ITEA
INFORMATION TECHNOLOGY FOR EUROPEAN ADVANCEMENT

PROJECT RESULTS

Improving networks from end-to-end

Securing heterogeneous local distribution networks
• •

MAGELLAN investigated secure end-to-end solutions in hetero-geneous local networks such as metropolitan area, hotspots, and enterprise and institutional systems. The project focused on the three major distribution channels: broadband Internet-protocol (IP) technology such as digital subscriber line (DSL) and cable, digital video broadcast-ing (DVB) and digital storage like DVD, including associated multimedia services. To achieve a complete end-to-end solution, it also tackled servers and thin clients within these networks.

When integrating and completing technologies to meet the require-ments of consumers and content providers, Europe has to focus on improvements in quality of service (QoS) and security within future end-to-end solutions. Current research and services focus on a single channel at a time – IP broad-band, broadcast or storage – but Europe will benefit from linking these channels and so creating new and innovative multimedia services.

Concretely, Europe has to be able to offer secure access to all content – even personal – from anywhere,

at any time. Only then will investments in broadband produce returns and the multimedia services market create business.

High economic potential
Broadband has high economic potential by providing new, fast and easy ways to develop trading, communications and on-demand services. European countries must integrate broadband networks into service industries such as hotels, shopping malls, business complexes and offices as well as institutions including hospitals, schools and local government as part of their metropolitan and regional economies.

Consumers are ready and willing to pay for broadband video delivery; such services over local networks – up to the consumer's home – provide a market opportunity. But future services need end-to-end security to be profitable. Such secure solutions are prerequisite to the deployment of video on demand (VOD).

Introduction of broadband techno-logies to the home is expected to be of limited macroeconomic value as they replace current dial-up services. Europe has therefore to focus on killer applications to create value. While leading neither the personal computer (PC) nor the gaming markets, Europe can address:
• Dedicated terminals or thin clients that satisfy future consumer needs;
• Convergence of communications and multimedia – such as Internet telephony (VoIP); and
• Cross-network distribution channels such as IP broadband, DVB and storage.

PROJECT RESULTS

Combined with new compression technologies – particularly MPEG4-AVC – these objectives offer a perfect way to integrate winning applications such as gaming on set-top boxes or secure peer-to-peer (P2P) distribution networks for VOD.

Matching future needs
MAGELLAN documented state of the art on QoS in broadband IP networks, security, end-to-end solutions, video encoding, distribution and storage. Reference architectures were described and validated thanks to several demonstrators.

The project also validated the usefulness of technologies developed and deployed by the partners in a broad context. New products and services implementing these results will better match the wider needs of European industry and world markets. New business models have also emerged.

Project partners will exploit and disseminate results in concrete applications such as single sign on (SSO) and real-time flow analysis for virtual private networks (VPN) and firewalls. Proof of concept of software for cross-domain network management (XNSM) was developed to validate complete security in well-established end-to-end services, essential

for commercial VOD delivery, TV distribution and web access for hotels and other community environments based on platforms developed within the project.

Thanks to QoS mechanisms, MAGELLAN also demonstrated that the video quality can be guaranteed by adapting the video bit rate of the different services in the network.

Promising core coding technology
As MPEG-2 reaches maturity and its technical limits, MPEG-4 AVC appears as the new promising core encoding technology, offering the essential base for innovative services developed in MAGELLAN. Compression efficiency is expected to be 50% higher than with MPEG-2. Such a breakthrough associated with all IP-based distribution networks will enable service convergence, including distribution of multimedia contents to various devices inside the enterprise/home using wired (xDSL) and wireless connections.

An implementation of a real-time MPEG-4 AVC end-to-end compression system delivering live high-quality video content in broadcasting/multicasting applications has resulted from MAGELLAN.

Major project outcomes

Dissemination
- One website
- 13 communications in peer-reviewed international conferences and workshops
- 30 publications in magazines or papers publications.
- Three dedicated workshops with participants from related projects (EasyWireless, HD4U, PassePartout, Blaze)

Exploitation
- MPEG4-AVC SD encoding products
- MPEG2 to MPEG4 transcoding and MPEG2 transrating products
- XNSM management solution
- QoS probes and SSO solutions
- IP-based set-up and first building blocks for DVB-IP platforms

Standardisation
Eight contributions to standardisation (MPEG4-AVC, IPTV, DRM, QoS) through JVT/VCEG, DVB TM-AVC, DVB-IPTV, DVB-IPI, Pro-MPEG Forum & SMPTE, OMA v2, DSL Forum, IETF

ITEA - Information Technology for European Advancement - is an eight-year strategic pan-European programme for pre-competitive research and development in embedded and distributed software. Our work has major impact on government, academia and business.

ITEA was established in 1999 as a EUREKA strategic cluster programme. We support coordinated national funding submissions, providing the link between those who provide finance, technology and software engineering. We issue annual Calls for Projects, evaluate projects, and help bring research partners together. We are a prominent player in European software development with some 10,000 person-years of R&D invested in the programme so far.

ITEA-labelled projects build crucial middleware and prepare standards, laying the foundations for the next generation of products, systems, appliances and services. Our projects are industry-driven initiatives, involving complementary R&D from at least two companies in two countries. Our programme is open to partners from large industrial companies, small and medium-sized enterprises (SMEs) as well as public research institutes and universities.

Σ! 2023

October 2006