MEDEA+

2A302: European smart card platform for citizenship and mobile multimedia applications (Onom@Topic+)

LITHOGRAPHY

Partners:

Axalto
CEA-LETI
CompuWorx
Esterel Technologies
France Telecom – Orange
Gemplus
ID3 Semiconductors
Oberthur Card Systems
OKsystem
NXP
Philips
Precise Biometrics
Purple Labs
SafeLayer
STMicroelectronics
Telefonica

Project leader:

Mourad Faher (Francis Gourdy)
Axalto

Key project dates:

Start: April 2005
End: December 2007

Countries involved:

Czech Republic
France
Hungary
The Netherlands
Spain
Sweden

Smart cards play an ever increasing role in our everyday lives. The Onom@Topic+ project is intended to result in a major improvement in individual security by improving identity verification, securing fully authenticated access to e-government services and reducing fraud. It will also make a strong contribution to helping operators deploy value-added services over mobile networks by offering new applications and new ways of secure communication with other devices. The result will be to maintain European leadership and avoid delocalisation of employment in the highly skilled smart-card industry and preserve large scale manufacture of chips and devices for secure mass distributed portable systems.

Many countries are adopting smart cards with embedded circuitry to store and process data for public identification – from national ID and resident cards to driving licenses and health service cards. While these cards improve the security and convenience of holders, individual countries have inconsistent technical and operating specifications. In a borderless digital world, the adoption of an electronic identity card that is globally interoperable is expected to improve the convenience of cross-border life. At the same time, mobile equipment and multimedia service suppliers are keen to introduce a new generation of universal subscriber identity module (USIM) cards for pay services. These are needed to ensure end-to-end security as a major element in the expected convergence of mobile, Internet and multimedia technologies.

Hardware/software approach

The MEDEA+ 2A302 Onom@Topic+ project is focusing on the development of complete hardware and embedded software platforms to enable industry, operators, terminal and smart-card manufacturers, and chipmakers to benefit fully from the enormous potential offered by the development of secure fixed and mobile electronic services.

Onom@Topic+ is targeting platforms for two specific domains:

1. Citizenship services such as administrative agent cards, electronic identity cards, passports and visas, driving licenses and electronic health service cards; and

2. Security solutions for the mobile communications and multimedia operating environment.

Both application areas have major economic, social and technical impacts and are forecast to represent a huge part of the overall smart-card market by 2010. Moreover, they share common needs in terms of stringent security and excellent interoperability:

• In the e-government sector, most of the targeted uses will require the embedding of 'identification, authentication, signature' (IAS) modules as the basis for cryptographic operations support. Developing interoperable IAS modules will therefore be a cornerstone of the project to enable future cross-border interoperable citizenship applications, particularly within the EU.

- In the mobile multimedia segment, achieving powerful end-to-end content protection through efficient conditional-access/digital-rights-management (CA/DRM) schemes as well as ensuring quality of service (QoS) in service roaming will be the two key requirements from both contents' owner and user perspectives. Developing hardware/software smart-card platforms meeting those two requirements will be the second pillar of the project.

In the two domains targeted, the MEDEA+ project will deliver specifications, contributions to European and international standards, benchmark test tools, silicon chips, software reference platforms and dedicated prototypes or demonstrators. And Onom@Topic+ partners will work with relevant standard organisations to promote project results.

Fully representative consortium

The project consortium incorporates key players from the European smart-card industry: smart-card manufacturers, chipmakers, electronic design companies, system users, biometrics specialists, software companies, terminal manufacturers, security laboratories, service companies and universities. Partners also include companies from two recent EU entrants that are particularly keen to work in the citizenship area.

Complete system-on-chip (SoC) developments by the semiconductor partners will serve as the basis for cost-effective implementation of targeted embedded applications such IAS, biometrics identification and new USIM platforms.

To achieve optimal trade-offs, several technological options will be studied, taking into account the specific constraints of mass deployment implicit in citizenship or mobile multimedia applications. These could include on-chip incorporation of fast inputs/outputs, fast contactless interfaces, embedded hardware accelerators and on-chip biometrics processing capabilities.

The platforms targeted must be ready for high-level security evaluation. So they will also be provided with the necessary hardware capabilities to ensure an extensive and secure processing of all supported transactions.

In order to ensure proper software robustness and reliability, the project will dedicate much effort to embedded software development methodology. In particularly, it will invest in formal verification and test generation from formal executable specification. Existing modelling and verification tools will be customised for the project.

Such tools will be exploited in creating reference test platforms for critical functional blocks – such as IAS module, biometrics authentication and power budget management in mobile applications. These reference test platforms together with the specification of modules will be made public, enabling third parties to develop their own interoperable implementations.

Continuing global leadership

From a socio-economic point of view, this MEDEA+ project is intended to help keep smart-card leadership in Europe, especially in the authenticated ID and mobile markets now seriously challenged by the political influence of the USA and the dynamism of Asia. The applications addressed target citizen convenience – such as interoperable cross-border service cards, daily life cards and instant delivery of premium mobile multimedia services. Onom@Topic+ will put specific efforts into citizenship, liaising with public authorities to ensure complementarity and consistency in the development of electronic ID cards, visas and other documents with national policies and overall development of European e-administration. It will also help align European strategy with US and Asian initiatives – such as the US passport and Japanese citizen card. Joining together all major global actors in the field will help give Europe a leading position in setting world standards in an area where preserving sovereignty is essential.

The top six European manufacturers own 80% of the world smart-card production capability and about 90% of its value. This is probably due to their unique capability to produce personalised cards with secret keys, PIN codes and certificates in billions of units a year, with the full confidence of customers – banks, mobile services operators and government agencies – transmitting their most precious assets, i.e. their customer identity files.

Exploitation of the open platform approach taken by Onom@Topic+ should lead to the development of cost-effective products from prototypes developed in the project to maintain mass production of smart cards in Europe. The smart-card industry is one of the few industries that has not delocalised mass-production jobs in recent years, but has been able to sustain a healthy local manufacturing capability and to serve aggressively markets worldwide.