Project profile

Cluster for Application and Technology Research in Europe on NanoElectronics

CA110 | Advanced set-top box expected to enhance functionality and performance in four key home-based application domains [AppsGate]

Driven by affordable and plentiful computing power, open-software frameworks and connectivity standards, the AppsGate project brings together chip suppliers, consumer-electronics OEMs and service providers to design and develop a services-rich set-top box for the home.

PROJECT CONTRIBUTES TO

Communication	✔
Automotive and transport	
Health and aging society	✔
Safety and security	✔
Energy efficiency	✔
Digital lifestyle	✔
Design technology	
Sensors and actuators	
Process development	
Manufacturing science	
More than Moore	
More Moore	
Technology node	

Technology Platform for Process Options

Partners:

STMicroelectronics
Pace
Technicolor
NXP
4MOD Technology
ARD
Immotronic
Ripple Motion
Simon Tech
Video Stream Network
SoftKinetic Software
Softkinetic Sensors
Vestel
University UJF/LIG
Institut Mines-Telecom

Project leader:

Jean-Christophe Pont
STMicroelectronics

Key project dates:

Start: September 2012
End: February 2015

Countries involved:

France
Spain
Belgium
Turkey

The set-top box (STB) is the primary point of entry into the digital home for television services, typically cable, satellite and internet TV. It currently supports a variety of functions, notably interactive TV applications. And it is set to evolve yet again. The AppsGate project will convert this device into an open platform to provide integrated home applications to the consumer mass-market. But that is not all.

A parallel development is the residential gateway, a complex device capable of delivering multiple services to the home (including video, voice and data). Importantly, the STB and residential gateway can be combined with various devices and seamlessly integrated with multiple applications to form an application gateway or AppsGate that delivers the same rich experience to multiple users in different rooms. This unique platform, which also offers the prospect of unprecedented business opportunities, is the focus of this project and will initially target four home application-domains: entertainment and gaming; home automation; energy management; and healthcare.

Right mix

The project will run for 2½ years with about equal time dedicated to defining and building the open platform, and to developing and evaluating applications. The length of the project has been kept to a minimum, given the fast pace of change of the consumer-electronics landscape.

Project partners will develop several STB platforms and a cable gateway. There will be additional work to enable interaction between the various communications protocols found in any digital home, and to create innovative user interfaces. These developments and technologies are then put into action using proof-of-concept applications, many of which will involve the control of connected home devices, with an emphasis on usability and seamless integration with video services.

Flexible solution

In a nutshell, AppsGate is a single, open and extensible platform with an intuitive and powerful user interface. But what does all of this mean?

By leveraging the multimedia strengths of the STB, AppsGate enables home services to be seamlessly integrated and accessible from a single unified interface, thus offering convenience and keeping the cost of new services down by sharing hardware and broadband connection. This will also open the door to telecomm companies to team up with service providers in offering innovative services with a guaranteed quality of experience,

essential for the adoption of telehealth (which needs a reliable network and cost-effective solution).

An open platform will deal with a fast-changing, dynamic market where operators and service providers must deploy new services quickly to lure new customers and counter competition. And extensibility allows users to install services and devices gradually, starting with a basic configuration and later extending it as experience and confidence grows.

Finally, key to the adoption of advanced home services is an intuitive, contextual interface suited to all user types, especially the less technology-literate, elderly and physically impaired.

Addressing technical challenges

Although none of the targeted applications is completely new, the integration into a single consumer hub demands significant computing power for running 3D graphics, complex concurrent applications and innovative user-interfaces (such as gesture control). The AppsGate open platform will therefore deploy a powerful, multi-core ARM processor.

A comprehensive connectivity solution is also required to communicate with numerous home devices as well as with services in the cloud, and wearable or environmental sensors and actuators scattered around the home.

Different devices on the home network must be able to communicate with each other to provide services despite their implementation differences. This needs the management and coordination of discovery methods that work across heterogeneous device technologies and complex networking architectures, a complex task. AppsGate will solve with a solution based on OSGi (a key software technology) providing full interoperability among different technologies as well as secure Internet access.

Impacting users, business and society

AppsGate provides effective support to the European effort in dealing with an ageing population, controlling healthcare costs, improving energy usage and providing high-quality interactive entertainment to every home.

Importantly, it offers significant benefits to a wide range of stakeholders. End users are expected to be the main recipients of AppsGate services. These services will bring to many an opportunity to access information and to use the Internet for a wide variety of activities. It may even entice the 41.6% of Europeans without an internet connection today to acquire one, thus helping bridge the digital divide.

Service providers will leverage this platform to support their multi-play strategies. They will offer multiple services, such as home control/monitoring without using incremental capital. This means they can add revenue streams by leveraging existing hardware, and increase customer loyalty with stickier bundles.

Medical care-providers face the challenge of delivering high-quality care for an increasing number of patients using limited financial and human resources. The concept of bringing the care from the hospital to the home is expected to result in cost-reduction and improved quality of life.

OEMs can decrease development costs and leverage a growing number of applications for their devices. Android, the open operating system, also provides a great flexibility for differentiation and opens the possibility for new business models, since it makes possible a vast number of new and innovative applications for consumer devices.

AppsGate will also allow European chip suppliers to stay at the forefront of integration, with nearly one billion transistors in a single SOC, and delivering a complete solution comprising a system in package, software stack and reference board, rather than a single piece of silicon.

And the project is deeply rooted in a context of convergence, which benefits the consumer and business alike. Networking technologies interoperate for full home-coverage with no new wires. The number of boxes is being reduced along with their complexity for the consumer. Contents in many formats and from many locations are being presented through a single consolidated and adaptive interface. This convergence process is creating both great opportunities but also great challenges for the European industry. New applications will be created that will drive new consumer behaviour that in turn will generate new revenues.

The rationale behind the AppsGate project is clear. In this fast changing environment, European stakeholders need to co-operate along the whole value chain to best position themselves. After all, Asian consumer-electronics companies and American internet players will not wait to shape the connected home landscape!

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