PROJECT PROFILE

A207: Faster time-to-market for mobile multimedia applications (Pocket Multimedia)

INTEGRATED INFORMATION/ COMMUNICATION/ENTERTAINMENT (ICE) TERMINALS

Partners:

ARMINES-CMM
Cambridge Display Technologies
Coding Technologies
Philips
STMicroelectronics
Thomson
URMET SISTEMI

Project leader:

Max Tournier,
STMicroelectronics

Key project dates:

Start: September 2001
End: August 2004

Countries involved:

France
Italy
The Netherlands
Sweden
UK

There is a range of platforms, protocols and standards for mobile multimedia devices today, with no agreement on a common approach. This fragmentation means development and manufacturing costs are high, with long lead times between product development and launch. Pocket Multimedia aims to produce a common development environment for low-power, highly portable devices, reducing costs and cutting time-to-market. It mainly targets image and video processing applications, but is also developing a state-of-the-art OLED display solution. Intellectual property rights will be established for associated software modules, enabling content providers to license content securely and prevent unauthorised use.

For developers and manufacturers of mobile multimedia equipment, today's market for end-user devices is very fragmented. A multiplicity of different types of terminals target the various market segments. When European consumers choose between mobile phones, digital cameras, camcorders or audio players, they find little common hardware and software.

Currently, no one entity is able to provide a shared, easy-to-use hardware and software environment that allows terminal manufacturers, whatever focus, to implement scalable solutions with a short time-to-market. Neither is there a simple and low-cost solution that combines multimedia, rights management and connectivity features into a common development environment.

European companies would benefit enormously from the existence of a flexible, multimedia development platform that combines processing of audio, image and video signals with universal connectivity, and which could link easily to Internet. Many mobile applications would gain from a single development environment, enabling European companies to plan, develop and launch new and enhanced mobile services and devices much faster.

Common mobile platform

The objective of the MEDEA+ A207 Pocket Multimedia project is to establish a common platform for mobile multimedia applications within a single development environment that produces the best hardware architecture for each targeted application. This involves a silicon application platform (SAP) to support the European microelectronics industry in developing and manufacturing cost-effective handheld Internet communications devices.

SAP will be based on innovative low-power multimedia architecture that combines a software computing approach with dedicated multimedia silicon modules. The main architectures being reviewed are:

- Very long instruction word (VLIW);
- Single instruction multiple data (SIMD);
- Reconfigurable hardware, in combination with a VLIW or RISC processor; and
- Multimedia coprocessor, in combination with a VLIW or RISC processor.

It will integrate local connectivity such as USB wired and HiperLAN wireless standards, and be compatible with mobile phone standards like UMTS. To show the platform's full capabilities and potential, a

user-friendly interface with a CMOS-based video camera and a low-power colour organic LED (OLED) display is planned for the demonstrators.

The project is also establishing intellectual property rights (IPRs) for associated software modules, including an MPEG-4 video compression toolbox for portable devices, plus copyright protection mechanisms and a complete software development chain. Leveraging current standardisation activities, SAP takes into account the latest digital rights initiatives, enabling service providers to broadcast different types of information securely over the Internet and to ensure protection from unauthorised use.

Finally, the objectives of the project are consumer price driven. The results will help stimulate the proliferation of user-friendly mobile terminals that make everyday activities simpler for European citizens. All of this should contribute to helping European industry take its proper place in the global market for mobile multimedia systems.

Ambitious goals planned

SAP focuses on developing a set of both hardware and software IPR-protected modules applicable to a broad range of multimedia applications. Based on a new low-power multimedia system-on-chip (SoC) device, associated with a dedicated hardware accelerator, the primary focus is the development of handheld consumer terminals with very low power needs.

Key innovations include:

- Best-in-class hardware architecture for a given application (VLIW, SIMD, hardware reconfigurable);
- MPEG-4-compliant SoC solution for portable multimedia devices that can take advantage of an MPEG-4 toolbox;
- Low-power, high-performance multimedia platform;
- Digital rights management adapted to the media;
- Embedded software solutions for portable terminals, compatible with industry-standard operating systems;
- Universal connectivity to include USB, Bluetooth and cellular data transfer;
- Scaleable OLED display driver compatible with low-power display technology;
- Mass data storage interface for battery-powered equipment; and
- User-friendly CMOS video camera interface.

MPEG-4 toolbox innovation

The major innovation is development of a state-of-the-art MPEG-4 compliant toolbox for mobile handheld devices, to include communications compatibility and high-quality audio and video. This will incorporate a subset of the full MPEG-4 range of tools and can be enhanced by adding digital rights management or other capabilities.

Unlike earlier MPEG standards, MPEG-4 is dedicated to multimedia solutions. For example, it supports both natural and synthetic video images, including computer-generated graphics and 2D/3D animation, natural and synthetic audio such as text-to-speech synthesizers and midi sound, and text. MPEG-4 is also interactive, allowing users to manipulate the content – such as selecting a preferred language. And it supports adaptation of content to user profiles, likely to be a major advantage for advertising.

With digital rights management becoming ever more important, the project is also monitoring standardisation activities–including MPEG-4, IPMP and MPEG-21 – and selecting the most promising tools for introduction into the SAP.

Reinforcing European leadership

Complementary roles are planned for each partner, with horizontal co-operation benefiting development efforts. The different partners have demonstrable strengths in fields such as multimedia system development for consumer and telecommunications applications, participation in standardisation activities, and expertise in design and manufacturing of complex silicon chips.

Various partners have refined their collaboration expertise through involvement in other European R&D programmes. This includes earlier MEDEA projects on MPEG-4 for mobile communications, portable multimedia and chip payment smart cards, as well as the ACTS MoMuSyS project, and JESSI and EUREKA digital audio broadcasting projects.

Project results will reinforce European leadership in the mobile terminal market and the telecommunications industry, and maintain the strength of European consumer markets for image and video applications. This project will provide a state-of-the-art solution to the capture and processing of images and video over the mobile phone network, making it a key facilitator to introduction of the multimedia message services (MMS) standard. It will help shorten time-to-market by enabling emerging applications such as 'virtual assistants' to gather information in a variety of areas – teaching, medical, transportation, etc. – and make a proactive European contribution to the definition of worldwide standards in mobile multimedia applications.

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