers and research institutions – to come together and collaborate. The achievements of UniAccess would not have been possible without financial support of public authorities in some major countries.



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Partners

Alcatel Microelectronics (until 2002)
CEA-LETI
Ericsson Microelectronics (until 2002)
GDT
Gemplus
Infineon Technologies
INRIA
ISD
Italtel
Philips
Siemens
STMicroelectronics
Thales Communications
University of Athens

Project leader

Klaus Starnberger until 7/2002, then Matthias Kindler, Infineon Technologies

Key project dates

Start: January 2001
End: December 2003

Countries involved

Austria
Belgium
France
Germany
Greece
Italy
The Netherlands
Sweden

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