



Proactive Enhancement  
of Human Performance in Border Control

## Deliverable D7.1 Stakeholder map and network



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## Deliverable information

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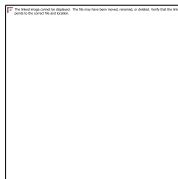
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3	AIT Austrian Institute of Technology GmbH	AIT	Austria
4	University Of Namur	NAM	Belgium
5	Atos Spain, S.A	ATOS	Spain
6	Thales Communications & Security	TCS	France
7	European Strategic Intelligence Company	CEIS	Belgium
8	Zanasi & Partners	Z&P	Italy
9	International Union of Railways	UIC	France
10	Agenzia delle Dogane e dei Monopoli	ADM	Italy
12	Hellenic Police	HP	Greece
13	The Finnish Border Guard	RAJA	Finland
14	Ubium	Ubium	Finland
15	HappyWise	HappyWise	Finland

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## EXECUTIVE SUMMARY

The objective of this document is to describe BODEGA project's stakeholder map and network and its applicability in the project. Broadly defined, stakeholders are entities who have an interest in the successful implementation of a project, or may have influence on the project progress and completion. A project stakeholder is seen as any party who may be interested or/and affected by a project.

The purpose of stakeholder mapping is to better understand the key stakeholders in the system, which ensures that decisions and actions taken by the BODEGA consortium are timely, appropriate and useful. To proactively enhance human performance in border control, there is a need to acknowledge the dynamics, diversity and complexity of the border control process. Border control stakeholders represent a large entity as it actually goes beyond the EU borders. The border control process is also organised and managed in different ways in the EU. There are many issues that should be taken into account when we consider the specifics of the border control context: political environment, ethical and privacy aspects, secure societies, highly regulated environment, data and identity management and technology development. Therefore, this report takes a broader perspective of the stakeholders that go beyond the industry, policy makers, academic experts to include a wider range of stakeholders, relevant to the BODEGA project.

The stakeholder mapping in BODEGA project identified five broad categories of stakeholders: core stakeholders, consisting of the national border control agencies, and five categories, which conceptualize the different types of environments that could potentially affect the progress and outcomes of the project, namely 1) core and 2) other operational; 3) societal; 4) technical, and 5) policy. By doing so, the influence of the wider institutional context is acknowledged. Stakeholders might be involved at least in three different ways in the BODEGA project: as partners, members of the Advisory Board or recipients and users of the project outcomes.

Responsibility for border management is distributed among different national authorities (agencies and organisations), which include *"border guards [who] are expected to receive a set of best recommendations and guidelines to improve their performances [and] border-management decision-makers [who] are expected to get new insight on the border management process and in particular on aspects pertaining to the human factor<sup>1</sup>";* as well as travellers' associations, representing the interests of the individuals who are checked by the end users.

The stakeholder map and network are important for creating value through the BODEGA project and for identifying relevant target organisations for the dissemination strategy in the project. More specifically, the stakeholder map and network support the coordinated efforts of the BODEGA project partners to deliver timely and meaningful results by understanding how the human factors in border control are affected by and affecting the different parties and contexts.

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<sup>1</sup> BODEGA description of the action, p.23

## 1. Introduction

The objective of this document is to describe BODEGA project's stakeholder map and network and how it could be used in the BODEGA project. In the development of BODEGA stakeholder map and network *the broad view on stakeholders* is taken to ensure integration of different forms of knowledge and perspectives. This report takes a broader perspective of the stakeholders that go beyond the industry, policy makers, academic experts to include a wider range of stakeholders, relevant from the perspective of human factors in border control.

A stakeholder is defined as “an individual, group, or organisation who may affect, be affected by or perceive itself to be affected by a decision, activity, or outcome of a project.”<sup>2</sup> In this respect we have handled the stakeholders as groups who may affect, be affected or perceive themselves to be affected by the development and automation of border checks and border control processes. In general stakeholders are entities which have an *interest* in a successful implementation of a development (e.g. project), or may have a positive or negative *influence* in the completion (e.g. of a project). The stakeholders may have various degrees of interest and influence on the project activities and results.

The purpose of stakeholder mapping in BODEGA is to better understand the key stakeholders in the border control system and its wider context. As such, the stakeholder map and network inform an appropriate and useful decisions and actions taken by the BODEGA consortium and as such ensures greater acceptance and broader applicability of the project results.

To proactively enhance human performance in border control as a result of the BODEGA project, there is a need to acknowledge the dynamics, diversity and complexity of the border control process. *Stakeholder complexity* refers to the large number and wide variety of project stakeholders and their goals, variety and patterns of stakeholder relationships, uncertainty in terms of lack of information related to stakeholders and their relationships. *Stakeholder dynamism* refers to various changes in stakeholders' attributes, position in the network, changes in relationships, influence strategies.

The overarching goal of BODEGA project is to understand in which manner the daily work of European Border Guards will be impacted by the growing automation of border control processes and to propose solutions for Border Guards to adapt to these changes. The key objectives of BODEGA are twofold:

- 1) To understand the impact of the growing automation of border check processes on the work of European Border Guards;
- 2) To propose recommendations to assist Border Guards and organisations in charge of border control in adapting to these changes.

The project explores the human factors, organisational and technological aspects in order to provide recommendations, which could be roughly divided into three categories:

- Human factors: e.g. identification of aspects to be taken into account for the training of Border Guards - how to improve classical skills in view of the new ergonomics, in order to have more broad view? Work place design, enhanced work motivation, critical cases identification?
- Human/machine interaction: recommendation for the design of the equipment and systems, interfaces of the machines, data to be displayed
- Organisational aspects: recommendations for the human resources management, the creation of teams - operator, assistant, arrangement of border control areas, workplace design

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<sup>2</sup> Stakeholders in Project Management. Retrieved from <https://pmstudycircle.com/2012/03/stakeholders-in-project-management-definition-and-types/>

There are wide disparities in the EU Member States in terms of agencies and organisations responsible for border management. While some Member States have a dedicated border guard agency in charge of border control, others rely on police forces, on the military border guard organisation or on a combination of organisations such as customs or coastguards. Representatives of the national authorities include, for example, border guards (field level), border guards' managers, border control authorities, border guards' trainers, police authorities contributing to border control tasks or supporting it and customs, personnel in charge of customs and who are working in cooperation with Border Guards but mainly responsible of the controlling of goods crossing the borders.

BODEGA-project will perform active stakeholder networking which includes identification of the most relevant individuals and organisations and ensuring their continuous involvement throughout the project. Identification of the actual groups of stakeholders was conducted by desk research and by drawing from the respective networks of the various partners in the project. A key benefits of their involvement is to have the possibility to co-design the research results with the consortium, thus maximising that the final outcomes will actually be relevant and useful. Another key advantage of joining the activities of a European research project is to be in a position to exchange with individuals and organisations with different backgrounds and expertise (border control stakeholders, academia, industry, SMEs).

The mapping process identified various opportunities to involve the stakeholders. For example, the identified end users or practitioners have a direct interest in the research conducted by the BODEGA consortium as they are likely to implement them in their daily work and thus to be impacted by the information gathered and the issues identified throughout the project. Participation of end users in the consortium also ensures a focus on essential aspects of border checks and its development. Stakeholders were also invited as members of the BODEGA Advisory Board, which positions them well for providing strategic advice to the consortium. Core operational stakeholders are also regularly engaged with during the BODEGA project end-user workshops, which provide additional opportunities for the identification of their needs and requirements in a more informal manner by discussions held under Chatham House Rule.

The report is divided into four parts: description of objectives and scope of the stakeholder mapping, presentation of the results of the mapping process, discussion and conclusions.





## 2. Objectives and scope of the stakeholder mapping

The objectives and scope of the stakeholder mapping is defined by the goals of the BODEGA project. In order to deliver research results, which contribute to the change management aspects related to the automation of border control from the perspective of human factors, the project consortium need to understand the needs and challenges, expected and experienced by the various stakeholders. Therefore, the stakeholder mapping helps to better understand the key stakeholders in the system, which inform adequate and useful decisions and actions by the BODEGA consortium and as such ensures greater acceptance and wider applicability of the project results.

To understand the impact of the growing automation of border control processes on the work of European Border Guards and to accordingly propose recommendations to assist Border Guards and organisations in charge of border control in adapting to these changes, the involvement of the stakeholders is of critical importance. Their involvement provides input for the BODEGA scenarios and the field studies, assists in defining the focus the research, and contributes with contextual and operational insights.

The stakeholder mapping approach employed in this report included two main steps. First, information and background knowledge about the stakeholders was gathered by different means, such as literature study of publicly available sources, internal meetings, seminars, networking events, and cooperation with other projects. Second, stakeholders were categorized and visualized. The stakeholder map, described in this report, is not an exhaustive list of all relevant stakeholders but it assists the BODEGA project in taking into account the most relevant actors who are affected by the decisions and actions taken throughout the project, and who have the power to influence the research outcomes and the future of border management in Europe.

From that perspective, the end users of BODEGA results are expected to provide inputs from the field so as to improve the understanding of the specifics of the context. Their involvement ensures that the project results are relevant and useful for practitioners and applicable in the field at border guards and management level. As for the broader category of stakeholders, their role is to enrich the consortium approach by providing additional insights from complementary perspectives: the perspective of the travellers, the perspective of the industry and the perspective of the academia in particular.



### 3. Stakeholder mapping

The stakeholder mapping identified five main categories of stakeholders based on their role in border control, as follows:

- **Core Operational stakeholders:** in charge of conducting the border control tasks at various border types in EU in cooperation with the professionals in charge of border management and stemming from national public authorities in Europe.
- Other operational stakeholders: having a specified role to support the EU and national border management at EU or at member state level.
- **Policy stakeholders:** in charge of deciding on the policies and developing the regulations pertaining to border control
- **Technical stakeholders:** in charge of designing the systems to be used in the context of automated border control
- **Societal stakeholders:** societal actors, including travellers, research/academia, industry, and civil society, who are either impacting or impacted by the growing automation of border control.

This categorisation is conceptual and the boundaries between these stakeholders is not clear-cut, e.g. in a way all stakeholders are societal stakeholders.

This typology allows for sorting the stakeholders according to their link to the upcoming Smart Borders initiative: *operational stakeholders* will have to conduct their daily work within the new proposed framework; *policy stakeholders* will define and influence the new framework; *technical stakeholders* will provide the tools to be operated within the new framework, and *societal stakeholders* will be impacted by the new framework (travellers) and/or contribute to its definition (RRI, data privacy, research projects).

Within these categories representative organisations and/or initiatives were selected. The idea was to focus on the organisations and initiatives, which were more likely to benefit from the research results and which will be targeted by the dissemination strategy.

Figure 1 visualizes the conceptual model of the general stakeholder categories, developed as a result of the stakeholder mapping.



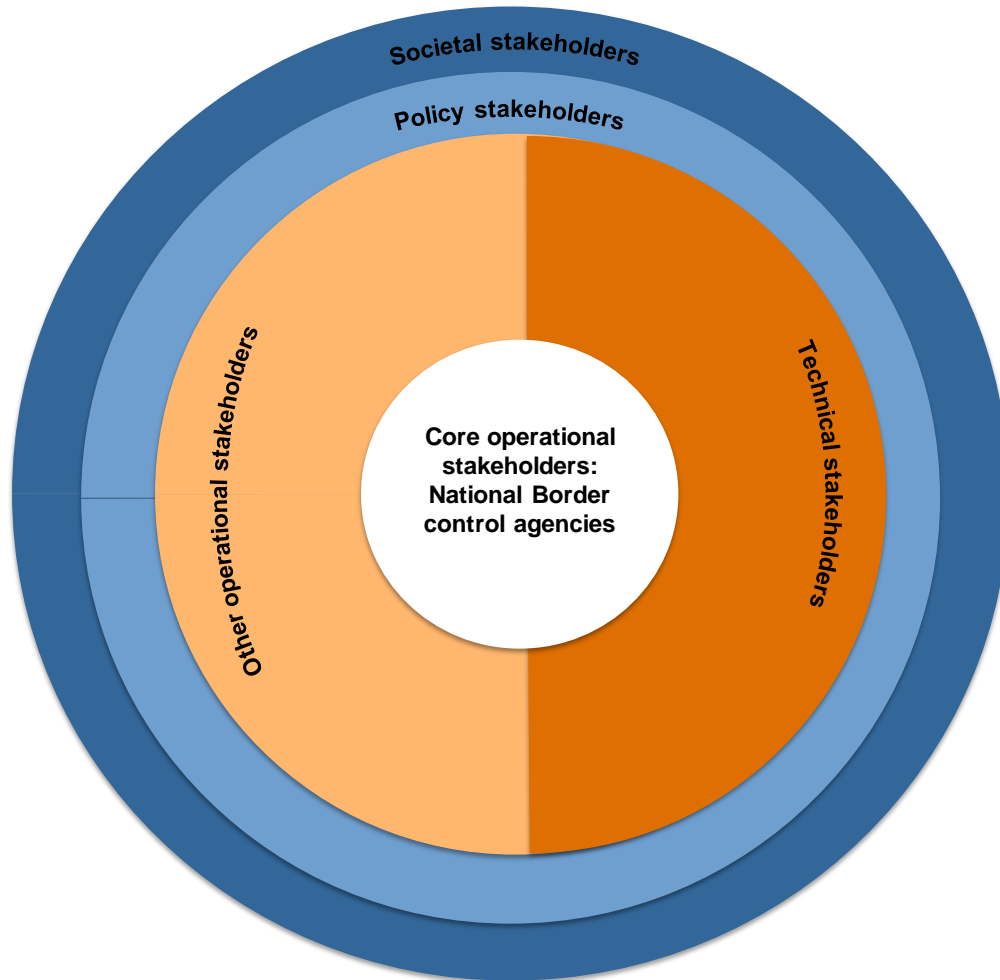


Figure 1. A representation of the stakeholder categories relevant for the BODEGA project.

The following chapters describe these categories of stakeholders in more detail.

### 3.1 Border control authorities - the primary operational stakeholders

Operational stakeholders are responsible for carrying out the border management and control tasks in practice. The border control and border management tasks are carried out by national border guard and police organisations. They operate in a legal framework drafted at the European level and in particular within the “Schengen Borders Code<sup>3</sup>”. Considering that the key issue of the BODEGA project is the human factors in border control tasks, the primary end-user stakeholders are these European border management authorities. They cooperate with other organisations and the professionals also in charge of border management or infrastructures and traffic flows and stemming from national public authorities or private companies in Europe. This operational stakeholder category is divided into two subcategories: primary core operational stakeholders (end users) and other operational practitioners (Figure 2.)

The border control authorities are the primary operational stakeholders when considering the current and future border checks. They are responsible for border security and the main operators who perform

<sup>3</sup> Schengen Borders Code. Retrieved from <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV:l14514>

the border checks, bring the requirements into practice and operate the technological tools. Since they operate on the national level they are the organisations that interpret the regulatory requirements at different types of Schengen and EU borders and are in charge that the national and EU security and border control efficiency and effectivity requirements are fulfilled. As main organisations in charge of the border checks they are also the main owner organisations of the border check technology and the main end user group for the border technology. According to the Frost & Sullivan market review European ABC revenue represents almost half of the global ABC market.<sup>4</sup>

The border guards or border police are the persons who perform the actual border checks whilst operating the border check systems and technological tools. From BODEGA point of view, they are the core stakeholder group for the project.

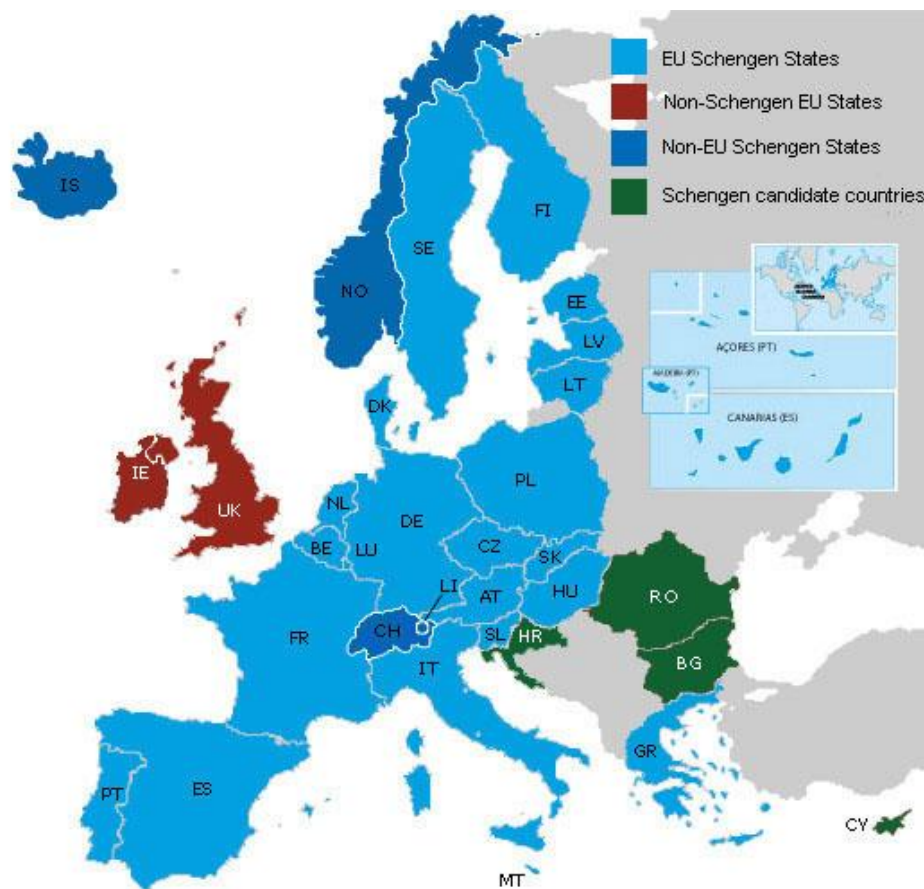


Figure 2. Map of European Schengen and EU states with their current status in relation to Schengen agreement and EU membership<sup>5</sup>

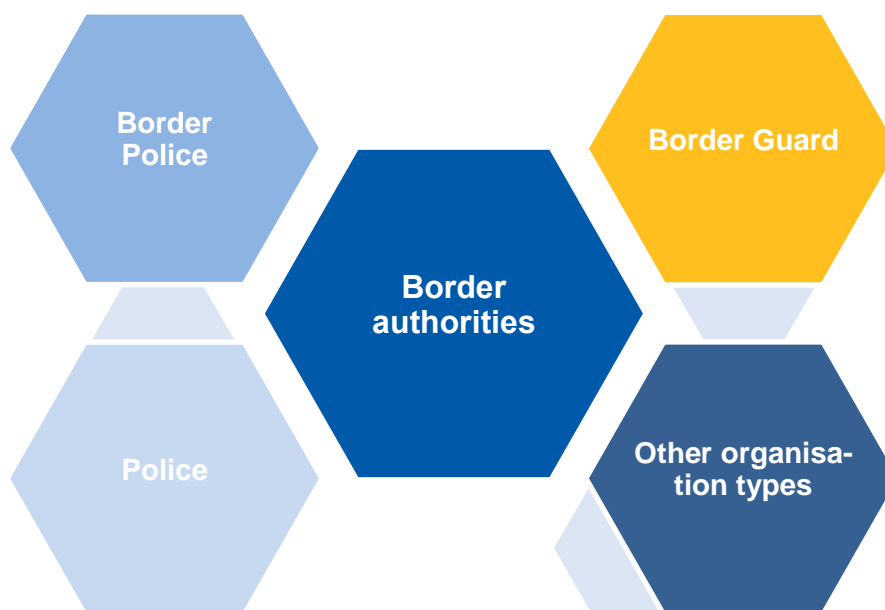
The European border checks are largely managed by the Schengen regulation guaranteeing the free movement of persons in the Schengen area. The key rules adopted within the European Union (EU) Schengen framework include removal of checks on persons at the internal borders; a common set of rules applying to people crossing the external borders of the EU Member States; harmonisation of the conditions of entry and of the rules on visas for short stays; enhanced police cooperation (including

<sup>4</sup> Global Automated Border Control (ABC) Systems Market, Forecast to 2020. 9-ABO-22. Frost&Sullivan. 2016

<sup>5</sup> Schengen Area. Retrieved from [http://ec.europa.eu/dgs/home-affairs/what-we-do/policies/borders-and-visas/schengen/index\\_en.htm](http://ec.europa.eu/dgs/home-affairs/what-we-do/policies/borders-and-visas/schengen/index_en.htm)

rights of cross-border surveillance and hot pursuit); stronger judicial cooperation through a faster extradition system and transfer of enforcement of criminal judgments; and establishment and development of the Schengen Information System (SIS). Figure 2 presents the current status for different European countries in relation to the Schengen and hence to the management of borders.

Border control is organised differently in many countries within the Schengen and EU area. Often it is managed by one administrative organisation, usually police or military organisations (Figure 3). The majority of border control authorities in Europe are police organisations or operated by specialised unit of national police (Border Police). Border police or Alien police is a specialised unit of the national police force which is responsible for border security and surveillance. Only in a few countries the border control is managed by a military organisation (Border Guard). These are mainly eastern European countries. Previously, having a military organisation as a border control authority was more common, but later on in many countries border control and security responsibilities have been transferred or merged with the police. However, there are still many paramilitary organisations taking part in border control activities. In Greece for instance, Hellenic Police is supported by the Hellenic Coast Guard, which is a paramilitary organisation under civilian control responsible for marine safety and preventing illegal immigration at sea. In Italy, the Italian Cost Guard is part of the Italian navy and supports the Italian police in marine surveillance and border control at sea.



*Figure 3. Border authorities are divided into four different organisational groups according to their structure and role*

There are also some civilian parties that are involved in border control and security. In the UK border surveillance and control is managed by the Border Force and in Sweden, similarly to Greece and Italy, the Swedish Coast Guard supports surveillance at sea.

Border management and border control related activities can be divided between different organisations or centralized. For example, in Finland the Finnish Border Guard is military organised, an independent organisation responsible for border control, checks, surveillance and security, but closely co-operates with national police and customs. In contrast, in Switzerland or the UK all the border security activities for both passengers and goods, are combined under one administrative organisation. The Swiss Border

Guard, for instance, is responsible for customs, police security and aliens police duties. Table 1 shows how national border control authorities are organised in Europe, according to Frontex<sup>6</sup>.

*Table 1 National border control authorities in Europe*

<b>Police</b>	
<b>Austria</b>	Austrian National Police
<b>Belgium</b>	Directorate of Administrative Police
<b>Cyprus</b>	The Aliens and Immigration Port and Marine Police Air Aviation Police Units
<b>Denmark</b>	Danish National Police
<b>Estonia</b>	Estonian Police and Border Guard Board
<b>Germany</b>	Federal Police
<b>Hungary</b>	Hungarian Police Alien Division
<b>Ireland</b>	An Garda Síochána (National Police Service)
<b>Luxembourg</b>	Police Grand-Ducale National airport police unit (Unité Centrale de Police à l'Aéroport)
<b>Norway</b>	Norwegian Police
<b>Portugal</b>	Serviço de Estrangeiros e Fronteiras
<b>Netherlands</b>	Royal Netherlands Marechaussee (police organisation with military status)
<b>Slovakia</b>	Bureau of Border and Alien Police
<b>Slovenia</b>	Slovenian Police
<b>Spain</b>	National Police Force
<b>Sweden</b>	Swedish National Crime Police
<b>Border Police</b>	
<b>Bulgaria</b>	Border Police
<b>Italy</b>	Polizia di Frontiera (Border Police branch) Guardia di Finanza
<b>Czech Republic</b>	Alien Police Service
<b>France</b>	Border Police The national railway police
<b>Greece</b>	Border Police Units of the Hellenic Police
<b>Romania</b>	Romanian Border Police
<b>Border Guard, military organisation</b>	
<b>Finland</b>	Border guard
<b>Latvia</b>	State Border Guard
<b>Lithuania</b>	State Border Guard Service
<b>Poland</b>	Polish Border Guard
<b>Other types of organisations</b>	
<b>United Kingdom</b>	Border Force
<b>Portugal</b>	Serviço de Estrangeiros e Fronteiras (SEF)
<b>Switzerland</b>	The Swiss Border Guard (part of Federal Customs Administration)
<b>Greece</b>	Hellenic Coast Guard

<sup>6</sup> national authorities. Retrieved from <http://frontex.europa.eu/partners/national-authorities/>

<b>Italy</b>	Italian Cost Guard
<b>Sweden</b>	Swedish Coast Guard
<b>Spain</b>	The Civil Guard

Considering the scope and topics covered by the BODEGA project, the different roles of persons at the border control organisation is also relevant. At the border control authority organisations all personnel are key professionals in the area of border management and border checks but regarding their position they may have a different view and also their ability to influence different aspect varies in relation to their position. The following roles, for example, can be distinguished:

- **Border Guards/Police:** the personnel in charge of the actual border checks including the verification of documents and of the identity of the travellers (field level) at different border types (land, air, rail, sea)
- **Border Guards managers:** the personnel in charge of supervising several border control officers including shift management, depending on the role, these persons may also perform the practical border checks.
- **Check Point managers:** the persons in charge of the management of one or several check point operations.
- **Top management:** directors and top management staff working at the areal or national headquarters.
- **Trainers:** personnel in charge of the training of Border Guards

### 3.2 Other operational stakeholders

The other operational stakeholder group is defined in this modelling to include organisations that operate on the EU level and also the other national authorities and infrastructure operators that work in close cooperation relationship with the border guard organisations.

At EU level we include the main EU agencies on the field of border checks to these group. These agencies have also a research and supportive role but they also do operational work. For example, Frontex the operational role has been reinforced recently. The other agency that is included in this group is EU-Lisa that provides and operates the large EU-wide IT-systems and databases to support border checks.

#### European Border and Coast Guard Agency - FRONTEX

The mission of Frontex - the European Border and Coast Guard Agency - is to promote, coordinate and develop European border management in line with the EU fundamental rights charter and the concept of Integrated Border Management. In 2016 under the new mandate, the Agency's role and activities have been significantly expanded including more staff, the right to purchase its own equipment and deploy them in border operations at short notice. and to compile a rapid reserve pool of at least 1,500 border guards and a technical equipment pool. Ensuring of the implementation of Union border management standards is guaranteed through periodic risk analysis and vulnerability assessments. FRONTEX current areas of activities are as follows:





- **Joint operations**<sup>7</sup>: planning, coordination, implementation and evaluation of joint operations conducted in using Member States' staff and equipment at the external border (sea, land, air)
- **Training**: development of common training standards and specialised tools. It includes the Common Core Curriculum for border guards across the Union.
- **Risk Analysis**: Collection and analysis of intelligence on situation at the external borders.
- **Research**<sup>8</sup>: Bridging the gap between technological advancement and the requirement of the border control authorities.
- **Rapid Response capability**: Creation of pooled resource tool, the European Border Guard Team (EBGT) and a database of available equipment.
- **Assistance to MS in joint return operations**: assistance to MS in returning foreign national staying illegally and ensuring the respect of fundamental rights.
- **Information systems and information sharing**: development of situational awareness for EU border control authorities. These systems enable the exchange of information.

FRONTEX has contributed to the border check development, e.g. to the introduction, implementation and harmonisation of the automated border control.<sup>9</sup> It has published several guidelines aiming to harmonise procedures and enhance border checks in EU. These include Best practice operational guidelines and Technical Guidelines for Automated Border Control (ABC) systems<sup>10</sup> and Guidelines for Processing of Third Country Nationals through Automated Border Control. The most recent guidelines relate to the asylum procedures.

### The European Agency for the Operational Management of large-scale IT Systems in the Area of Freedom, Security and Justice - EU-LISA<sup>11</sup>

The agency was established to provide a durable solution for the operational management of large-scale IT systems, which are important instruments in the implementation of the asylum, border management and migration policies of the EU. The agency's core mission is to be dedicated to continuously add value to Member States, supporting through technology their efforts for a safer Europe. The Agency's vision is to provide high-quality efficient services and solutions; to build trust amongst all stakeholders and continuously align the capabilities of technology with the evolving needs of the Member States; and grow as a centre of excellence.

<sup>7</sup> General. Retrieved from <http://frontex.europa.eu/operations/types-of-operations/general/>

<sup>8</sup> Role. Retrieved from <http://frontex.europa.eu/research/role/>

<sup>9</sup> Frontex (2015) Frontex at glance. Retrieved from [http://frontex.europa.eu/assets/Publications/General/Frontex\\_at\\_a\\_Glance.pdf](http://frontex.europa.eu/assets/Publications/General/Frontex_at_a_Glance.pdf)

Frontex. (2012). Anti-trafficking training for border guards: trainers' manual.

Frontex. (2012). Common Core Curriculum: EU Border Guard Basic Training.

Frontex, "Annual Risk Analysis",

Frontex. (2013). Document Fraud Detection at the Border: Preliminary Observations on Human and Machine Performance. Retrieved from [http://piskorski.waw.pl/wibc2013/WIBC\\_files/downloads/papers/WIBC2013\\_Gariup\\_et\\_al.pdf](http://piskorski.waw.pl/wibc2013/WIBC_files/downloads/papers/WIBC2013_Gariup_et_al.pdf)

Frontex. (2013). Fundamental Rights Training for Border Guards: trainers' manual. Retrieved from [http://frontex.europa.eu/assets/Publications/Training/Fundamental\\_Rights\\_Training\\_for\\_Border\\_Guards.pdf](http://frontex.europa.eu/assets/Publications/Training/Fundamental_Rights_Training_for_Border_Guards.pdf)

Frontex. (2014) Twelve Seconds to Decide. ISBN 978-92-95033-92-4. Retrieved from [http://frontex.europa.eu/assets/Publications/General/12\\_seconds\\_to\\_decide.pdf](http://frontex.europa.eu/assets/Publications/General/12_seconds_to_decide.pdf)

Frontex. (2015). VEGA Handbook: Children at airports. Children at risk on the move: guidelines for border guards. Retrieved from [http://frontex.europa.eu/assets/Publications/Training/VEGA\\_Children\\_Handbook.pdf](http://frontex.europa.eu/assets/Publications/Training/VEGA_Children_Handbook.pdf)

<sup>10</sup> can be downloaded from : <http://frontex.europa.eu/publications/?c=research>

<sup>11</sup> Mission. Retrieved from <http://www.eulisa.europa.eu/AboutUs/MandateAndActivities/Pages/Mission.aspx>





The Agency is currently managing EURODAC, the Visa Information System (VIS) and second generation Schengen Information System (SIS II). EU Member States are the key stakeholders of EU-LISA. They constitute the main target group of the activities carried out and services provided by the Agency. EU-Lisa has also had a key role in preparing the new EU initiatives, including the Smart Borders package, as it executed the testing phase of the Proof of Concept.<sup>12</sup>

### **European Police Office – EUROPOL**

Europol, the European Union's law enforcement agency, main goal is to help achieve a safer Europe for the benefit of all EU citizens by assisting the European Union's Member States in their fight against serious international crime and terrorism.

Europol works closely with law enforcement agencies in the 28 EU Member States and in other non-EU partner states and organisations. It has more than 900 staff, among which 185 Europol Liaison Officers (ELOs) and around 100 criminal analysts. Europol conducts more than 18 000 cross-border investigations each year. It uses the latest methodologies and techniques to identify missing links in cross-border EU investigations.

### **Other nationally operating stakeholders**

As described the border check points are places that combine together many different stakeholder groups. In our mapping we have gathered all other operational stakeholders to one group though their role varies from border management to supporting border security and providing means and infrastructures or supplying the travellers to border control. The stakeholders group consists of the entities that operate at the border check point. In many cases these stakeholders do not perform the actual border checks but they may have a key role in the whole border management or provide the infrastructure to perform the actual border checks.

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<sup>12</sup> Smart Borders and EU-LISA. Retrieved from <http://www.eulisa.europa.eu/AboutUs/SmartBorders/Pages/default.aspx>





Figure 4. Grouping of other operational stakeholders for the border management.

In special cases the other authorities may be accredited to perform border checks. This may be the case at very remote border check point with very few border checks. As this group operates mostly on national level we don't go into detailed description of the organisations in this group in this report but describe these stakeholders on more general level. The role of this group's stakeholders varies according to country and the border type.

Customs main aim is to facilitate trade and protect the financial interests of the European Union and its citizens and as well as their safety and security. Customs authorities implement EU policies in almost every field connected with international trade. They are in the front line in the fight against fraud, terrorism and organised crime. They work in close cooperation with the border guards at border check points in the role of responsible of the luggage and goods checks.

The role of **infrastructure operators** or the **transportation companies** is noteworthy at the airport where the border checks are performed in the infrastructure to the travellers that are transported by the airlines. On the other hand, at land border the travellers arrive mostly by their own means of transportation on the time they decide themselves but the customs check may be more important. Though border control points at land borders can be understood as interfaces between regional transportation systems within the European Union area and that of third countries. The geographical location with respect to different land transportation corridors defines the volumes and nature of traffic flows (passenger traffic / freight transport) which are processed through a border control point. At land borders the role of the **neighbouring non-EU border authority** may also have certain role to the performance of the checks.

During the last years the role of the relevance of **Immigration services** at Schengen states has increased due to the large immigration flows towards Europe. The main tasks relate to controlling that the

conditions to residence are met and to compacting challenges related to the high immigration pressure. The immigration services are provided by national immigration services. For example, in Finland the Immigration service describe its strategy as follows: “The Finnish Immigration Service’s overall vision for 2021 fits perfectly with this vision of a ‘super agency’: from immigration to citizenship; building a strong and secure Finland. Our values are adaptability, responsibility and effectiveness.”

If we want to look the group of other operational stakeholders with a broad scope, we could also include operators that have an influence to the security. These could be for example the organisations responsible for the airport or sea port and traveller security though their role is not directly related to border checks. As described when considering the mapping the other operational stakeholder group it is not reasonable to describe this group in detail as the influence to the border checks varies country wise and in general these group does not perform the actual border checks but have a role in the border management in general.

### 3.3 Policy stakeholders

Policy stakeholders influence the border checks both at a very high level and at the bottom level. Border control and border checks are an issue that is currently under vivid discussion on the high policy level. Both the EU level policy stakeholders and national policy stakeholder have a great influence on how the situations at borders develop, how regulation is developed and also to the cooperation of different stakeholders at the border. It is mainly the policy decisions that determine the border check procedures, information gathering and exchange as well as cooperation between stakeholders. Harmonised legislation in the Schengen area guarantees free movement of persons as a fundamental right. The Schengen provisions abolish checks at the Union’s internal borders, while tightening controls at the external borders in accordance with a single set of rules. These rules cover the following areas:<sup>13</sup>

- A common set of rules applying to people crossing the EU external borders, including the types of visa needed and how checks at external borders have to be carried out
- Harmonisation of the conditions of entry and of the rules on visas for short stays (up to three months)
- Enhanced police cooperation (including rights of cross-border surveillance and hot pursuit)
- Stronger judicial cooperation through a faster extradition system and transfer of enforcement of criminal judgments
- Establishment and development of the Schengen Information System (SIS)
- Documents needed for travelling in Europe.

During the finalisation of this report the Commission has issued many new proposals for the decision making, including the “Smarter and stronger borders proposal”, which covers the EES-system, the ETIAS Reference proposal and proposal concerning the use of the PNR data. The border agencies will have to be prepared for the possible changes in the coming years.

The national policy stakeholders are responsible of the national legislation development and enforcement. A Schengen country may also act temporarily to reintroduce border control at country’s internal borders, if there is a serious threat to public policy or internal security,

The main EU policy stakeholders, such as the European Parliament, European Commission, as well as DG home and migration, are presented in Figure 7 and listed below.

<sup>13</sup> Schengen Area. Retrieved from [https://ec.europa.eu/home-affairs/what-we-do/policies/borders-and-visas/schengen\\_en](https://ec.europa.eu/home-affairs/what-we-do/policies/borders-and-visas/schengen_en)



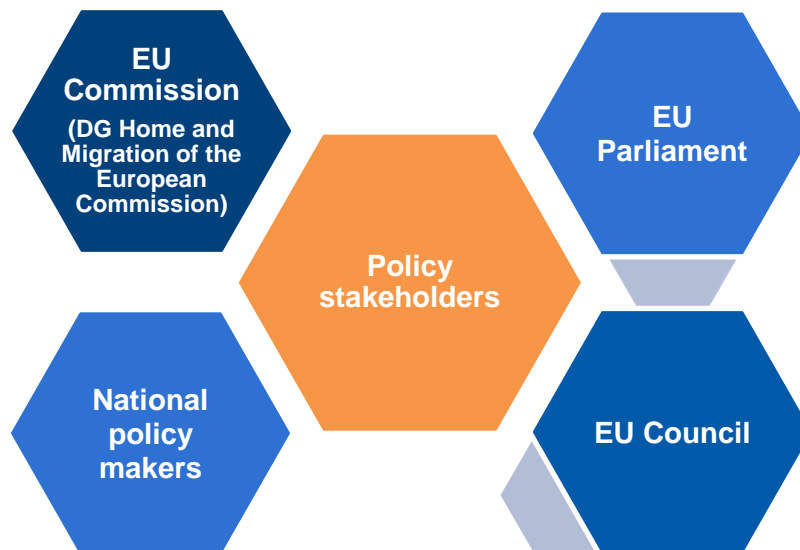


Figure 5. Policy stakeholders in border control.

### European Parliament<sup>14</sup>

The European Parliament has had mixed reactions to the development of external border management policy: it has broadly supported the upgraded organisational role of Frontex, often calling for the agency's role to be further enhanced as the EU grapples with the migration crisis in the Mediterranean.

While the European Parliament welcomes a more joined-up approach to external border management, it has nonetheless expressed concern over the lack of parliamentary oversight of Frontex and of a robust fundamental rights compliance system.

The EU parliament will play a key role in the development of the upcoming border control initiatives, including the Smarter and Stronger Borders Initiative.

### European Commission<sup>15</sup>

The Commission has the *right of initiative* to propose laws for adoption by the European Parliament and the Council of the EU (national ministers). In most cases, the Commission makes proposals to meet its obligations under the EU treaties, or because another EU institution, country or stakeholder has asked it to act. The principles of subsidiarity and proportionality mean that the EU may legislate only where action is more effective at EU level than at national, regional or local level, and then no more than necessary to attain the agreed objectives.

<sup>14</sup> European Parliament. Retrieved from [https://europa.eu/european-union/about-eu/institutions-bodies/european-parliament\\_en](https://europa.eu/european-union/about-eu/institutions-bodies/european-parliament_en)

<sup>15</sup> European Commission at work. Retrieved from [http://ec.europa.eu/atwork/index\\_en.htm](http://ec.europa.eu/atwork/index_en.htm)

**National policy representatives** are the representatives of the 28 European Member States.

### **The European Council - EU Council<sup>16</sup>**

The European Council defines the EU's overall political direction and priorities. It is not a EU legislating institution but it sets the EU's policy agenda by taking into account recommendations and conclusions during the European Council meetings which identify issues of concern and actions plans. The members of the European Council are the heads of state or government of the 28 EU member states, the European Council President and the President of the European Commission. The High Representative of the Union for Foreign Affairs and Security Policy also takes part in European Council meetings when foreign affairs issues are discussed. The European Council meetings, or 'EU summits' are usually held twice every six months.

### **DG Home and Migration of the European Commission<sup>17</sup>**

DG Home and Migration of the European Commission is in charge of setting up policies and managing the Schengen Borders & Visas activities, as well as legal migration, irregular migration & Return, Common European Asylum Systems. This Commission represents Directorate-General of the European Commission in charge of "Migration and Home Affairs". It is responsible for "managing policies that aim at ensuring that all activities necessary and beneficial to the economic, cultural and social growth of the EU may develop in a stable, lawful and secure environment".<sup>15</sup> The work on building a common EU migration and asylum policy involve development of a balanced and comprehensive EU migration policy, based on solidarity and responsibility, which will make an important contribution to the Union's economic development and performance in the longer term. The aim is to create an EU-wide set of rules for legal migration, while taking into account the interconnection between migration and integration, and at the same time addressing irregular migration and trafficking in human beings. The DG Home and Migration of the European Commission also focuses on setting up a Common European Asylum System, based on solidarity and respect for fundamental rights.

On 15 December 2015, the European Commission adopted a set of measures to manage the EU's external borders and to protect the Schengen area. The European Commission proposes a European Border and Coast Guard in order to ensure the strengthening and sharing of the management of external borders. The proposal also includes the amendment of the Schengen border code to introduce systematic checks against relevant databases for all people entering and exiting the Schengen area at the external border of the EU<sup>18</sup>. Also, the DG HOME delivered the Smart Borders Initiative in April 2016<sup>19</sup>.

### **European External Action Service (EEAS)**

The EEAS supports police, judiciary and customs reforms and capacity building in crisis-struck countries. The EEAS facilitates agreements ending hostilities and ensures compliance of these agreements. There are important efforts to assure the security of civilians, refugees, humanitarian workers and UN personnel.

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<sup>16</sup> The European Council. Retrieved from <http://www.consilium.europa.eu/en/european-council/>

<sup>17</sup> About us. Retrieved from [https://ec.europa.eu/home-affairs/who-we-are/about-us\\_en](https://ec.europa.eu/home-affairs/who-we-are/about-us_en)

<sup>18</sup> Securing EU borders. Retrieved from [http://ec.europa.eu/dgs/home-affairs/what-we-do/policies/securing-eu-borders/index\\_en.htm](http://ec.europa.eu/dgs/home-affairs/what-we-do/policies/securing-eu-borders/index_en.htm)

<sup>19</sup> Smart Borders. Retrieved from [https://ec.europa.eu/home-affairs/what-we-do/policies/borders-and-visas/smart-borders\\_en](https://ec.europa.eu/home-affairs/what-we-do/policies/borders-and-visas/smart-borders_en)



### 3.4 Technical stakeholders

Technical stakeholders include stakeholders that provide technical systems and equipment as well as IT solutions to the border checks. These can be companies that provide whole systems, or individual technical equipment, IT-systems, databases, and companies that provide physical gates and infrastructures or guidance systems etc. (one possible modelling of this stakeholder group is presented in Figure 6). The amount of different companies involved in building a functioning border control point can vary and it may constitute of local and multinational companies. Also the role of the companies varies from basic tool provider to very strategic ones. These companies may deliver e.g. the key components to handle the travellers' personal information or are responsible of the key technologies to perform the checks. In a country the key technology providers may vary between border types because of the differences of the border check processes at those border types. The risk and analysis tool providers are included in this group as they may provide a computer tool that are provided to the background to help decision making. The role of this industry is assumed to increase as more and more the information related to border crossing is available and the need to process and assess this information is critically needed. The technology providers often make a partnership for a tender which means that the biometric, document authentication or physical component providers deliver their products under the main integrator. In the border control context, it also can also be seen that many countries seem to prefer the local vendors to provide the solutions.

The stakeholders in the border check system provider group (Figure 6) consist of the main companies providing big self-service and automated border control systems. This group may consist also the same equipment providers that are grouped under the equipment providers but in this group these are often subcontractors of the main system providers. As this group is mainly represented by the main contractor towards the border authorities the equipment providers are mentioned separately. the equipment providers and the IT- or background system providers are the key players at borders which are not equipped with self-service of automated border control systems.

In this report our aim is not to report extensively all the industry stakeholders but to concentrate on some examples of the technology providers keeping especially the future development in mind. In BODEGA we are mainly interested in the future changes to the border guard work including the increased amount of technology and background analysis that is aiming to make the border checks more efficient. the aim of the stakeholder analysis is to consider which stakeholders will affect the change, which have the main role in the change and which have a minor or more like a follower role in the development.



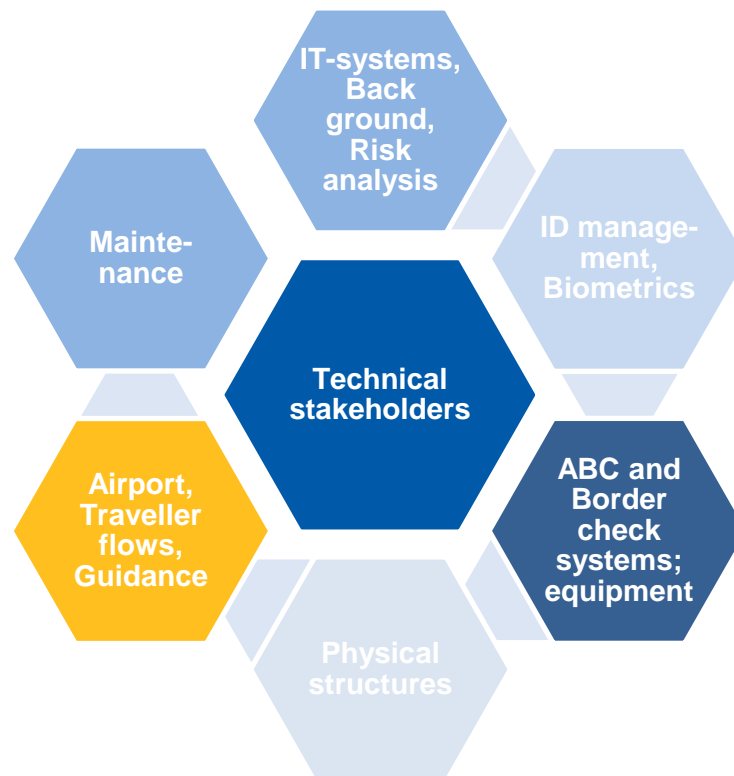


Figure 6 Technical stakeholders for the border checks management

For the border checks, the automated border check solution providers will influence the border guard work and realise the transformation from the manual checking to the automated monitoring of the lines. In this context it is important that the technology enables smooth, easy and reliable operation for the travellers and enable secure and smooth border crossings.

When considering the technical stakeholders' role for the borders check development and transformation and especially from the human factors point of view we could also assess the stakeholder group's the possibility influence the change and also its interest in developing the border checks. The IT-systems and the large border check systems providers have big interest to develop border checks and they also large possibility to influence the border check work. The two technical stakeholder groups are very interrelated as the large systems must fluently work together to enable the border checks as planned. The providers of special equipment, e.g. the passport readers or biometric technologies have big interest at the borders but their possibility to influence the work procedures are more limited. The influence of the background system providers is related to the influence of technology and the whole border check process. If the background system enquiries do not work it affects seriously the border checks. The interest of the background system providers may be more focused on the databases itself and not so much on the actual border check process for which reason the interest may be lower. The physical structure providers as well as the barriers provides role is assessed to be less powerful and their interest of developing especially border checks is assessed to be minor. The guidance is often handled and inserted when found necessary. and it is assessed that the border check points are not the main business area, though if the guidance is not up to date the border crossing point may face a lot of hassle or extra manpower is needed to manage the traffic flows. The last group are the industry and stakeholders that are involved in the maintenance of the system. Depending on the system these may be the same companies that have provided the initial system or then these are special maintenance companies delidecated to the maintenance and availability tasks and performing updates.



### 3.4.1 Examples of national ABC implementations and related key products and manufactures in EU

In EU and Schengen area the ABC systems have been implemented in many countries already. The state of the implementation is gathered by Frontex (Table 2). In most of the countries traditional e-Gates are implemented but additionally in some also pre-check kiosks are included. Also other countries like Greece is planning to start ABC implementation.

Table 2. Overview of ABC systems implemented in the EU/Schengen Area (Frontex)<sup>20</sup>

MS	Status			Eligible pax		Eligible document	Biometrics		Configuration			Owner	Operator	System provider(s)		Number of:				
	Operational	Pilot	Planned	Age	Nationality	Selected TCNI	ePassport	National eID	Face	Finger	1-step	2-step integrated	2-step segregated	Border / State Authority	System provider	Airport Authority	Border Authority	System provider	Kiosks	E-gates
AT		■		≥18	EU/EEA/CH		■		■			■		■ <sup>1</sup>		■		Project Consortium		1
BE			■ <sup>2</sup>				■		■		■							Vision Box		6
BG	■			≥18	EU/EEA/CH		■	■	■	■ <sup>4</sup>		■		■		■		Atos Bulgaria, Vision Box		16
CZ	■			≥15	EU/EEA/CH		■		■			■		■		■		L-1 Identity Solutions, Magnetic Autocontrol, Vitkovice Solution, Secunet		3
DE	■			≥18	EU/EEA/CH	■	■	■	■			■		■		■		Bundesdruckerei GmbH and Secunet Security Networks AG		117
DK			■ <sup>5</sup>		EU/EEA/CH		■		■			■		■		■		Vision Box		9
EE	■			≥15	EU/EEA/CH		■		■	■			■	■		■		Vision Box	6	2
ES	■			≥18	EU/EEA/CH		■	■	■	■	■		■	■		■		Indra, Gunnebo, Neurotechnology	19	166
FI	■			≥18	EU/EEA/CH	■	■		■			■		■		■		Vision-Box		38
FR	■			≥18	EU/EEA/CH	■	■ <sup>7</sup>		■	■		■		■		■		Morpho		41
HU	■			≥18	EU/EEA/CH		■	■	■	■			■	■		■		ARH Zrt.	4	1
IE		■		≥18	EU/EEA/CH		■		■			■		■		■		SITA, Accenture		4
IS			■				■													
IT	■			≥18	EU/EEA/CH		■		■	■	■	■		■		■		SITA		8
LV			■		EU/EEA/CH		■		■			■								2
NL	■			≥18	EU/EEA/CH	■	■		■						■	■		Accenture, Vision Box		36
NO	■			≥18	NO/SE/UK/FI/DK/IS		■		■			■		■		■		Gemalto, Vision-Box		4
PT	■			≥18	EU/EEA/CH	■	■		■	■ <sup>8</sup>		■		■		■		Vision-Box		81
RO			■				■		■		■			■		■	■			2
UK	■			≥18	EU/EEA/CH	■	■		■		■	■		■		■		Fujitsu, Vision Box, Accenture		111

In 2015 the biggest ABC projects in Europe were in Portugal, United Kingdom and Germany<sup>21</sup>. According to the table 2, the biggest ABC system providers in EU are Vision Box, Bunderdruckerei and Secunet, Indra and Morpho. Below examples of recent ABC projects are shortly presented. In the descriptions, presented mainly by the industry themselves, also the possible differences in the process, project completion, technologies as well as ownership are presented.

#### EasyPASS border control system (Germany)<sup>22</sup>

EasyPASS aims to support the Federal Police officers working in border checks. The automated border control system verifies the identity of the traveller and the validity and authenticity of their electronic travel document. EasyPASS users can use additional lanes (totally 150 eGates) at the German airports that handle the highest volumes of passengers: Frankfurt am Main, Munich, Cologne/Bonn, Dusseldorf, Berlin-Schönefeld, Berlin-Tegel and Hamburg.

<sup>20</sup> Best Practice Operational Guidelines for Automated Border Control (ABC) Systems. Frontex. ISBN 978-92-95205-50-5. 2015. retrieved from [http://frontex.europa.eu/assets/Publications/Research/Best\\_Practice\\_Operational\\_Guidelines\\_ABC.pdf](http://frontex.europa.eu/assets/Publications/Research/Best_Practice_Operational_Guidelines_ABC.pdf)

<sup>21</sup> Global Automated Border Control (ABC) Systems Market, Forecast to 2020. 9-ABO-22. Frost&Sullivan. 2016

<sup>22</sup> [http://www.easypass.de/EasyPass/EN/What\\_is\\_EasyPASS/home\\_node.html](http://www.easypass.de/EasyPass/EN/What_is_EasyPASS/home_node.html)



**Parafe ABC (France)<sup>23, 24</sup>**

The Parafe project stands for Automated Fast Track Crossing at External Schengen Borders. This system is installed 2012 and is free of charge and voluntary. This system allows eligible travellers to cross border using automated passport control. The system uses biometric authentication technology based on fingerprinting.

Recently 87 new gates are installed at Paris-Charles de Gaulle and Paris-Orly airports. Gemalto and its two Bolloré Group subsidiaries, Automatic Systems and IER, will supply, install and maintain automated border control gates. Passengers are required to present their electronic passport, then their finger at the e-gate. The fingerprint is matched against biometric data stored in the document to verify the passenger's identity. The information will be monitored by border protection officers in real-time. Over time, the technology is expected to evolve to enable facial recognition. Gemalto has partnered

**ABC in Spain<sup>25</sup>**

The systems verify passenger identification, ensuring that all passport documentation belongs to the holder by evaluating facial attributes and fingerprints. The implementation included deploying 124 systems at major international airports and, at a port terminal. Indra has implemented a centralised management platform that allows the General Police Department, which owns and operates the ABC (Automatic Border Control) system, to remotely control all the systems installed at multiple airports from its Data Processing Centre.

**ABC in Denmark<sup>26, 27</sup>**

Nine new automated passport control e-gates have been installed at Copenhagen Airport to automate the border control process for travellers flying to destinations outside of the Schengen area. The e-gates can be used by European Union citizens aged 18 or over. The first of its kind to process departing and arriving passengers as such, the new eGates allow for the Danish Police, in charge of passenger control and risk management at the airport, to dynamically operate touchpoints by switching the flow according to the predicted volume of passengers entering or exiting the Schengen area. This means a significant improvement in operational efficiency and in security for the Airport and for the Danish Police. A powerful software orchestration platform offers Border Guards reliable identification of travelers, and an overview of every passenger's process, the ability to immediately react to alert situations (forged documents, identity theft, left objects, hit on watch lists, doors forced, among others) and the control of the whole security infrastructure (i.e. the configuration of operation rules and flows of the eGates). The very first time, an airport and a border authority together own total flexibility to adjust the throughput of entry and exit points at the border, according to the predicted passenger volume.

**Examples of technical solution providers for automated border control**

As an example a more detailed view to the companies operating on the field of the automated border checks is provided. This list is not trying to be an extensive list of the companies but tries to present

<sup>23</sup> <http://www.parafe.gouv.fr/en/category/les-avantages-de-parafe/>

<sup>24</sup> <http://www.airport-technology.com/news/newsgemalto-to-provide-e-gates-in-paris-charles-de-gaulle-and-paris-orly-airports-5685020>

<sup>25</sup> <http://www.indracompany.com/en/noticia/indra-deploys-automated-border-biometric-control-systems-seven-spanish-airports-port>

<sup>26</sup> <http://www.futuretravelexperience.com/2016/06/copenhagen-airport-installs-new-automated-passport-control-gates/>

<sup>27</sup> <http://www.vision-box.com/news/pioneering-automated-border-control-solution-goes-live-at-copenhagen-airport/>



some of the key companies in Europe with the key products. It must also be mentioned that this stakeholder list does not handle the size of the business in the company. At airports the automation is also related to the general automation and self-service concept at air borders.

*Table 3 Examples of technology providers in the field of automated border control and border management.*

Company	Profile and solution examples
<b>ATOS</b> <sup>28</sup> (ES)	Atos is a reference vendor of border control and electronic identity documents solutions; Atos has deployed many solutions worldwide across the entire national security chain. Atos clients recently confirmed their confidence on biometric data capture solutions in Switzerland, Czech Republic and other Central European countries. Atos won a contract in 2015 with Hong Kong government to design and deploy 159 ABC (Automated Border Control) gates (eGate). In Spain, Atos solutions monitor around 5,000 kilometres of maritime boundaries, and the national identity card benefits from the Atos « match on card » (MOC) biometric solution.
<b>Thales</b> <sup>29</sup> (FR)	As Europe's leading provider of digital technologies for defence and security, Thales designs, develops and deploys innovative solutions that meet the most complex security requirements. the systems coordinate data to provide state agencies with a common operational picture and to facilitate response procedures. To this end, the national security solutions include: Biometric technologies for ID management, Homeland Surveillance Systems, Nexium network solutions and Professional Mobile Radio. The company offers E-gate and kiosk product as automatic control system as well as the IT system deployed with such product. Entry/Exit system , eGate, mobile and fixed station for enrolment and identity verification.
<b>Vision-box</b> (PT) <sup>30</sup>	1,000 Automated Border Control (ABC) solutions for land, sea and air borders around the world. ABC and Passenger Experience solutions are processing an average of 80 million passengers per year. <b>vb i-shield</b> <sup>®</sup> A platform devised to integrate border management processes, joining all entry/exit points (air, land and sea borders) of a country to provide authorities with a full overview of their borders. <b>Vb-inspector within Vb Ishield</b> provides border guards with real-time monitoring of all operations, including high quality and real time overview of the traveller clearance process. This enables for the immediate detection of identity fraud and the notification of visa overstays. <b>vb i-match</b> <sup>®</sup> , Automated Border Control eGate, has thousands of deployed solutions. The eGate is deployed in 50 international airports around the world, as well as in sea and land borders.
<b>Accenture</b> <sup>31</sup> (FR)	Accenture Border Services provide a full range of services to support border and customs agencies deal with the current increased pressure, expectations, and commitments from various stakeholder groups. Accenture believes the combination of multi-modal biometrics and integrated automated technologies presents a sizeable opportunity for air, land and sea ports. Accenture Smart Identity solution integrates enterprise-wide identify management capabilities. Accenture travel security services uses multimodal biometrics, e-passports, two-dimensional bar-codes boarding passes, mobile devices to enhance security and facilitation for air travellers
<b>Gemalto</b> <sup>32</sup> (NL);	Coesys Automated Border Control (ABC) is an automated immigration control system that combines the latest technologies of eGate hardware and advanced software such as facial recognition and border control software. It provides a fast and secure solution for airports and border authorities, as well as a user friendly experience for travelers and is part of Gemalto's integrated border management solution.

<sup>28</sup> <https://atos.net/>

<sup>29</sup> <https://www.thalesgroup.com/en/worldwide/security/state>

<sup>30</sup> <http://www.vision-box.com/solutions/bordercontrol/>

<sup>31</sup> <https://www.accenture.com/us-en/service-border-management-automated-border-clearance-summary>

<sup>32</sup> <http://www.gemalto.com/govt/coesys/eborder-abc>

Company	Profile and solution examples
	Gemalto, announced that it has entered into agreements to acquire 3M's Identity Management Business. 3M's Identity Management Business is comprised of 3M Cogent Inc., which provides a full spectrum of biometric solutions with a focus in civil identification, border control and law enforcement, and 3M's Document Reader and Secure Materials Businesses. The closing of the transaction is expected to occur in the first half of 2017.
<b>3M Identity Management<sup>33</sup> (UK)</b>	The offering ranges from secure data management, systems integration, data capture and biometrics to build a customised solution that helps solve specific issue and meet security mandates. 3M™ Border Management System. A total hardware and software solution for border management, customised for each government border agency. It brings together our proven expertise in customer workflow design, document and biometric authentication solutions and system integration.
<b>Indra<sup>34</sup> (ES)</b>	Indra is one of the main global consulting and technology companies and the technology partner for core business operations of its clients' businesses. i-BCS (Indra Border Crossing Solution) modularity and flexibility allows a quick deployment of an automated system for border control. It can be integrated with external systems, other access control systems or traditional manual control points.
<b>Morpho<sup>35</sup> (FR)</b>	Morpho provides automated (MorphoWay), semi-automated (E-Counter) and passenger data handling solutions. MorphoWay, eGate solution, helps government agencies and airport authorities to secure and enhance air, sea and land border crossings. Based on the biometric recognition technologies (fingerprint, iris and face), this solution speeds up passenger screening and reduces queuing time, whilst guaranteeing optimum security. Morpho Traveler Analytics Suite enables the collection and processing of advanced passenger information and Passenger Name Record data. It also performs smart data analysis by comparing the data to external databases and conduct risk analysis. It also manages alerts..
<b>SITA<sup>36</sup> (NL)</b>	iBorders® Border Management <sup>37</sup> offers secure self-service gates and kiosks that provide an alternative to traditional resource-intensive manual border controls for travelers holding biometric travel documents. SITA AirportConnect Kiosk is a self-service airport kiosk. SITA Airport Self-Service Gate offers functions including self-boarding, access control to airport lounges, and automated border control. They are equipped with 2D barcode readers and accommodate e-passports as well as near field communication.
<b>Veridos<sup>38</sup> (DE)</b>	Veridos GmbH is operated jointly by Bundesdruckerei and Giesecke & Devrient. In this joint venture, the two partners have pooled their international business with secure identification solutions such as passport and ID systems for governments. Veridos provides solutions for Identification (National ID, residence permit, voters registration, healthcare); Passport and border control solutions (passport, visa, border management); Traffic ID solutions (driver's license tachograph, vehicle registration)
<b>Secunet<sup>39</sup> (DE)</b>	secunet solutions ensure the comprehensive protection for electronic IDs (eIDs) while providing reliable verification and identification at the same time. These solutions modernise, automate and mobilise ID management. EasyPASS is implemented by the consortium partners Bundesdruckerei and secunet Security Networks. Veridos is a joint venture between Giesecke & Devrient and Bundesdruckerei. Approximately 140 eGates have now been installed at major German airports, i.e. Frankfurt/Main, Berlin, Munich, Düsseldorf and Hamburg.

<sup>33</sup> [http://solutions.3m.co.uk/wps/portal/3M/en\\_GB/SSD\\_EU/Security\\_Systems/Market/One/Two/](http://solutions.3m.co.uk/wps/portal/3M/en_GB/SSD_EU/Security_Systems/Market/One/Two/)

<sup>34</sup> <http://www.indracompany.com/en/indra>

<sup>35</sup> <http://www.morpho.com/en/aviation-border-security/secure-and-manage-borders/manage-entry-exit/passenger-data-processing-api/pnr/morpho-traveler-analytics-suite>

<sup>36</sup> <http://www.sita.aero/solutions-and-services/products/airportconnect-kiosk>

<sup>37</sup> <http://www.sita.aero/solutions-and-services/products/iborders-borderautomation>

<sup>38</sup> <https://www.veridos.com>

<sup>39</sup> <https://www.secunet.com/en/topics-solutions/border-control/>

Systems integrators (SIs) are the prime entry strategy to most software and hardware providers. Nevertheless, SIs require proprietary technology produced by hardware/software providers. The list of companies operating in the field of IT-systems, ID-management, and biometrics is very large. One view to the amount of companies in the biometric field can be obtained by looking e.g. at the members of the European Association for biometrics<sup>40</sup> member list. This list includes over one hundred company members and additionally a large list of individual members from companies and institutions. In Europe there are many technology companies which are focusing on, for example, biometrics, security IT solutions, authentication documents, etc. but it is not the goal of this report to provide the exhaustive list of all technology providers involved in the border control.

### 3.4.2 Examples of European research projects dealing with novel border control technologies

The following reference list provides an overview of the ongoing and most recent European research projects in the field. It also gives an additional overview of the players in the field; the end-users, companies, research organisations and other stakeholders. The list first describes the FP7 projects and is followed by the H2020 projects. The biggest FP7 projects are described more thoroughly.

The idea is not to provide an exhaustive overview of all the projects conducted in the area of border control but rather to focus on the initiatives, which would appear the most relevant in the context of the Bodega project and border check developments.



#### FP7 – FastPass (2013-2016)<sup>41</sup>

The project established and demonstrated a harmonized, modular approach for Automated Border Control (ABC) gates. FastPass developed an innovative architecture gathering different technologies proper to enhance the security and the efficiency at border crossing. Project focused on a **harmonised user experience** and elaborate a **harmonised process for risks and security assessment**, that can be used by all stakeholders involved in the management of a border crossing point. FastPass is designing three scenarios for each kind of border. FastPass will focus on developing technologies complying with requirements on a **technical, social, ethical or legal** level.

#### Partners

<b>AIT Austrian Institute of Technology (AT)</b>	VTT (FI)	Federal Ministry of Interior (AT)	Austrian State Printing House (AT)
Fraunhofer (DE)	Katholieke Universiteit Leuven (BE)	Finnish Border Guard (FI)	Secunet Security Networks (DE)
Mirasys Oy (FI)	Regula Baltija Ltd (LT)	University of Reading (UK)	International Centre for Migration Policy Development (AT)

<sup>40</sup> <http://eab.org/?ts=1482996884313>

<sup>41</sup> <https://www.fastpass-project.eu>



University of Tampere (FI)	Gunnebo Entrance Control	Giesecke & Devrient (DE)	MODI Modular Digits (DE)
JRC (IT)	ITTI (PL)	Deltabit Oy (FI)	Oxford Internet Institute (UK)
Romanian Border Police (RO)	Finavia Cooperation (FI)	Municipal Port Authority of Mykonos (GR)	Frankfurt Airport Services Worldwide (DE)
Vienna International Airport (AT)	Intrepid Minds (UK)		

**FP7 - MobilePass (2014-2017)<sup>42</sup>**

MobilePass will focus on research and development towards technologically advanced mobile equipment at land border crossing points. This will allow border control authorities to check European, visa-holding and frequent third country travellers in a comfortable, fast and secure way. The mobile solution incorporates new technologies needed in mobile scenarios and embeds them in the actual border crossing workflow to speed up control procedures. MobilePass brings together system- and component producers, research institutions and governmental authorities. The entire innovation process, from components development to the integration into an efficient workflow will continuously be evaluated by border guard authorities.

<b>AIT Austrian Institute of Technology (AT)</b>	Fraunhofer (DE)	UM – MERIT (NL)
Regula (BL)	Videmo (DE)	Indra (ES)
ITTI (PL)	G&D (DE)	Universidad Carlos III de Madrid (ES)
Romanian Border Police (RO)	Spanish National Police Corps (ES)	

**FP7 - ABC4EU (2014-2018)<sup>43</sup> – Automated Border Control Gates for Europe**

The project aims to make border checks more flexible for passengers by enhancing the workflow and harmonizing the functionalities of border check automation. It will demonstrate fully operational deployments facilitate the border crossing process for 3rd country passengers, while maintaining security at the border. the project will also assess the Feasibility of Registered Traveler Programme (RTP) and Entry / Exit System (EES) concepts. In addition, it assesses and evaluates the compliance of the processes with the legal requirements to protect fundamental rights, in particular the protection of personal data and with ethical principles.

<b>Indra (ES)</b>	PWC (ES)	Vision-Box (PT)	Ministry of Internal Affairs (RO)
Etica Research & Consulting (ES)	Università degli studi di Milano (IT)	Cognitec (DE)	Univeridad Rey Juan Carlos (ES)
Dermalog (DE)	Cuerpo Nacional de Policia (ES)	Serviço de Estrangeiros e Fronteiras (PT)	Police and Border Guard Board (EE)
Laurea University (FI)			

**FP7 – Origins (2014 – 2016)<sup>44</sup>**

The project ORIGINS aims to study the security of the extended border and more particularly passport breeder document security. The underlying idea of ORIGINS is to improve the security and therefore to restore the confidence in the application process and issuance of e-passports, by filling the gaps in

<sup>42</sup> <http://mobilepass-project.eu>

<sup>43</sup> <http://abc4eu.com>

<sup>44</sup> <http://www.origins-project.eu>



security of breeder documents.

Morpho – Safran (FR)	ID partner (FR)	Gjøvik University College (GUC) (NO)	Hochschule Darmstadt (DE)
Gemalto (FR)	UL Transaction Security (NL)	Ministry of Interior (LV)	ETICAS (ES)
Institute of Baltic Studies (EE)	PWPW (PL)	Agence Nationale des Titres Sécurisés (FR)	Technological and Scientific Research Council (TUR)
AFNOR (FR)	Ministry of Security and Justice (NL)	Universidad Carlos III Madrid (ES)	

#### Additional FP7 projects

- CLOSEYE – Collaborative Evaluation of Border Surveillance technologies in maritime environment by pre-operational evaluation of innovative solutions<sup>45</sup>
- ORIGINS - Recommendations for Reliable Breeder Documents Restoring e-Passport Confidence and Leveraging Extended Border Security
- SUNNY - Smart UNattended airborne sensor Network for detection of vessels used for cross border crime and irregular entry
- ACXIS - Automated Comparison of X-ray Images for cargo
- TERASCREEN - Multi-frequency multi-mode Terahertz screening for border checks
- XP-DITE - Accelerated Checkpoint Design Integration Test and Evaluation
- BEAT - Biometrics Evaluation and Testing
- EFFISEC - Efficient Integrated Security Checkpoints
- TABULA RASA - Trusted Biometrics under Spoofing Attacks



#### PROTECT - Pervasive and User Focused BiomeTrics BordEr ProjeCT.

The goal of the PROTECT is an enhanced biometric-based person identification system that works robustly across a range of border crossing types and that has strong user-centric features. The system will be deployed in Automated Border Control (ABC) areas supporting border guards to facilitate smooth and non-intrusive rapid crossing by travellers based on deployment of the next generation of biometric identification detection methods.

<b>The University Of Reading (UK)</b>	Paris-Lodron-Universität Salzburg (AT)	Military University of Technology in Warsaw (PL)	Komenda Główna Straży Granicznej (PL)
Veridos GmbH (DE)	Itti Sp Zoo (PL)	Université De Namur Asbl (BE)	Intrepid Minds Ltd (UK)
Eurecom (FR)	Home Office (UK)		





**C-BORD - effective Container inspection at BORDER control points.**

Efficient NII (non-intrusive inspection) of containerised freight is critical to trade and society. Freight containers are potential means for smuggling (e.g. tobacco), illegal immigration, trafficking of drugs, mis-declared goods and dangerous illicit substances, including explosives, nuclear material, chemical and biological warfare agents and radioactively contaminated goods.

CEA (FR)	Hochschule Bonn-Rhein-Sieg (DE)	CAEN (IT)	ESIEE (FR)
NCBJ (PL)	Symetrica (UK)	Smiths Detection (DE)	Università degli Studi di Padova (IT)
University of Manchester (UK)	Izba Celna w Gdyni (PL)	Ministerie van Financien Directoraat Generaal Belastingdienst (NL)	National Tax and Customs Administration (HU)
Agenzia delle Dogane (IT)	ARTTIC	Fraunhofer (DE)	
Oslo Centre for Science in Society (NO)	Joint Research Centre – European Commission	Hungarian Academy Of Sciences Centre For Energy Research (HU)	

**iCROSS - Intelligent Portable ContROI SyStem.**

iCROSS envisages to enable faster thorough border control for third country nationals crossing the borders of EU, with technologies that adopt the future development of the Schengen Border Management. The project will present an optimal mixture of an enhanced, voluntary form of a Registered Traveller Programme and an auxiliary solution for the Entry/Exit System based on involving bona fide travellers. iCROSS designs and implements a system that adopts mobility concepts and consists of a two-stage procedure, designed to reduce cost/time spent per traveller at the crossing station. It leverages software and hardware technologies ranging from portable readers/scanners, various emerging and novel subsystems for automatic controls, wireless networking for mobile controls, and secure backend storage and processing.

**3.4.3 Standardisation organisations and other associations dealing with border technologies**

The core aim of the new technology requirements at borders is to achieve a high level of border security, and fast and smooth border crossings at the same time. Experiences of self-service and automated border check system installations show that technology can also enhance border guard work satisfaction and that increased technologies have a potential to enhance effectivity and increase capacity of border control points. However, the technological and process approaches and new innovations often need standardisation in order to succeed with performance and user acceptance requirements. Furthermore, a standardized technology can help reduce the operating costs as it will last longer and have less maintenance costs.

The standardisation of the key technologies round advanced border checks has been lively during the last years including the standardisation of technologies, IT-structures, analysis and processes. One key point enabling the use of automated services is the standardisation of the e-travel documents mandated to ICAO. The standardization in the field of information technology gathers most of the standards concerning the smarter border technologies. This area is followed by a Joint Technical Committee (JTC1) formed by the International Organisation for Standardization (ISO) and the International Electrotechnical Commission (IEC). The international committee for biometric standardisation is Subcommittee 37 (SC37). The European internal standardisation is carried out by CEN, European committee for Standardisation.



Concerning associations, there is a wide variety of global, EU-level and national associations dealing with security, biometrics and border control. The EAB (European association for biometrics) is an example of an active association for biometrics. It states its itself as a non-profit organisation seeking to advance the proper and beneficial use of biometrics in Europe, taking into account the interests of European citizens, industries, academia and governments.<sup>46</sup>

European Network of Law Enforcement Technology Services (ENLETS) is another example. ENLETS main goal is to operationally strengthen Security Forces (Police) and to promote the use of modern Technology and Development by exchanging information, experience and knowledge on a practical communication level. Thus, creating a large database that consists of technological systems and innovations that are available to all the members of the ENLETS. ENLETS also has a working group for mobile technologies for smart borders.

On security field for example ASIS International is a global organisation supporting security management of different businesses.<sup>47</sup>

### 3.5 Societal stakeholders

The border control process includes many activities, with border checks and identity verification form the part, which calls for a holistic understanding of the border crossing experience. Societal actors should be carefully considered and involved when developing border technologies and socio-technical systems because they directly experience the impact of the border control technology and security systems. The role of the societal stakeholders is to define, for example, what is socially *desirable*, what is (*ethically*) *acceptable*, what is *sustainable* from the border crossing experience from societal perspective.

Societal stakeholders include travellers, research/academia, and the civil society; that is, it may include different categories of societal actors who are impacting or impacted by the growing automation of border control. For example, the research/academia could be focusing on various border control aspects, related to human rights, ethics, innovation, human and organisational factors, etc. Societal stakeholders relate to Responsible Research and Innovation (RRI) as an inclusive approach, which takes into account the values, needs and expectations of the societal actors for the good of the larger society. The importance of Responsible Research and Innovation (RRI) is growing steadily. The future societal challenges will better be tackled if societal actors are fully engaged in the co-construction of innovative solutions, products and services<sup>48</sup>. This implies also the border control area and solution development. The importance of the societal stakeholders has been increasing at the same time as the world has digitalised and more and more data, including personal data, is handled in processes. The increasing amount of technologies at border control is a good example of this development. This development enhances also the research on social, societal and governance aspects.

Societal aspects related to the refugee crisis bring new challenges to the border control since issues of vulnerability and difference are increasingly present in the border crossing context. Border guards need to deal with various societal categories, which may often need special attention and extra efforts, such as asylum seekers, refugees, children, disabled, elderly, victims of trafficking and exploitation, etc. These categories of travellers represent different national cultures, ethnos, religion, appearance, beliefs,

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<sup>46</sup> European Association for Biometrics. Retrieved from [eab.org](http://eab.org)

<sup>47</sup> ASIS International Europe. Retrieved from [www.asisonline.eu](http://www.asisonline.eu)

<sup>48</sup> Responsible Research and Innovation. [https://ec.europa.eu/research/swafs/pdf/pub\\_rri/KI0214595ENC.pdf](https://ec.europa.eu/research/swafs/pdf/pub_rri/KI0214595ENC.pdf)





etc. This relates to the fundamental European values, such as respect for human dignity and human rights, freedom, democracy, equality and the rule of law.

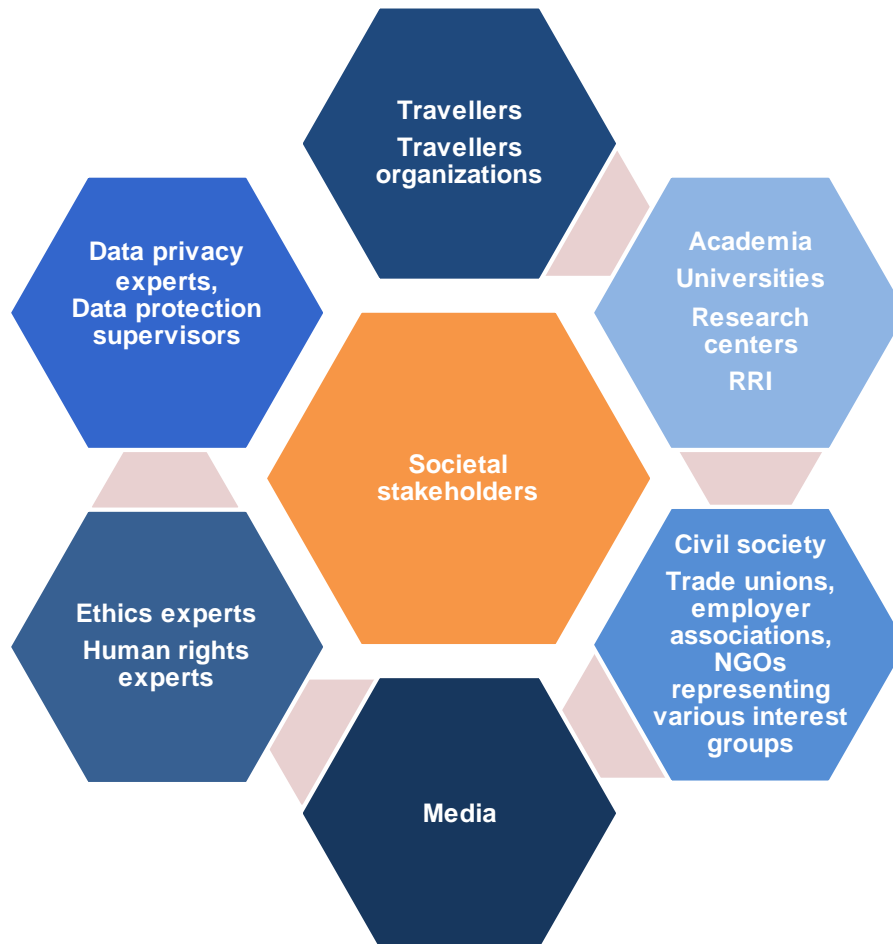


Figure 10. Mapping the societal stakeholders in border control.

## Travellers and traveller organisations

Different traveller groups include e.g. EU nationals, EEA/CH nationals, third country nationals, residence card holders, family members.

### European Passengers' Federation<sup>49</sup>

EPF is an international non-profit association under Belgian law. Each member organisation appoints a delegate who is responsible for the contacts between his/her association and the federation. All delegates are invited on a regular basis to the meetings of the Administrative Council and to the General Meeting.

<sup>49</sup> The voice of public transport users in Europe. Retrieved from <http://www.epf.eu/wp/>

EPF also has working groups on the topics of international long-distance travel and regional cross-border services. There are working groups that meet with Eurostar, Thalys and CER on a regular basis. If needed, ad hoc working groups are formed, such as for the various EU consultations.

### **The European Group on Ethics in Science and New Technologies (EGE)<sup>50</sup>**

The European Group on Ethics in Science and New Technologies (EGE) is an independent advisory body of the President of the European Commission, which provides advice to the Commission regarding ethical aspects of science and new technologies in terms with EU legislation or policies. EGE members are appointed on the basis of their expertise and are chosen from diverse fields to ensure an independent, inter-disciplinary perspective on ethical questions posed by scientific and technological innovation. The EGE's tasks are related to integrating ethics at international level, at inter-institutional level with the European Parliament and the Council and within the Commission itself. To this end, the Commission provides the Secretariat of the EGE tasked with

- provides the General Secretariat of the European Commission's International Dialogue on Bioethics, a platform bringing together the National Ethics Councils from 97 countries (EU-G20 forum and beyond)
- is in charge of the representation and liaison with the international organisations tasked with examining the ethical implications of science and new technologies (UN and its agencies, OECD, Council of Europe)
- chairs and convenes the Inter-service group on Ethics and EU Policies, coordinating Commission activities in the fields of bioethics and ethics of science and new technologies.

### **The European Union Agency for Fundamental Rights (FRA)<sup>51</sup>**

FRA is one of the EU's decentralised agencies, which provides expert advice to the institutions of the EU and the Member States to ensure that the fundamental rights of people living in the EU are protected. Fundamental rights set out minimum standards to ensure that a person is treated with dignity. They include, for example, the right to be free from discrimination on the basis of your age, disability or ethnic background, the right to the protection of personal data, or the right to get access to justice.

Through the collection and analysis of data in the EU, the FRA assists EU institutions and EU Member States in understanding and tackling challenges to safeguard the fundamental rights of everyone in the EU. FRA is working in close partnership with the EU institutions, its Member States and other organisations at the international, European and national levels, to ensure that fundamental rights are respected for everyone living in the EU.

### **Civil society organisations**

Societal stakeholders also include the civil society organisations (CSOs).

The concept of Civil Society Organisations (CSOs) from an EU perspective is defined as<sup>52, 53</sup> embracing a wide range of actors with different roles and mandates. CSOs may include, for example, non-State, not-for-profit entities through which people organise to pursue shared objectives. The EU values CSOs' diversity and thus respects the fundamental values of peace, freedom, equal rights and human dignity.

<sup>50</sup> The European Group on Ethics in Science and New Technologies (EGE). Retrieved from <https://ec.europa.eu/research/ege/index.cfm>

<sup>51</sup> About the FRA. Retrieved from <http://fra.europa.eu/en/about-fra>

<sup>52</sup> COM (2012) 492. The roots of democracy and sustainable development: Europe's engagement with Civil Society in external relations. Retrieved from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0492:FIN:EN:PDF>

<sup>53</sup> Information Guide Civil Society, Stakeholders, Pressure Groups and Lobbying in the European Union. 2013. Retrieved from [http://www.cardiff.ac.uk/insrv/resources/edc/Civil\\_Society.pdf](http://www.cardiff.ac.uk/insrv/resources/edc/Civil_Society.pdf)



According to the European industrial relations dictionary, published by Eurofound<sup>54</sup>, Civil Society is composed by “*organisations and associations that are not part of government but that represent professions, interest groups or sections of society.*” These organisations or associations may include, for example, trade unions, employer associations, environmental lobbies and groups (NGOs) representing women, farmers, people with disabilities. Actors of civil society can for instance include non-governmental organisations (NGOs), professional associations, social partners, universities or media representatives.<sup>55</sup> At societal areas the cooperation is Europe wide, e.g. EUREC - European Network of Research Ethics Committees. EUREC is a network that brings together already existing national Research Ethics Committees (RECs) associations, networks or comparable initiatives on the European level.<sup>56</sup>

The societal stakeholders are mainly interested about the changes and states that have an effect to the citizens and travellers for example when new technology is introduced or new regulation is proposed. Their role is very important in the beginning, when a certain regulatory framework is developed or political decision-making is proceeding. The important aspects include privacy, human rights, data protection as well as usability and user experience

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<sup>54</sup> Civil society. Retrieved from <https://www.eurofound.europa.eu/observatories/eurwork/industrial-relations-dictionary/civil-society>

<sup>55</sup> Civil society organisations. Retrieved from [https://ec.europa.eu/europeaid/civil-society-organisations\\_en](https://ec.europa.eu/europeaid/civil-society-organisations_en)

<sup>56</sup> Welcome to EUREC. Retrieved from <http://www.eurecnet.org/index.html>



## 4. Discussion and conclusions

The objective of this report was to describe the BODEGA project's stakeholder map and network. A broad view on stakeholders was taken to ensure that different perspectives of human factors in border control project are taken into account and integrated. The approach taken to stakeholders in the mapping process highlighted the valuable role of all stakeholders as groups or entities who may affect, be affected or perceive themselves to be affected by the development and automation of border checks and border control processes.

The stakeholder mapping results support the concept of the integrated border management which constitutes of the National and international coordination and cooperation among all the relevant authorities and agencies involved in border security and trade facilitation to establish effective, efficient and coordinated border management, in order to reach the objective of open, but well controlled and secure borders.<sup>57</sup> The BODEGA stakeholder mapping has broadened the perspective by including the industry and societal stakeholders to the modelling.

The recent technological and scientific advances and the quick spreading of novel technological solutions in the border control field bring both benefits and constraints. There are numerous recent developments in the field of border control, related to the political situation, the threat of terrorist attacks and the internationalisation of organised crime, increased traveller regular and irregular traveller flows and factors, external to the EU, which bring pressure to enhance the border checks and to gather more information for passengers. In this respect, there are controversial opinions on the information gathering, especially related to societal stakeholders fears of misuse of personal data or issues related to fundamental rights. From human factors perspective, since border control process is affected by a highly regulated environment, developments cannot be shaped only by technology push: societal stakeholder engagement is very important during political decision making phase and when regulations are developed.

The stakeholder mapping resulted into five broad categories. 1) core operational stakeholders 2) other operational stakeholders; 3) policy stakeholders; 4) technical stakeholders and 5) societal stakeholders.

In this report we take the stance that all stakeholders are needed and important, and a balanced approach is needed for developing relationships with various groups of stakeholders. When saying this, at the same time we acknowledge the operational end users, the border authorities, to be the key practitioner at the border, that are in charge of border security and the functioning of the borders while performing the actual border checks.

The background viewpoint of the stakeholder mapping and stakeholder involvement is that the border control is more effective when the cooperation between stakeholders is performed actively both on official and unofficial modes of operations. When considering the development, the border checks and human factors of the border guard work this may include involvement of stakeholders at different levels of operational organisation, stakeholders operating at the checkpoint and national or international stakeholder from different backgrounds. When involving the stakeholders actively into the development and design processes the organisation is more equipped for the fast changes on the current operating environment.

The successful border management takes the benefits of the stakeholder network. The development towards smarter borders involve more and more implemented technology and information to be used. The cooperation between stakeholders to enhance border processes and traveller experiences especially at airports have brought new concept to purchase and own the equipment and border control

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<sup>57</sup> What is Integrated Border Management? <http://www.eap-ibm-capacitybuilding.eu/en/about/ibm>

systems. In addition, the mapping of stakeholders also revealed that both national and EU level views are noteworthy when considering many stakeholder categories.

The stakeholder map and network is aiming at providing a broad overview of organisations and projects, which might be of interest for the BODEGA consortium. There is a wide variety of end users and stakeholders identified, most of which should be impacted in a way or another by the automation of border control. As such, they are the relevant target audiences for the BODEGA project. This is useful also in the framework of the BODEGA dissemination strategy. The description of the end users was instrumental in identifying the target organisations to be invited end users' workshops. These workshops gather, in addition to the consortium members, stakeholders from different positions: end users from border control organisations, the other operational and policy level professionals as well as societal experts and security professionals' representatives.

Stakeholder commitment evolves during the project life-cycle, and open dialogue will provide a good opportunity for developing a shared understanding of the key challenges and opportunities when human factors in border control are considered. The active stakeholder involvement will support BODEGA in developing the future border management and border checks for regular travelers and trade while enhancing security and efficiency, and identify and prevent irregularities and cross-border crime.

