ITEA 3

Project Results

IDEA4SWIFT

Safe and secure border control that is quick and convenient

EXECUTIVE SUMMARY

Today's travellers expect both speed and a convenience, non-intrusive but safe passage at borders that are secured against illegal immigration, terrorism, crime and other threats. The ITEA 2 project IDEA4SWIFT set out to demonstrate that various technologies can be integrated and produce a high-quality border control solution that maintains the highest level of security and increases the speed and comfort of all legitimate travellers at all types of border control point.

PROJECT ORIGINS

Promoting both security and mobility within the EU border control environment, which has become 'explosive' in terms of the growth of international arrivals that are expected to reach nearly 1.6 billion by 2020 and the recent upsurge in terrorist threats and attacks, is a major challenge for the authorities. IDEA4SWIFT's response to this challenge was to come up with a unique comprehensive, technology and vendor agnostic, modular platform for continuous innovation that includes supported dynamic business rules managed by key stakeholders in a federated manner.

TECHNOLOGY APPLIED

In terms of its required technical building bricks, the project built an architecture that integrates security considerations from the beginning of the system design as well as new protocols for the 3rd generation of e-Passport (SAC). Optimisation of earlier SAC versions reinforces the global security of the document itself and speeds up cryptographic computation for accelerating the border control.

Right from the start of the project the focus was on integrating all the relevant existing technologies in designing and developing disruptive technologies in biometry and soft-biometry in a real environment.

In implementing the technology for the biometric passport, namely for fingerprint and face, citizens expect the biometry-based system to ensure complete respect of privacy and, in this respect, they are also expecting seamless biometry. In other words, the possibility of identity verification using the face and iris of a person walking through a portal to increase the flow and to reduce constraints for the user. But if a person passes through border control but the current superficial ID differs from the original ID due to a different hairstyle, make-up or other changes, there is a need to know what influence make-up has on verification, so algorithms were developed to assess this influence and determine whether the ID is the same as the original.

MAKING THE DIFFERENCE

The use of novel technologies at automatic border control gates not only improves security and accelerate the process of border crossing but also cuts the workload for border control officers. The addition of enhanced security check features will solve spoofing and identity fraud, and new biometric and soft-biometric modalities will accelerate the flow.

A good illustration of how the twin needs of privacy and security merge rather than collide is evident in the Finger On the

Fly solution, Morphowave, a fingerprint controller product generated within the project by Safran Identity & Security SAS and an example of how innovation speeds up security. By simplifying deployment and improving user experience, advanced biometrics facilitate security for agents and users; swiping four fingers across a scanner

provides an efficient and elegant solution to improve both accuracy and speed. The resulting solution is transformative; the algorithms process the resulting data in less than a second. Such an application extends beyond border control to all kinds of access control for sensitive and high-density traffic sites like airport and seaport sensitive areas, government facilities, power and petrochemical plants, banking and financial institutions, hospitals, sports stadiums...the list is almost endless!

Other exploitation includes a world first in the NIST MINEX III compliant fingerprint matching algorithm developed by ID3 that runs on a smart card and the multi-model fusion model that can be easily integrated in future platforms developed by Mozaik. Finger Vein and OCT Biometrics developed by Institut Mines-Télécom SudParis and Face and Finger Vein Scanners by Turkish partner Proline Bilisim Sistemleri are other concrete achievements along with an Integrated Automatic Border Control Gate, the result of the collaborative effort of several partners. A fusion dataset scenario, in which four biometric modalities combine to signal a major advance in enabling automatic control for a wide range of nationalities without compromising performance, demonstrated significantly lower false rejection rates at just 0.13%, while the face modality only has a false rejection rate of 20%.

The services can even be extended to boarding control at the same passport control gate using a mobile phone application based on the same passport identity. Eventually, a comprehensive package of services could be developed to cater to traveller passage from the preparation of the journey through to the arrival at the destination – door-to-door. The results will certainly have a considerable and tangible impact, and besides the European Commission, considerable interest has been shown by Turkish and French authorities in the results of the project.

MAJOR PROJECT OUTCOMES

Dissemination

- 11 publications/conferences, e.g. IEEE International Conference and workshops

Exploitation (so far)

- The iris at distance technology (Safran Identity and Security): a technology that is able to acquire and then match a person's iris in less than a second
- Face and Finger Vein Recognition Approvements (Proline): unique and reliable product, using 4 biometric modelities
- id3 world's first company NIST MINEX III compliance using a fingerprint matching algorithm running on a smart card. Oberthur succeeds in enabling it in the context of Frequent Traveller service
- Gemalto has demonstrated a state-of-the-art 4G ePassport. The 4G ePassport is supporting eVisa & eTime-Stamping (in line with the new ICAO LDS2 standard)
- Fusion Architecture Process (Mozaic): fusion solution based on the feed by 4 different types of biometric data receiving to fusion engine and producing the best final result

Standardisation

- Safran: ICAO (Standard for Civil Aviation Organization), EFTS/F IQS (Image Quality Specification), EN 60950 (Safety), CEN TC/224/WG18 (Interoperability of biometric recorded data),
- GEMALTO: ICAO LDS2, 9303 specification ed7 and test specifications, TRIP Strategy, New EU Visa, New EU eRP, PKD activity, Portrait quality / 19794-5
- OBERTHUR: ICAO (Standard for Civil Aviation Organization), CEN TC 224 WG 15 (European Citizen Card)
- PROLINE: Biometrics Institute

ITEA is a transnational and industry-driven R&D&I programme in the domain of software innovation. ITEA is a EUREKA Cluster programme, enabling a global and knowledgeable community of large industry, SMEs, start-ups, academia and customer organisations, to collaborate in funded projects that turn innovative ideas into new businesses, jobs, economic growth and benefits for society.

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