

## PROJECT NEWSLETTER 12 (9/2016)

From the beginning of the project the partners have done a great number of scientific researches which deserves to be brought forward. In this newsletter we will present some of the most substantial research and their findings that influence the project. In addition we will present the research that our partners have planned or what they are currently developing.

This is the second part of the research newsletter editions which present researches from Università Degli Studi di Milano and ATOS ES. Part one can be found on our webpage [www.abc4eu.com](http://www.abc4eu.com).

### Università Degli Studi di Milano (UMIL)

UMIL has focused their research for designing and validating algorithms for fingerprint recognition. Their main scientific results include a thorough review on the state-of-the-art emerging biometrics and fingerprint technologies for biometric recognition. UMIL has also studied the typical issues affecting fingerprint acquisition process that can reduce or improve the quality of the images. Based on the received information it is possible to design corrective actions to improve fingerprint image quality. Other scientific results that UMIL has accomplished are a comprehensive analysis of multimodal biometric recognition suitable for ABC systems and the design of less constrained acquisition processes for fingerprint recognition.

These results have been published in several conferences and international journals as well as disseminated in keynote

speeches and expert panels.

After publishing the results, UMIL has had a discussion with the audience and the reviewers about the necessity to provide a clear overview of the state-of-the-art biometrics in ABCs that could be used by both the researchers and the practitioners. Other discussion topics include how the future ABC systems should rely on multimodal biometric approaches to improve recognition performance and robustness against spoofing attacks. However, this kind of approach poses some challenges regarding privacy concerns and technology integration. The audience and the reviewers have also been interested in fingerprint scanners that permit an easy and more comfortable acquisition process.

The main research topics UMIL is planning or currently developing are a design and development of biometric fusion techniques that permits to respect the EU privacy laws while improving recognition performance. In addition, studying and designing technology neutral multimodal biometric fusion techniques. Additionally, UMIL has mentioned the development of novel fingerprint acquisition systems that permits a less constrained acquisition (3D systems and 2D systems to acquire a fingerprint also from a distance). Another forthcoming research topic is a study and proposal of fingerprint quality analysis methods that automatically tell the user how to correct acquisition errors.

### ATOS ES

Research conducted by Atos ES in ABC4EU is related to the mobile and NFP Registered Traveller subsystems and its impact on the border control processes.

*Registered Traveller Service:* Atos ES has aligned with the revised 2016 Smart Borders Package to provide a registered traveller service based on the newly proposed National Facilitation Programme and with previous research into a central EU RTP service. Implementation of the system can be deployed as a regional, national or central service with multiple BCPs or member states. From research of the latest 2016 Smart Borders package proposal and stakeholder feedback Atos sees that only an NFP registered TCN travellers will be able to pass through ABC systems in an automated manner.

*Selection process of the mobile terminal:* Since the current legislation does not yet contemplate regulations for the use of mobile terminals in border control, Atos ES researched the possibilities to fulfil the device requirements identified in the previous stages of the project and identify the best candidate device to fulfil the role. While it was first thought that the mobile terminal operation would be similar to an ABC Gate, through analysis and feedback from partners its workflow was found to be more in line with the manual border control booth. Thus, Atos ES designed a mobile workflow accordingly while taking into account compatibility with the functionality available on a mobile terminal and the integration available with the police border control systems. Atos ES evaluated several off-the shelf devices, both self-contained terminals and smartphone peripherals, establishing metrics related to functionality, performance, biometrics capture, ergonomics and usability.

*Implementing Smart Borders package EES and NFP features in the mobile:* Atos ES created a workflow for the mobile terminal border control process based on a modular concept which separates the flow in atomic operations and assigns every operation to a different screen of the mobile application.

### Events where ABC4EU is represented:

World e-ID & CyberSecurity - Digital Identity and Data Protection for Citizens and Businesses | September 26-28, 2016 – Marseille, France

The 13th International Conference on Pattern Recognition and Information Processing (PRIP 2016) | October 3-5, 2016 Minsk, Belarus

