

D5.2 Evaluation of existing systems, recommendations and specifications for identity verification – Summary

The deliverable D5.2 is related to Task 5.3 that aims to recognise if biometric recognition systems can support border guards (BGs) and their tasks; thus, this deliverable is aimed to propose possible enhancements for the border control process (BCP). This document is pertaining to identity verification by using facial comparison and fingerprints recognition.

In case of facial comparison, the idea is to maximise border guards' performance (both in speed and accuracy) in identity check by using the best combination of methods and tools. To that end, it is necessary to understand the assets and flaws of border guards in face verification and how they can be helped by the machine. In this document we study the factors that affect recognition performance for humans and machines. We also focus on the current best practices for humans and the state-of-the-art algorithms in face recognition. Based on this analysis, we identify software functionalities that could help BGs in their identity verification tasks.

In case of fingerprints recognition, this document presents an overview and revision of existing technologies with proposals how these technologies can be used at the best by personnel involved in the border control process. It was desirable to get access to real data. Due to both reasons security and policy this access was not possible. Deliverable D3.1 and deliverable D3.3 were partially used as input and in addition a survey related to fingerprint technologies was developed. The survey was put on-line and it was intended to use it during the showcases. While deliverable D3.1 provided first recommendations based upon on the analysis of raw data, deliverable D3.3 describes and summarises relevant information collected during the field studies. Examples of such information are a description of how the border check is done or the perception of the process from the travellers' point of view. The major achievements related to Task 5.3 are:

- Analysis of the state-of-the-art in fingerprints recognition
- Identification of problems of current technologies in operation
- Generation of following recommendations: (i) For improving the interaction between BCP and current systems; (ii) for improving the interaction between BCP and possible future implementations; and (iii) for improving technologies in operation.

Recommendations listed on D3.1 and information inferred from the field studies (D3.3) are integrated with the overview, analysis and revision of existing technologies here done to generate new lists of recommendations. Due to lack of experience and time constraints, following topics have not been addressed: (i) the use of multi modal biometrics, (ii) managing and protecting data privacy, and (iii) combining different kind of data.

The rest of this document is organised as follows: Section 1 describes involved processes, facial comparison and fingerprint recognition. Section 2 presents an analysis of technologies. Sections 2.1.x cover topics regarding facial recognition, while sections 2.2.x summarises fingerprint recognition. The assessment of studied technologies is shown in Section 3: aims and objectives (section 3.1), evaluation metrics and criteria often used in the process (secti-



on 3.2), and on-going evaluations (section 3.3). Section 4 discusses possible improvements and presents the different lists of recommendations. Finally, section 5 concludes the document summarising major achievements. The Appendix A describes the developed survey in case of fingerprint recognition.

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