



Proactive Enhancement
of Human Performance in Border Control

Grant agreement n° 653676

BODEGA Project Showcase at SDW 2018 Report

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*This project has received funding from the European Union's Horizon 2020
research and innovation programme under grant agreement No 653676.*

Deliverable information

Grant Agreement N°. **653676**

Project acronym **BODEGA**

Project title **Human Factors in Border Control**

Project timeframe and duration **1.6.2015–30.09.2018 (40 months)**

WP **WP8** **Dissemination and Exploitation**

Task **T8.4** **BODEGA showcases**

Document **BODEGA Project Showcase at SDW 2018 Report**

Status **Final**

Version number **1.0**

Lead Contractor **Z&P**

Dissemination level **Public**

Due date **M30**

Date of submission **13.07.2018**

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3	AIT Austrian Institute of Technology GmbH	AIT	Austria
4	University Of Namur	NAM	Belgium
5	Atos Spain, S.A	ATOS	Spain
6	Thales Communications & Security	TCS	France
7	European Strategic Intelligence Company	CEIS	Belgium
8	Zanasi & Partners	Z&P	Italy
9	International Union of Railways	UIC	France
10	Agenzia delle Dogane e dei Monopoli	ADM	Italy
11	Center for Security Studies – KEMEA	KEMEA	Greece
12	The Finnish Border Guard	RAJA	Finland
13	Ubium	Ubium	Finland
14	HappyWise	Happywise	Finland
15	Fondation Nationale des Sciences Politiques	SciencesPo	France
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1. Introduction

A showcase of the BODEGA project¹ took place on June 25th-27th 2018 at the Security Document World (SDW) Conference and Exhibition 2018². Held at Queen Elizabeth II (QEII) Centre in London, UK, the event provided the BODEGA consortium with an opportunity to disseminate project results to stakeholders from government and industry as well as from the side of travellers. The event was also leveraged for gathering feedback on the solutions devised during the project and establish useful contacts in view of collaboration initiatives that may be undertaken after the end of BODEGA.

BODEGA is a research project funded by the European Commission under the Horizon 2020 program, which started in June 2015 and is scheduled to end in September 2018. The aim of the project is to develop an expertise about human factors and border crossing at European level, in order to enhance the efficiency of border control procedures with no negative side effects towards the end-users, both travellers and border guards. Led by the Technical Research Centre of Finland (VTT), the BODEGA consortium comprises of 16 organisations from 7 European countries, including law enforcement and border control authorities, large industrial groups and innovative small-medium enterprises.

BODEGA's participation to the SDW 2018 represented the second showcase organised by the consortium. The first showcase, held in Finland in May 2017, consisted of a joint dissemination event between the BODEGA and the ABC4EU projects.³

The 2018 showcase of the BODEGA project was spread over the three days of the SDW Conference and Exhibition:

- On June 25th, BODEGA took part in the SDW Conference, where the Project Coordinator presented the project during a session about intelligence and innovation at the border;
- On June 26th, BODEGA contributed to the SDW Exhibition with a series of public seminars and a dedicated exhibition stand;
- On June 27th, the BODEGA consortium engaged with visitors at its own stand throughout the day, until the closing of the SDW 2018.

The following sections of this report provide an overview of the activities carried out and of the results achieved during the event.

¹ <http://bodega-project.eu/>

² <http://www.sdwexpo.com/>

³ http://bodega-project.eu/IMG/pdf/joint_bodega-abc4eu_showcase_event_report_v1.0.pdf

2. BODEGA project presentation at SDW Conference

On Monday, June 25th 2018, members of the BODEGA consortium participated to the first day of the SDW Conference, one of the world's largest events focusing on advanced security document and identity solutions (Figure 1).



Figure 1. Opening session of the SDW Conference (Photo credit: European Association for Biometrics https://twitter.com/euro_biometrics)

During the conference, Veikko Ikonen (VTT) - the BODEGA Project Coordinator – delivered a presentation about the project as part of a session on the theme of intelligence and innovation at the border. The aim of this session was to explore "where innovation, new ideas and approaches will likely emerge and the continuing role intelligence plays in helping secure the border while remaining proportionate, socially acceptable and delivering meaningful benefits for all concerned – in particular, the hundreds of thousands of travellers who cross international borders every day." ⁴

The BODEGA project presentation was titled "BODEGA: innovative, ethically and societally compatible socio-technical solutions for border control context". It offered a summary of the findings obtained throughout the project, proposing innovative modes of interaction between humans and technologies at EU border crossings. Key research results presented concerned border guards' needs and requirements for existing and future border control systems as well as the Responsible Research and Innovation (RRI) framework implemented during the project. An overview of recommendations and specifications elaborated by the BODEGA consortium with regards to specific border control technologies, from document and identity verification solutions to data-based and video-based risk analysis techniques, was also provided. A picture taken during the BODEGA session of the SDW Conference is shown in Figure 2.

⁴ <http://www.sdwexpo.com/programme/#.Wzzpn9iHJD8>



Figure 2. The BODEGA Project Coordinator presents the project at the SDW Conference

Besides presenting the project at the conference, consortium members attending the event sought to draw interest in BODEGA by individually interacting with participants during informal sessions. For example, project representatives took the opportunity to engage in discussions on the role of travellers in the border control process and present BODEGA's work in this particular area. Some of the participants were also invited to complete a BODEGA project survey designed to capture travellers' perspectives and experiences related to the crossing of Schengen borders.

3. BODEGA public seminars at SDW Exhibition

Tuesday, June 26th 2018 saw the opening of the SDW Exhibition. Throughout the day, the BODEGA consortium delivered a series of public seminars in which research results pertaining to the project's different areas of focus were presented to interested visitors. The seminars were divided into two parts, one was held in the morning and the other in the afternoon. Each part consisted of multiple sessions led by a different member of the consortium. Every seminar lasted approximately 20 minutes and was followed by a 5 minute Q/A session with the audience. The agenda of the BODEGA seminars is shown in Figure 3 below. The seminars were attended by an average of 20-30 visitors per session.

Time	Seminar contents	Presenter
KNOWLEDGE THEATRE, 2ND FLOOR		
The BODEGA project – PART 1		
10.30 – 10.40	"BODEGA project introduction"	Veikko Ikonen (VTT)
10.40 – 11.10	"End user needs and requirements for future smarter borders"	Christine Mégard (CEA), Virginie Papillault (UIC)
11.10 – 11.35	"Optimising the tandem between document inspection systems and humans"	Franz Daubner (AIT)
11.35 – 11.55	"Identity verification with fingerprints"	Arndt Bonitz (AIT)
11.55 – 12.15	"HMI design for mobile border control solutions"	Arndt Bonitz (AIT)
12.15 – 12.35	"Enhancing the border control process with video-based technologies"	Andreas Kriechbaum-Zabini (AIT)
KNOWLEDGE THEATRE, 2ND FLOOR		
The BODEGA project – PART 2		
14.30-14.55	"Big data analytics as a support tool for risk analysis"	Alessandro Bonzio (Z&P), Raul Sevilla (ATOS)
14.55-15.20	"Innovative border control processes and organisation"	Carolina Islas (Ubium), Laura Salmela (VTT)
15:20-15.45	"Changing borders, changing (in)security"	Anaïs Rességuier (Sciences Po)
15:45- 16:05	"Demonstrations"	

Figure 3. Agenda of the BODEGA seminars organised during within the SDW Exhibition

The BODEGA seminars were chaired by the Project Coordinator and a representative of Zanasi & Partners, the consortium member responsible for the dissemination and exploitation of the project results. The Project Coordinator opened the session with an introduction to the BODEGA project, which summarised the project's main objectives and highlighted its key achievements (Figure 4).



Figure 4. The Project Coordinator introduces the BODEGA project

This was followed by the first seminar of the day, which was run by Christine Megard (CEA) and Virginie Papillault (UIC). This session looked at BODEGA's research into the human factor needs and requirements of border control operators with regards to current and future border control systems. The findings reported emerged from observations and interviews conducted with border guards during field studies at air, sea and land border-crossing points across the EU (Figure 5).



Figure 5. BODEGA seminar on end-user requirements and needs for future smarter borders

In the next session, Franz Daubner (AIT) presented BODEGA's work on document inspections systems. His session investigated how inspection systems can communicate better with border guards. Emphasis was placed on the impact of the smaller form factor on the device's ability to transport knowledge to the user. Recommendations and specifications for user interfaces capable of enhancing the performance of machines in tandem with human operators were also given (Figure 6).

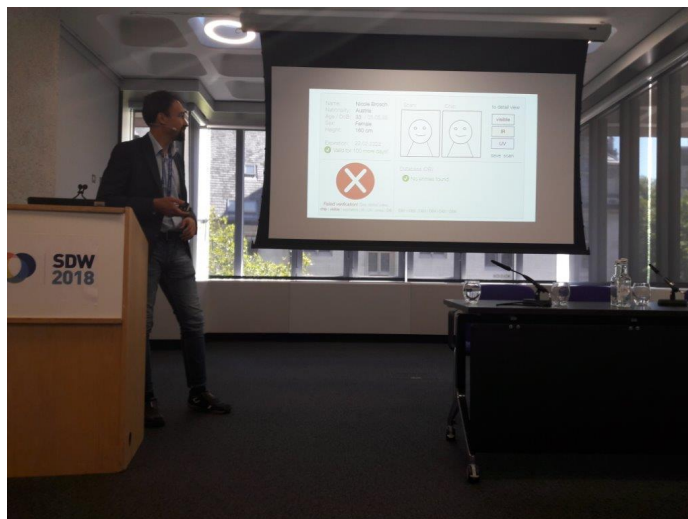


Figure 6. BODEGA seminar on document inspection systems

From document inspection, the focus of the seminars shifted to identity verification solutions proposed by BODEGA. Arndt Bonitz (AIT) provided an overview of existing fingerprint identification systems and discussed how they can be improved to support the tasks of a border guard and the border control process. Special attention was devoted to describing novel technologies for contactless fingerprint acquisition through mobile devices. Further expanding on BODEGA's research into mobile border control solutions, Arndt Bonitz gave insights into handling problems which might arise when a passenger is controlled at a border-crossing point. He concluded his presentation with a set of recommendations for HMI design of mobile border control devices and by showing a novel solution for a user interface of a dedicated mobile hardware (Figure 7).



Figure 7. BODEGA seminar on mobile border control solutions

The morning sessions ended with a seminar led by Andreas Kriechbaum-Zabini (AIT), who elaborated on possible enhancements for the border control process using video-based technologies. An overview was provided of the state-of-the-art in video-based technologies and video analytics algorithms, including references to experiences made in the field. This was followed by recommendations for the development of future video-based systems for border control and stressed the importance of user-centered design (Figure 8).



Figure 8. BODEGA seminar on video-based risk analysis solutions

The seminars continued in the afternoon with a session jointly run by Alessandro Bonzio (Z&P) and Raul Sevilla (Atos), which explored ways to enhance data-driven risk analysis at EU borders. A set of solutions was presented for exploiting data mining algorithms and facial recognition techniques in order to support advance detection of high-risk travellers and facilitate their identification using biometrics (Figure 9).



Figure 9. BODEGA seminar on data-driven risk analysis

The following seminar focused on innovative border control processes from the perspectives of both border guards and travellers. Laura Salmela (VTT) discussed novel technologies for enhancing the quality of border guards' training, whereas Carolina Islas (Ubium) presented solutions for improving travellers' awareness of border control procedures as well as fostering their cooperation with border guards (Figure 10).



Figure 10. BODEGA seminar on innovative border control processes and organisation

The penultimate seminar of the day addressed some ethical questions posed by current trends in EU border management. Starting from a discussion of the changing nature of EU borders towards digitalisation, Anais Resseguier (Sciences Po) explored new forms of insecurity linked to emerging technologies. She then argued for the need to develop a social consciousness about the risks associated with increasingly 'smart' EU borders (Figure 11).



Figure 11. BODEGA seminar about ethical aspects related to border control

The BODEGA public seminars were concluded by demonstrations of prototype solutions elaborated during the project. One of the prototypes presented was the PROPER Toolbox, the platform whereby documents, learning materials and multimedia contents originating from BODEGA will be made available to interested stakeholders. A second solution that was subject to demonstration was a mobile device for contactless fingerprint acquisition developed by AIT in the context of WP5 activities. The sessions' chairs wrapped up the session and invited participants to follow-up on the seminars by visiting the BODEGA exhibition stand (see Chapter 4).



4. BODEGA stand at SDW Exhibition

In parallel to the seminars, BODEGA had its own stand set up at the SDW exhibition. The stand was open on both days of the exhibition, starting from the morning of June 26th up until the afternoon of June 27th. The BODEGA stand was conveniently located in a walk-through area adjacent to the room where the seminars were organised. This ideal location allowed the partners to fruitfully interact with the participants to the exhibition as well as to invite them to join the seminars.

A BODEGA project banner and two posters were hung on the stand walls (Figure 12). The banner and one of the posters described the project's objectives and consortium composition, with the other poster advertising the BODEGA travellers survey. Two separate flyers with the same contents as the posters, together with leaflets with the agenda of the BODEGA seminars, were printed out and distributed to visitors.

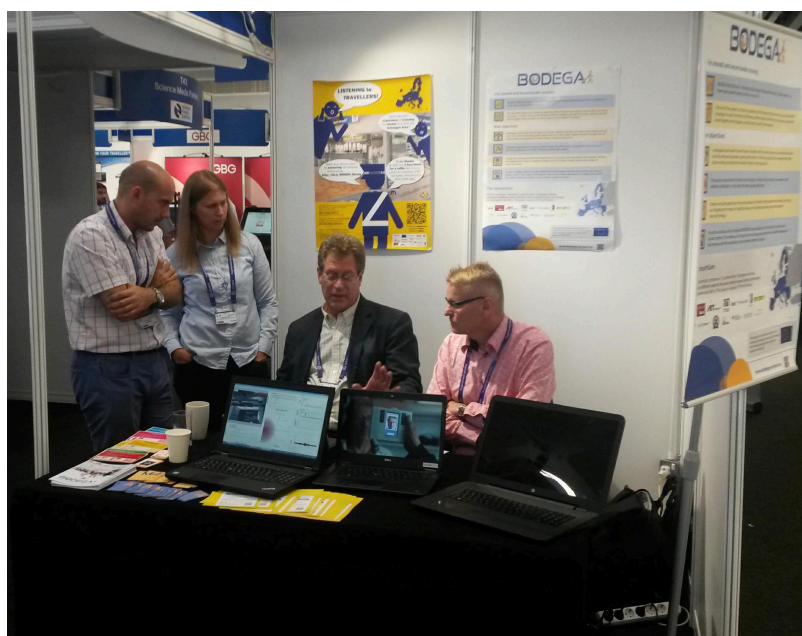


Figure 12. The BODEGA stand at the SDW exhibition

In order to showcase some of the solutions proposed by BODEGA, dedicated laptops were set up on the stand desk. Laptops were used by consortium members for face-to-face presentations of research findings and demonstrations of technology prototypes. The analysis grids developed by CEIS drawing from inputs from border management end-users and pertaining to the respective strengths and weaknesses of humans and machines in the completion of border control tasks were presented to the participants. This resulted in interesting exchanges with biometric and technology experts. The PROPER Toolbox platform, two prototype systems for identity verification and video-surveillance as well as a card game designed to improve travellers' awareness about rules and procedures related to Schengen borders were also demonstrated, receiving positive feedback from visitors (Figure 13).



Figure 13. BODEGA consortium member presenting a game-based solution for enhancing travellers' cooperation during the border control process

Overall, the event proved a valuable opportunity to exchange on the projects results and outcomes with experts in documents, technology suppliers and end-user stemming from government authorities. During the SDW exhibition, project's results were disseminated and relevant contacts were made with:

- **Representatives of governmental organisations:** the UK National Physical Laboratory demonstrated an interest in BODEGA's findings on human factors and biometrics;
- **Representatives of industry:** several industrial players were interested in various aspects of the research process (traveller focus, technology developments, etc.) and in the exploitation of different project prototypes presented at the stand, such as the video surveillance systems;
- **Representatives of border control media:** a representative of an international marketing, communication and media management agency was interested in inviting members of BODEGA to their 2019 World Border Security Congress in Casablanca next spring and to publish articles in their trimestral publication: the Border Security Report.

Furthermore, showcasing the project at a large-scale event such as the SDW 2018 opened doors to future opportunities for international cooperation through discussion with various third country nationals, such as a partner of a Canadian project working on contactless border control and planning to conduct a use case in partnership with Dutch authorities.