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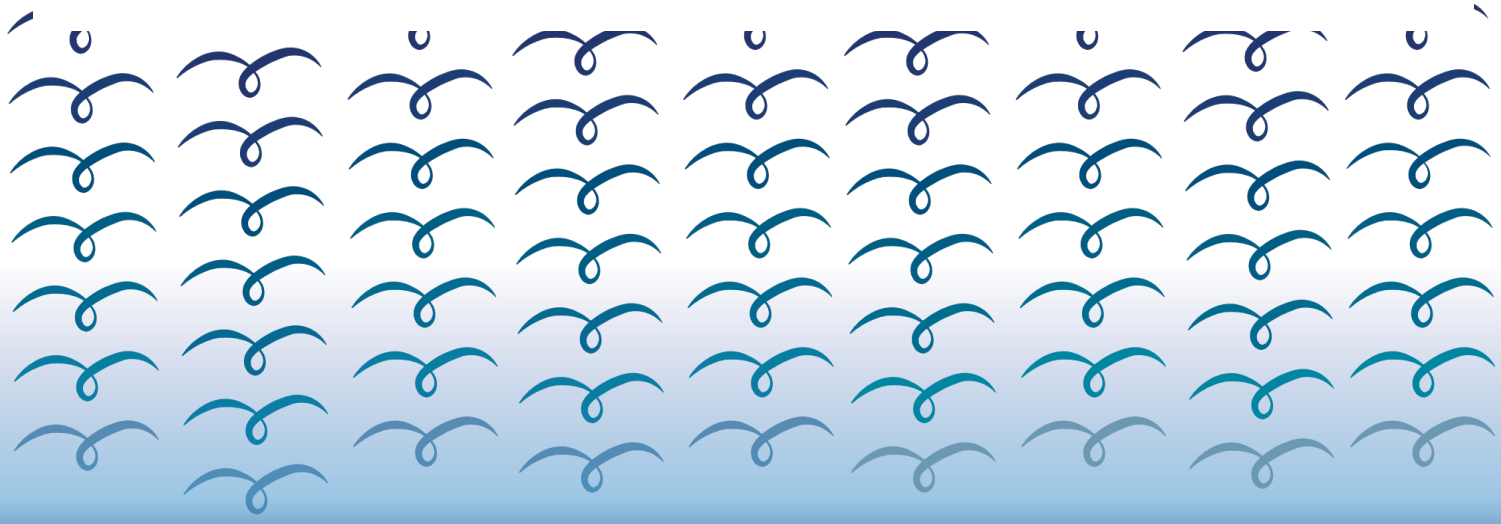

The Political Economy of Entry Governance

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2020

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Acronyms

ASD	Association of AeroSpace and Defence Associations of Europe
BMS	Biometric Matching System
CFSP	Common Foreign and Security Policy
CISE	Common Information Sharing Environment
Copernicus	European Commission's Earth Observation & Monitoring Programme
CORDIS	Community research and Development Information Service
CPIP	Common Pre-Frontier Intelligence Picture
DG	Enterprise Directorate-General Enterprise and Industry
EADS	European Aeronautic Defence and Space Company
EASO	European Asylum Support Office
ECRE	European Council on Refugees and Exiles
EDA	European Defence Agency
EDPS	European Data Protection Supervisor
EES	Entry/Exit System
EiB	European Investment Bank
EiF	European Investment Fund
EMSA	European Maritime Safety Agency
EOS	European Organization of Security
ESA	European Space Agency
ESRAB	European Security Research and Advisory Board.
ESRP	European Security Research Program
ESS	European Security Strategy
ETP	European Technology Platforms
EU	European Union
EU-Lisa	European Union Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice

EURODAC	European Dactyloscopy
EUROSUR	European Border Surveillance System
FP6	Sixth Framework Programme for Research and Development
FP7	Seventh Framework Programme for Research and Technological Development
FRA	European Union Agency for Fundamental Rights (FRA)
FRONTEX	European Border and Coast Guard Agency
GMES	Global Monitoring for Environment and Security (GMES)
GoP	Group of Personalities
GZBV	Gesellshcaft zur Beteiligungsverwaltung
Horizon 2020	Eight Framework Programme for Research and Development
ICT	Information Communication Technologies
IMO	International Maritime Organization
JHA	Justice and Home Affairs
MEP	Member of European Parliament
NGO	Non-Governmental Organization
PASR	Preparatory Action on the enhancement of the European industrial potential in the field of Security Research
PSMCs	Private Security and Military Companies
R&D	Research and Development
RTPs	Registered Traveller Programmes
PASAG	Protection and Security Advisory Group
SecAG	Advisory Group on Security
SAG	Advisory Group on Space
SDA	Security & Defence Agenda
SIS	Schengen Information System
SME	Small and Medium Sized Enterprises
SOGEPA	Societé de Gestion de Participations Aéronautiques
SSI	Sky and Space Intergroup
TCN	Third Country National

TFEU	Treaty on the Functioning of the European Union
UNHCR	United Nations High Commissioner for Refugees
VIS	Visa Information System

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1. Introduction

The entry of migrants has been the focus of public, political and technological discussions and initiatives within the EU. Underpinning entry to the EU level are practices of enforcement and infrastructures of border control. Some are physical, like border guards, others, such as biometric databases and maritime surveillance systems are digital and technological. At the level of public and political discourse, border technologies and new security systems are often portrayed as a panacea to deal with irregular border crossing and political discussions about immigration in European societies. However, the assumption that border control systems constitute neutral technological fixes disregards not just that they constitute interventions against inherently political problems, but also that the systems themselves are produced through political and economic processes. Consequently, this deliverable is founded on the outlook that any careful analysis of EU entry governance needs to take into account the political economy of border control practices, and how they can be shaped by concerns other than about migration, and by other actors than the public bodies and institutions of the EU or its Member States.

This report details how private and commercial actors also yield a crucial influence on the development, adoption and implementation of EU measures related to immigration. It is based on the assumption that in order to provide the general public and policy-makers with tools to pursue a sustainable and forward-looking policy on migration, the supply-chain of border technologies, functions and infrastructures must be acknowledged. The same is the case for the way in which it features in the processes of multileveled EU border governance, and how commercial actors are positioned and positioning themselves on a profitable market for EU border control that is worth billions of euro. This perspective on border control challenges standard assumptions which privilege the territorial unit of the nation-state, or the stated self-image of the EU as a supranational area of freedom, security and justice.

In order to fulfill this goal, this deliverable providesa mapping of the political economy of EU entry governance, realized through a database developed for the purpose, and analysis of the data generated by it. This enables the identification and discussion of some of the key actors, processes and networks of this political economy at the level of the EU through key illustrations provided by two central policy drives which have evolved in European border control during the last decades, namely: Interoperability and space surveillance for border control purposes. While a focus on these two themes is not exhaustive, it is argued to be able to demonstrate dynamics, silences and criticism, which needs to be addressed in EU entry governance.

2. Methodology

The intention of this deliverable has been to trace public-private interaction in the political economy of EU border control by collecting and tracing contracts from EU agencies and funding programme. To this end two different databases were set up. The first encompasses contracts for border control between, respectively, Frontex, EU-Lisa and Horizon 2020. This was developed in collaboration with the Danish investigative media Danwatch, using Excel and in extension of previous databases on private actor involvement in EU border control. The starting point for this data-set was fixed at 2012. Since then, and in mutual agreement with Danwatch, ADMIGOV researchers have expanded on the material for the database, due to diverging focus areas, namely EU entry governance (ADMIGOV) and Danish involvement in EU border control (Danwatch). This meant that the starting date was pushed back to 2007, in order to include contracts from the FP7 and the Copernicus Programme, which were then added to the database.

The second database, also in Excel, includes information about meetings between representatives from, respectively, the European Commission and the dominant and reoccurring companies on the market for EU border control. This was done in order to examine the engagement of border industrial actors with EU policy-makers, and the information was collected from the EU Transparency Register. included data on who the companies met with, when they met, where and, when possible to determine this, what the subject of the meeting was. Accordingly, information was also stored on the portfolios of the Commission representatives. Based on this information, the deliverable constructs several timelines in order to visualize the number of registered meetings of companies, sectors and for specific Commission portfolios.

In order to contextualize the information about border control contracts, we have since then collected different types of open source data from publicly available policy documents, policy reports, technical studies and cost assessments. These have been identified in particular through the EU-portal Cordis, which has been used to generate all objective and project descriptions quoted about consortiums under FP7 and Horizon 2020. Moreover, webpages of relevant agencies and programmes, such as Frontex, EU-Lisa, Copernicus, EUROSUR, FP7 and Horizon 2020 have also been used. Other sources of data on, respectively, private interests in EU border control and on lobbyism in EU institutions included reports from Statewatch, Stop Wapenhandel, and the Transnational Institute, as well as lobbyfacts.eu, Corporate Europe Observatory and Transparency International's Integrity Watch.

This helped determining the contexts, actors and developments leading to contracts for border control, as well as data on companies' profiles, turnover, lobby budget and in-house lobbyists based in close proximity to EU institutions like the European Commission and the European Parliament. Together, this allows the deliverable to analyse in some detail how companies' impact the policy-making processes of EU entry governance and how this connects to the infrastructural and technological development of border control.

2.1 Locating contracts and constructing the database

The empirical data about border control contracts was collected via official documents from the websites of the responsible EU agencies. Thus, contracts have been gathered from the Frontex website for the period 2012-2018, and the categories of: 1) aggregated volumes contracted by Frontex under framework contracts, 2) low- and middle value contracts, 3) exceptional negotiated procedures, and 4) external experts contracts. From the EU-Lisa website, which publishes annually awarded contracts, it has been collected for the period between 2013-2018. This includes contracts categorized as: 1) under EU-Lisa's framework contracts and 2) under inter-instutional framework contracts; from the European Space Agency (ESA) and its annual lists of contracts for the Copernicus Programme; and from the Community research and Development Information Service (CORDIS) database, the European Commission's primary source of results from the projects funded under EU's framework programmes for research and innovation, such as Framework Programme 7 (FP7) from 2007-2013, and for Horizon 2020 between 2015-2023.

The contracts were selected if they directly related to the development of border control or border management mechanisms and instruments, that is, concerned the monitoring or control of human mobility across EU's borders. The database was then built around the following categories:

- Contract reference number
- Agency
- Year
- Contract title/subject
- Whether it is relevant for border control/surveillance
- The contractors
- Whether it is part of a consortium
- Number of companies involved in the consortium
- The individual company names
- The name of the parent company
- The headquarter country
- The industry sector
- The total value of the contract
- The estimated value per company

This categorization of the data facilitated several kinds of analysis. First, it made possible the quantification of the data in terms of the numbers and volume of contracts awarded, the identification of receipient companies, the relation between subsidiary and parent companies, company headquarters, and collaborating public bodies. Second, it made possible the tracing of specific companies being repeatedly awarded contracts, and thus to ascertain their relative market positions within the market for EU border control. Third, the categories also aided in the construction of a series of tables, figures and visualizations illustrating the complex political economy of this market, its actors and dynamics.

FP7 and Horizon 2020 represent important nexus points between actors on the market for EU border control and EU and Member State instutions. Through projects under these

programmes, consortiums comprised by members from several national industries and sectors are awarded contracts, partly or fully subsidized by the EU. Alongside national or EU institutions, these sectors include research organisations, think tanks, consultancies, higher or secondary education establishments, ICT companies, security companies, biometrics and defence and aerospace companies to name a few. The information about FP7 and Horizon 2020 projects in the database allows for the creation of visualizations of project consortiums, along the lines of call, topic, funds, coordinators and sectors, and thus a more fine-granied approximation of the many different private actors involved in the development of EU border control.

At the same time, information about these funding instruments is also crucial for tracing the confluence characterizing the relation between private and public interests in border control development. More specifically, and alongside other sources, information was also added to the database about FP7 and Horizon 2020 work programmes, and more specifically, about topics for calls. This was done in order to be able to trace the journey of the EU policy drives towards interoperability and space-based surveillance from policy, over research and development, and to large-scale framework contracts awarded by Frontex, EU-Lisa and the European Space Agency (ESA).

2.2 Delimitations and motivation

The selection of EU agency sources and the specific timespans for contracts outlined above implies the deselection of other possible sources and inquiries. Thus, the deliverable does not analyse funding instruments, like the EU Trust Fund for Africa, Home Affairs Fund, including the External Borders Fund, the SOLID programme, the DCI Programme, the Aeneas Programme and the B7-667 budget line. Others also excluded are the Instrument for Pre-Accession (IPA), the European Neighbourhood Instrument (ENI) and the European Development Fund (EDF). While some of these have been analysed elsewhere (cf. den Hertog, 2016), they all represent the recurring challenge of delimitation when studying EU bureaucracies.

The chosen deselection creates certain limitations for the analysis: First, the choice of temporal period excludes the deliverable from analysing the rupture and resumption of the political economy of EU border control during the so-called Arab Spring, as well as developments preceding it. Second, it also excludes it from engaging with more general concerns about the political economy of externalization of border control to territories or actors beyond Union territory (see f.i. Lemberg-Pedersen, 2013; Moreno-Lax and Lemberg-Pedersen, 2019). Third, despite interesting perspectives, since excluding the External Borders Fund, it also does not try to map out the flows of money from EU instruments and back into national economies.

Another limitation with the data stems from the use of the Transparency Register. Although the new college of the Juncker Commissioners in 2014 announced plans to improve the Register, which was set up in 2008, in order to “seek to ensure an appropriate balance and representativeness in the stakeholders they meet” (IntegrityWatch, 2019), it still suffers from several flaws. Since it is voluntary for companies and lobbying groups to register their activities, many do not, whilst others underreport them and the associated expenses (Alter-EU, 2013). Moreover, no equivalent transparency tool exists for examining the interaction of the Council or

Parliament with private companies, interest organizations or communication and consultancy firms. As of 2019, the Commission, the European Parliament and Council were still discussing and negotiating the adoption of a mandatory transparency register for all three institutions (Integrity Watch, 2019).

Each of these limitations represent areas worth further investigation but the selection and use of data was nonetheless maintained for several reasons. First and foremost, an analysis of all the public-private interactions taking place across all of these EU institutions, bodies and funding streams was not feasible given the economic and temporal limitations of the deliverable. Second, despite opaque areas and much information which remains inaccessible, the political economy of EU border control is still more accessible than that of the vast majority of Member State authorities dealing with the matter. Early on in the research process, it was therefore decided to maintain the focus on lobbyism and multileveled governance within EU institutions, even if this meant that the level of national industrial policies remained underdeveloped. Third, the goal of illustrating the effect of multileveled governance on EU policy-making by tracing the two policy drives of interoperability and space-based surveillance indicated the necessity of focusing more particularly on how these travelled through certain expert groups, agencies and programmes. Consequently, while the deliverable does not represent an exhaustive mapping of the political economy of EU entry governance, it does offer an illustrative and case-based analysis. Its focused approach contributes new knowledge and facilitates attempts to understand the actors, networks and processes of multileveled EU entry governance.

3. The Market for EU Border Control

Various actors are involved in the multileveled governance of EU borders, and thus of peoples' entry. This report focuses on for-profit commercial actors and interest organizations from the European sectors of biometrics, security, defence and aerospace, and their involvement in making a multifaceted and expanding market for EU border control. Either directly, or through interest and lobby organizations, consultancy firms and communications bureaus, these actors seek to gain access and leverage on EU policy-makers in order to ensure profit, growth and the strengthening of both their own positions on that market, as well as the conditions for the market itself (cf. Lemberg-Pedersen, 2013; Kumar, 2017; Baird, 2018). That the potential profit is huge, is illustrated by estimates that the global market for biometric systems will be worth €65,3 billion by 2024 (Market and Markets, 2019).

In general, these commercial non-state actors can influence EU policy through strategies of public-private partnerships, lobbyism, private rule- and standard-setting and of framing their input as expert knowledge (Ibid.; Baird 2018). These strategies are pursued in different ways. Lobbyists may target the European Commission, responsible for the formulation of new legislation, via consultative processes and expert groups officially formed by the Commission, often relating to specific issues or challenges (cf. Coen and Richardson, 2009; Bouwen, 2004).

3.1 Public funds to a multisectoral market for EU border control

Conventionally, within the realm of migration politics, the concept of a market for border control has been used to describe both markets for enforcement and markets for border infrastructures. The current report focuses especially on the latter market, but it is worth noting that even within this perspective, it is in fact extremely multifaceted, and operates across a wide range of sectors. While the current report follows existing work in focusing on the sectors of aerospace, defence, biometrics and security, the information collected on our database illustrate a plethora of small and medium-sized businesses (SMEs) who also reap smaller contracts concerning IT, housing, interpretation, health, cleaning, layout/design, software, conference and meetings, consultancies, maritime or aviation services, office supplies or transportation.

In what follows, Tables 1-4 are used to generate a snapshot of current procurement practices among the key agencies in EU border control between 2012-2018. They also illustrate that even if a certain diversity is observable among the largest contracts granted by agencies like Frontex, EU-Lisa, Copernicus, and under Horizon 2020, it is nervetheless a small number of capital-intensive sectors like ICT, biometrics, aerospace and defence, with aviation services as a possible exception, which are consistently awarded the biggest contractors by EU agencies.

Frontex was founded in 2004 through Regulation 2007/2004 which stated that "Community policy in the field of the EU external borders aims at an integrated management ensuring a uniform and high level of control and surveillance, which is a necessary corollary to the free movement of persons within the European Union and a fundamental component of an area

of freedom, security and justice (European Council, 2004, p.1). Its first major operation was the Hera operations, which took place in the territorial waters of Senegal, Mauritania and Cap Verde in 2006-7.

The Frontex R&D Unit was set up to facilitate information exchange on the surveillance of the EU's external borders between Member States' border guard authorities, research institutes, universities and industry. To this end, the Unit participates in numerous fairs, conferences, workshops and luncheons. Notably, it has participated in several EU expert forums alongside industry representatives. On behalf of the Agency, the Unit has also organized several border technology workshops, such as drones or biometrics, providing "industry with the chance to demonstrate the capabilities" of their products, as one such workshop in Bulgaria was presented (Frontex, 2010). Illustrating the challenges with such close relations to industry, Frontex was found to give payments varying from €10.000 to €198.000, to European security and defence companies exhibiting their wares during such events (Fotiadis and Ciobanu, 2013).

In July 2011, the mandate of Frontex was amended, blurring the boundaries between the Agency and industrial interests interests further. While Frontex's previous mandate described the Agency's function as one of "following up" on research into border control, the new mandate stated that it should "proactively monitor and contribute to the developments in research relevant for the control and surveillance of the external borders" (EU Parliament, 2011a). Moreover, Frontex was also allowed to build a permanent pool of equipment itself through purchase or lease, rather than loaning equipment from Member States as before. This positioned the agency in the double role of not only monitoring and fostering industry, but also becoming its direct end-user. This legislative drive was continued with Regulation 2016/1624 stating that Frontex should "participate in the development and management of research and innovation activities relevant for the control and surveillance of the external borders, including the use of advanced surveillance technology, and develop pilot projects" to this effect (EU Parliament, 2016a). Frontex also plays a role in developing and deciding on EU research programmes, funding streams for them, and strategic priorities for EU border control.

Agency	Year	Contract title	Contractor	Sector	Value of contract (€)
Frontex	2018	Aerial Surveillance	Diamond-Executive Aviation	Surveillance	4.793.875,00
Frontex	2017	Aerial Surveillance	Diamond-Executive Aviation	Surveillance	3.929.247,00
Frontex	2017	Organization of Frontex events outside Poland	Adria Congrex srl	Events	3.102.242,00
Frontex	2017	Provision of travel desk services (transportation and accommodation bookings) for Frontex	eTravel SA	Events	2.755.265,59
Frontex	2016	Provision of services and delivery of goods for the maintainance and development of the EUROSUR network	GMV Aerospace and Defence S.A.U.	Surveillance	2.597.863,24
Frontex	2017	Aerial Surveillance	EASP Air BV	Surveillance	2.145.525,00
Frontex	2016	Software development services	Asseco Poland	ICT	2.082.275,50
Frontex	2015	Maintenance and development of the Eurosur Network	GMV Aerospace and Defence S.A.U	Surveillance	2.042.403,81
Frontex	2016	Provision of travel desk services (transportation and accommodation bookings) for Frontex	eTravel SA	Events	2.034.831,27
Frontex	2013	Information Systems	Asseco Poland S.A	ICT	1.903.303,99
Frontex	2018	Provision of ICT products and services for Eurosur	GMV Aerospace and Defence S.A.U.	ICT	1.887.738,07
Frontex	2018	Software development services - FWC with reopening of competition	Asseco Poland	ICT	1.819.391,50
Frontex	2013	Maintenance and development of the Eurosur Network	GMV Aerospace and Defence S.A.U	Surveillance	1.756.895,98
Frontex	2017	Aerial Surveillance	CAE Aviation s.a.r.l.	Surveillance	1.746.000,00
Frontex	2017	Provision of services and delivery of goods for the maintainance and development of the EUROSUR network	GMV Aerospace and Defence S.A.U	Surveillance	1.744.950,37

Table 1 - Top recipients of contracts for border control awarded by Frontex, 2012-2018.

An overview of the 15 largest Frontex contracts between 2012-2018 (Table 1) illustrates how the air surveillance, events and ICT sectors dominate procurement. This reflects the Agency's core activities, namely land and sea surveillance, and that these have been upscaled in 2017 and 2018 via the companies Diamon-Executive Aviation EASP Air BV and CAE Aviation. Another big contract was the organization of Frontex events, workshops and conferences outside Poland during 2017 (awarded to Adria Congrex) and the maintenance and development of the EUROSUR network in 2013-2017 (awarded to GMV Aerospace and Defence). While Diamond-Executive Aviation have won the two largest contracts, worth €8.723.122, GMV Aerospace and Defence have won contracts worth around €10 million.

EU-Lisa (the European Union Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice) was established in 2011 in Tallinn, and has datacentres in Strasbourg, via Regulation 1077/2011. It officially opened operations in December 2012. The Agency's relations to industrial actors was placed with the EU-Lisa Procurement Team, which frames its task as an "important part of the single market", and as removing barriers and opening up markets (EULisa, 2019a). EU-Lisa manages Eurodac, the second generation Schengen Information System (SIS II) and the Visa Information System (VIS)(EU-Lisa, 2019b). It has also been scheduling the roll-out of the Entry-Exit System (EES) in 2020.

EU-Lisa cooperates in particular with agencies from the sphere of justice and home affairs (JHA); CEPOL, EASO, EIGE, EMCDA; Eurojust, Europol, FRA and Frontex. Based in Tallinn, Estonia, EU-Lisa cooperates with the Estonian Academy of Security Sciences following an agreement signed in 2015 (EU-Lisa, 2019c). It receives funding through a mixture of EU grants and direct

contributions from member states. In 2019, it had a total revenue of €204m (EU-Lisa, 2019d) compared to just €34m in 2013 (EU-Lisa 2019e).

Agency	Year	Contract title	Contractor	Sector	Value of contract (€)
eu-LISA	2018	Framework Contract for the Maintenance in Working Order Visa Information System and BMS	Bridge³ Consortium: Accenture, Atos og Safran	Biometrics	54.783.467,78
eu-LISA	2017	Framework Contract for the Maintenance in Working Order Visa Information System and BMS	Bridge³ Consortium: Accenture, Atos og Safran	Biometrics	51.912.634,95
eu-LISA	2014	Framework Contract for the Maintenance in Working Order of the Visa Information System	Bridge³ Consortium: Accenture NV/SA (leader), Morpho Limited Company (member) and Hewlett-Packard Belgium BVBA/SPRL (member)	Biometrics	27.568.971,18
eu-LISA	2014	The new second generation Schengen Information System (SIS II) MWO	Consortium: ATOS Belgium SA/NV (leader), Accenture NV/SA (member), and Hewlett Packard Belgium BVBA/SPRL (member)	Biometrics	24.999.750,76
eu-LISA	2015	Framework Contract for the Maintenance in Working Order of the Visa Information System	Bridge³ Consortium: Accenture NV/SA (leader), Morpho Limited Company (member) and Hewlett-Packard Belgium BVBA/SPRL (member)	Biometrics	23.627.826,23

Table 2 - Top recipients of contracts awarded by EU-Lisa, 2013-2018.

Observing the five largest contracts awarded by EU-Lisa after 2012 (Table 2), the fact that all of them have been awarded to the same five companies, namely Atos, Safran, Accenture, Morpho (subsidiary to Safran) and HP, stands out. All are companies operating on the markets of ICT and biometrics. It is furthermore interesting to notice, that the members of the Bridge3 consortium responsible for the VIS database changed after 2015, from consisting of Accenture, Morpho and HP to consisting of Accenture, Atos and Safran. In reality, since Morpho is a subsidiary of Safran, the big difference is the replacement of HP with Atos.

Horizon 2020 is the biggest EU R&D Innovation programme ever with nearly €80bn of funding available between 2014-2020 (European Commission, 2020a). It was conceived in 2011 in line with a commitment to increase EU spending on R&D to 3% by 2020 (European Commission, 2011e). The project has been overseen by Carlos Moedas, EUC for Research, Science and Innovation (European Commission, 2018a). It received over 115.000 proposals in the first 3 years, of which about 1 in 8 were successful (Ibid.). 60% of the successful proposals came from the EU heartland of the UK, Germany, France, Spain and Italy. Of the grants awarded beyond Europe's borders, by far the most went to the USA – almost 10% of the total, with the next largest numbers going to China, Canada, Australia, South Africa, Brasil and Japan (Ibid.). Applications from entities in Belgium, France, the Netherlands, Luxembourg and Austria were the most successful, with more than one out of six applications being successful, while applications from entities in Bulgaria, Slovenia, Hungary, Croatia and Latvia were less successful; Bulgarian proposals were successful less than one time in ten (Ibid.). It transpires then, that the funding has clustered in locations traditionally associated with economic power in Europe. The new instrument Horizon Europe is projected to start in 2021 (European Parliament 2019a).

Agency	Year	Contract title	Contractor	Sector	Value of contract (€)
H2020	2015-2018	C-BORD - effective Container inspection at BORDer control points	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	Research Organisations	3.610.930,00
H2020	2016-2019	RANGER: RAdars for loNG distance maritime surveillancE and SaR opeRations	DIGINEXT	ICT	1.973.208,75
H2020	2018-2022	Foldout - Through-foliage detection, including in the outermost regions of the EU	AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH	Research Organisations	1.698.580,00
H2020	2015-2018	C-BORD - effective Container inspection at BORDer control points	SMITHS HEIMANN SAS	Security	1.419.638,75
H2020	2016-2019	RANGER: RAdars for loNG distance maritime surveillancE and SaR opeRations	LEONARDO - SOCIETA PER AZIONI	Defence, aerospace and biometrics	1.346.750,00
H2020	2019-2022	D4FLY - Detecting Document frauD and iDentity on the fly	VERIDOS GMBH	Defence, aerospace and biometrics	1.330.950,00
H2020	2016-2018	SafeShore - System for detection of Threat Agents in Maritime Border Environment	DR FRUCHT SYSTEMS LTD	Defence, aerospace and biometrics	1.129.773,58
H2020	2016-2019	PROTECT - Pervasive and UseR Focused BiomeTrics BordEr ProjeCT	THE UNIVERSITY OF READING	Higher or Secondary Education Establishments	1.082.707,50
H2020	2015-2018	C-BORD - effective Container inspection at BORDer control points	UNIVERSITA DEGLI STUDI DI PADOVA	Higher or Secondary Education Establishments	1.035.225,00
H2020	2017-2020	MARISA - Maritime Integrated Surveillance Awareness	LEONARDO - SOCIETA PER AZIONI	Defence, aerospace and biometrics	1.031.843,75

Table 3 - Top recipients of border control projects awarded by H2020, 2015-2018

Table 3 visualizes the 10 largest contracts awarded by the EU-funded Horizon 2020 to private companies. These companies represent the ICT, security and defence, aerospace and biometrics sectors. Leonardo and Veridos GMBH are the two companies that have received the largest contracts, with the total value of respectively €2.378.593,75 and €2.327.825,00. They both represent the sector of defence, aerospace and biometrics.

Agency	Year	Contract title	Contractor	Sector	Value of contract (€)
Copernicus	2015	Sentinel 3 Satellites C/D Unit Construction	Thales Alenia Space France	Defence, aerospace and biometrics	206.494.364,00
Copernicus	2015	Sentinel 1 Satellites C/D Unit Construction	Thales Alenia Space Italia	Defence, aerospace and biometrics	166.834.268,00
Copernicus	2015	Sentinel 2 Satellites C/D Unit Construction	Astrium GMBH - Satellites	Defence, aerospace and biometrics	101.702.188,00
Copernicus	2015	Sentinel 5 Satellites - Recurrent models B + C	Astrium GMBH - Satellites	Defence, aerospace and biometrics	81.261.548,00
Copernicus	2015	Sentinel 1 Satellites C/D Unit Construction	Astrium GMBH - Satellites	Defence, aerospace and biometrics	76.393.104,00
Copernicus	2015	Data Relay Services for Copernicus Sentinels (EDRS)	Astrium GMBH - Satellites	Defence, aerospace and biometrics	70.492.472,00
Copernicus	2015	Launch Service Sentinel 1B	Ariane Space	Defence, aerospace and biometrics	70.356.152,05
Copernicus	2015	Sentinel 2 Satellites C/D Unit Construction	Airbus Space and Defence	Defence, aerospace and biometrics	66.442.394,00
Copernicus	2016	Sentinel 6B Satellite Instrument Construction	Airbus Space and Defence	Defence, aerospace and biometrics	63.597.986,00
Copernicus	2015	Sentinel 1 Payload Ground Data Segment (PGDS), system operations, maintenance and evolutions	Airbus Space and Defence	Defence, aerospace and biometrics	49.250.234,00

Table 4 - Top recipients of contracts awarded by Copernicus, between 2014-2018

Table 4 visualizes the 10 largest contracts awarded by Copernicus between 2014-2018, though apart from one in 2016, all those shown here are from 2015. All the contracts are awarded to companies in the defence, aerospace and biometrics sector. Thales won the two largest contracts worth over €370m combined, though the four next largest – all going to Astrium – have a similar combined value. Astrium and Ariane are both companies within the Airbus umbrella; taken together, Airbus' total revenue from Copernicus contracts approached €700m.

The processes through which this multifaceted market has evolved have included the blurring of boundaries between public interests and institutions, and the profit-driven activities of the commercial actors listed above. Of particular interest in this regard is the way in which EU research funding has been used to underpin, diversify and grow the border control market that is restructuring the material conditions for EU entry governance.

3.2 Frameworks and horizons for a multisectoral border market

The FP7 continued the trend of subsidizing security and defence projects on surveillance, biometrics and maritime and land border technology initiated under the PASR. Of the European companies, Thales was the biggest beneficiary of FP7 project funds, participating in 97 projects totalling €253,8 million, Airbus and several of its subsidiaries participated in 74 projects worth €37,6 million, while Telespazio, the joint venture between Thales and Finmeccanica, harvested €6,1 million through 8 projects (Kumar, 2017; European Commission, 2011g). After 2013, this trend was continued and indeed expanded when the seven-year €1,7 billion financing of the ESRP was continued as a component of the Horizon 2020 framework research programme.

Both FP7 and Horizon 2020 subsidized a variety of projects concerned with the research and development of EU border infrastructure. Figures 1-5 illustrate the consortiums EFFISEC and PERSEUS (FP7), and ARESIBO, PROTECT, BODEGA (Horizon 2020); they also illustrate that this research and development happens in close collaboration between security and defence companies, research organizations, consultancy firms and universities. For instance, at times academic institutions are coordinating such border security projects, like the University of Reading under the PROTECT consortium (Figure 4), while at other times, they are participants being coordinated by security and defence companies, like Airbus, under the ARESIBO consortium (Figure 3).

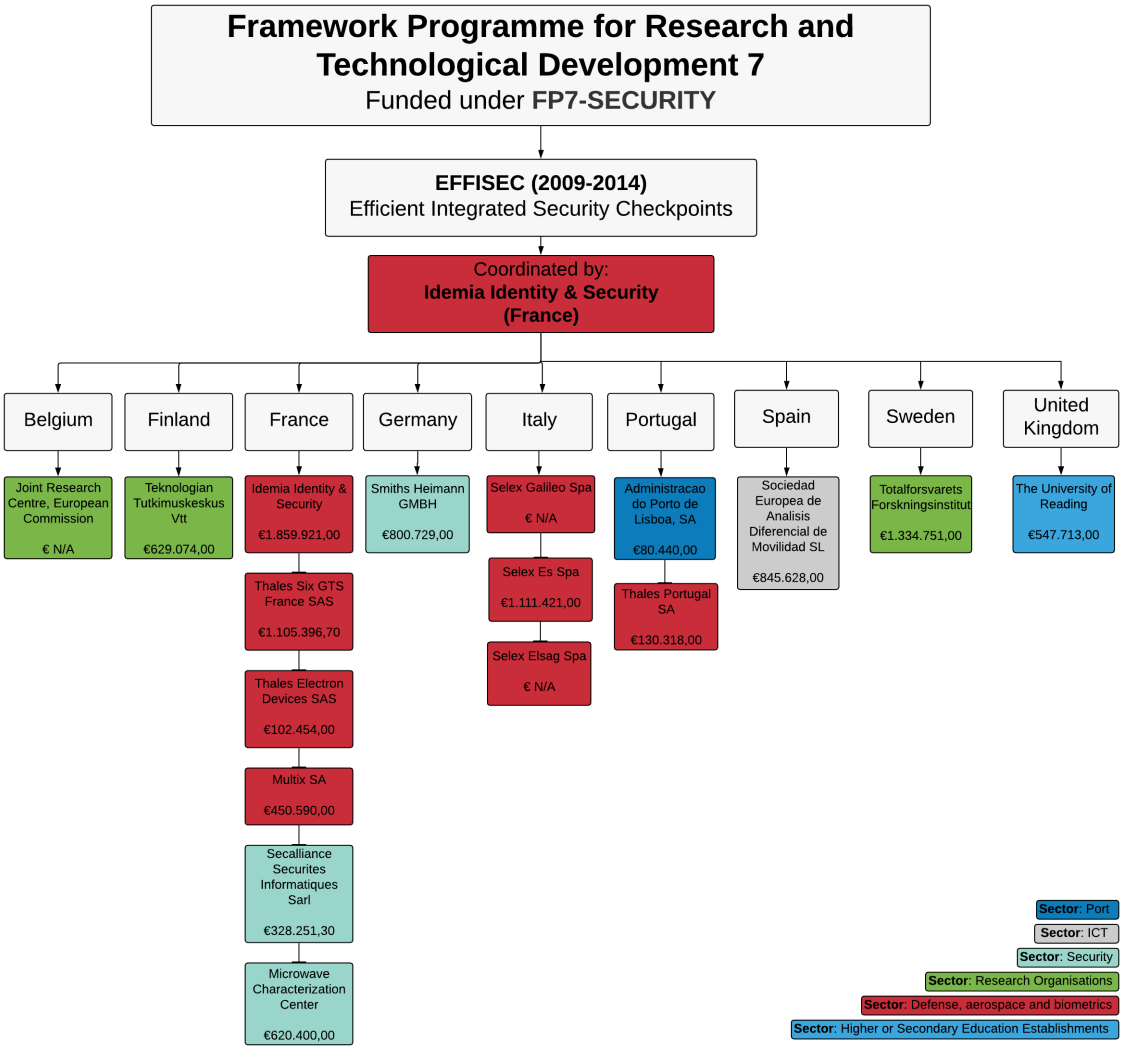


Figure 1 - The EFFISEC consortium under FP7, divided into Member States, sectors, companies and contracts

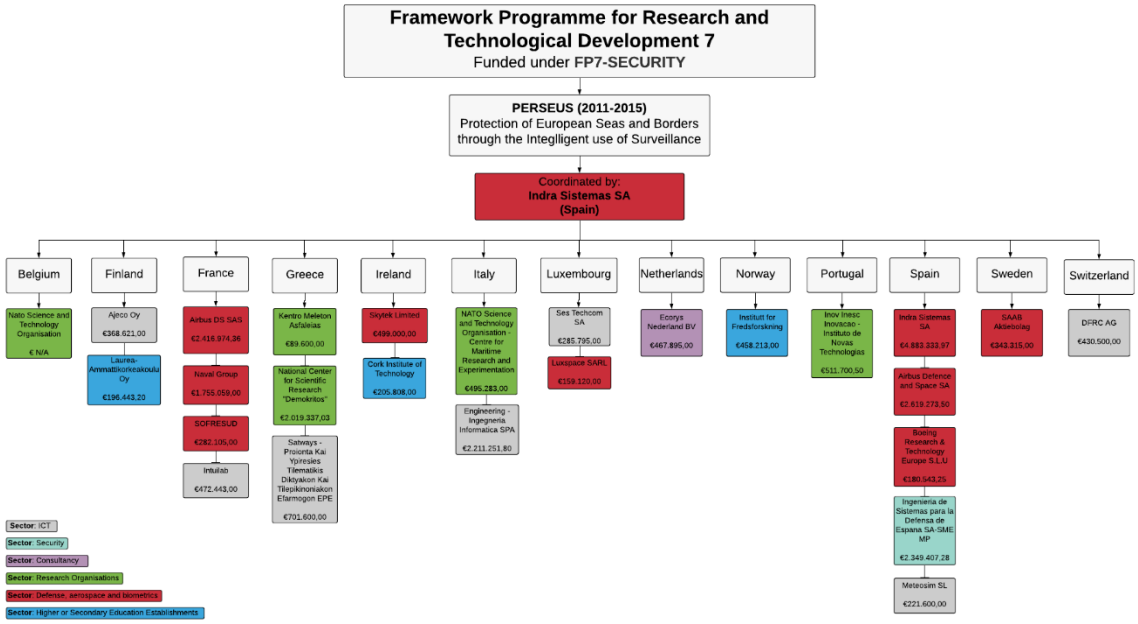


Figure 2 - The PERSEUS consortium under FP7, divided into Member States, sectors, companies and contracts

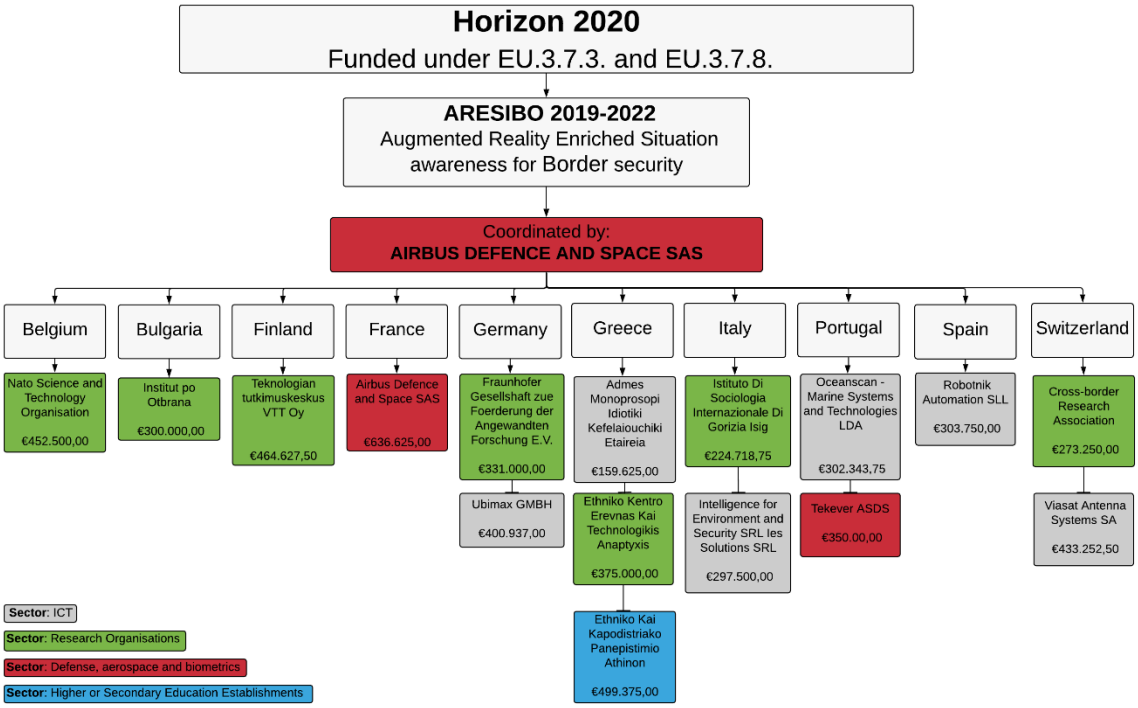


Figure 3 - The ARESIBO consortium under Horizon 2020, divided into Member States, sectors, companies and contracts

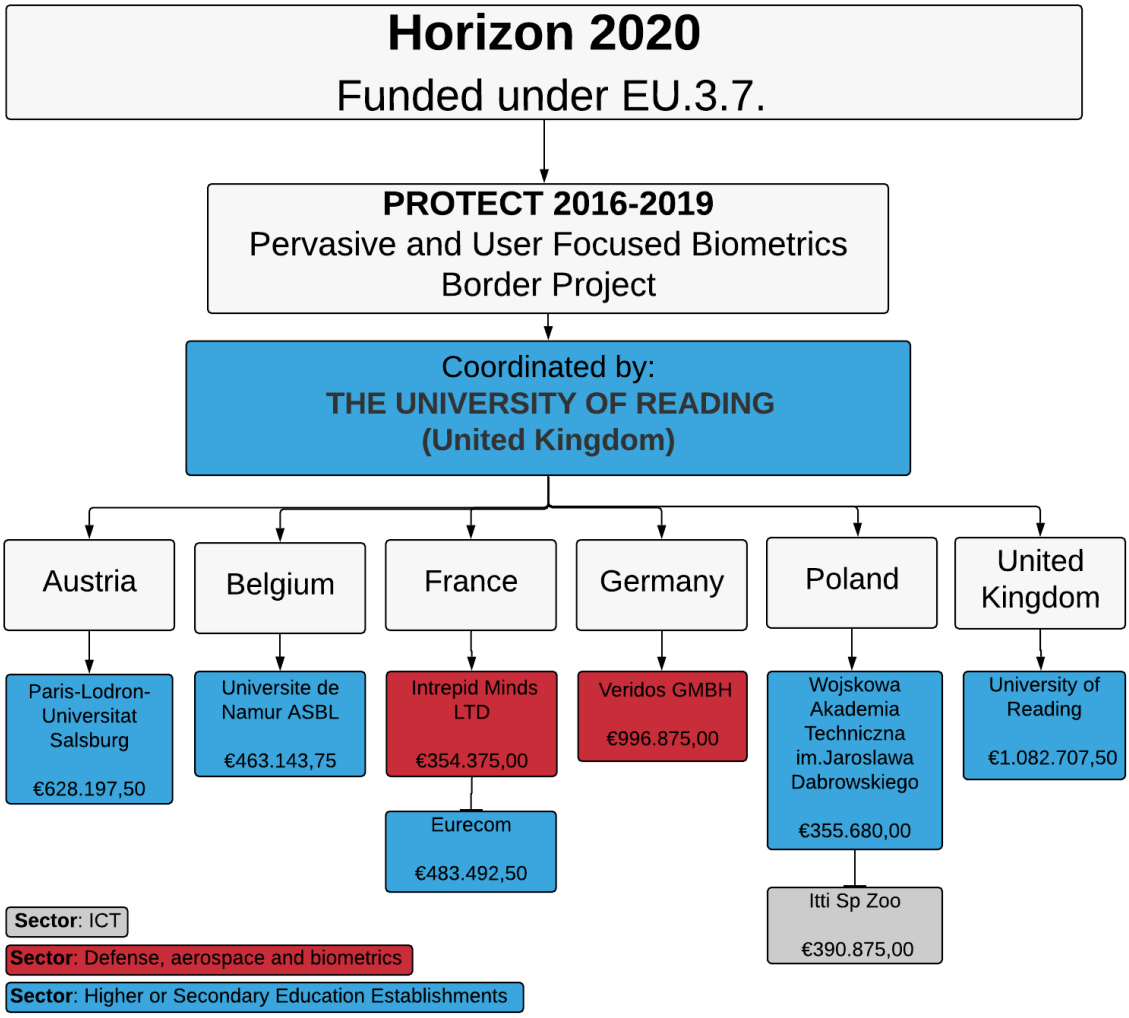


Figure 4 - The PROTECT consortium under Horizon 2020, divided into Member States, sectors, companies and contracts

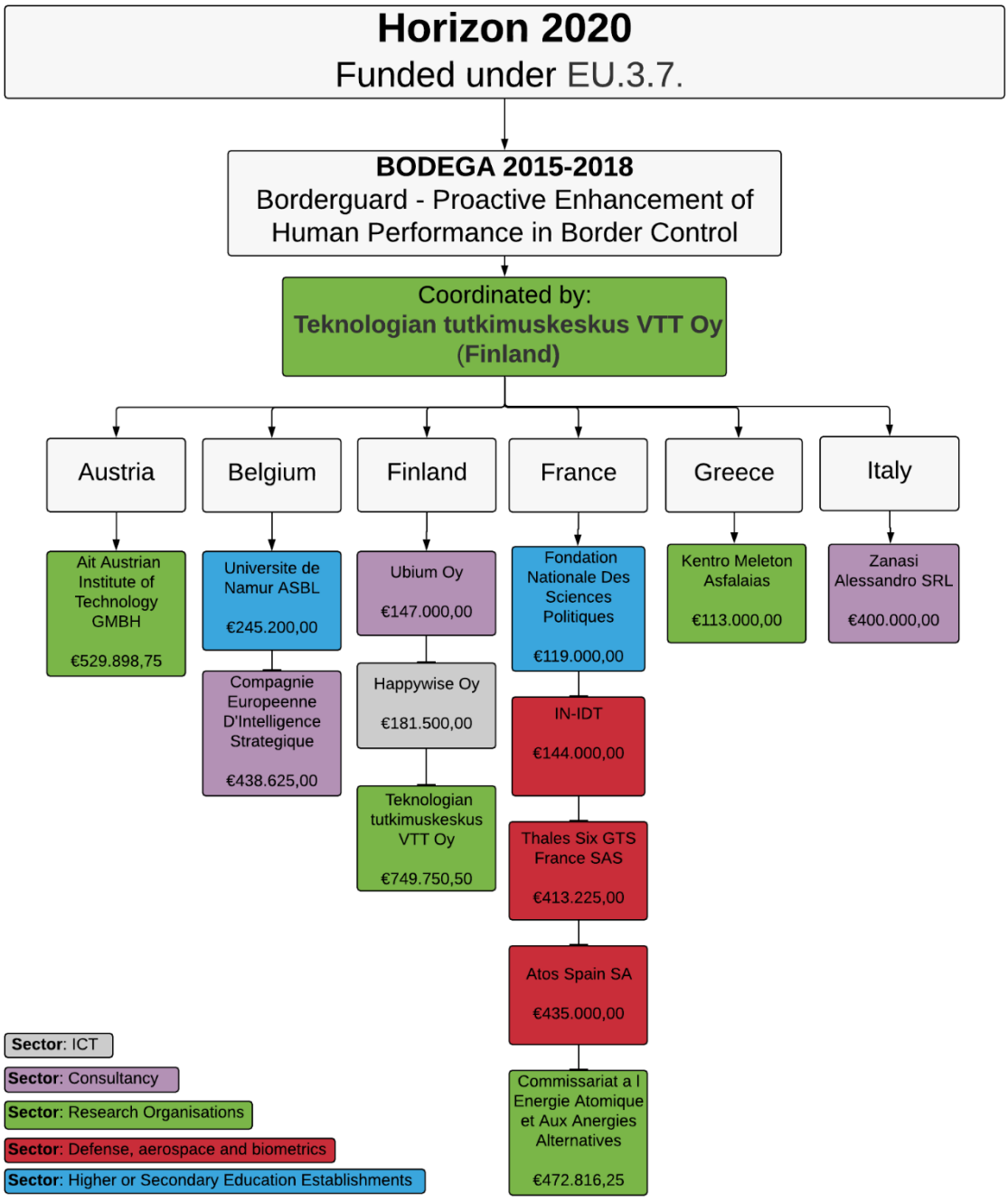


Figure 5 - The BODEGA consortium under Horizon 2020, divided into coordinator, Member States, sectors, companies and contracts

Figures 1-5 confirm the multisectorality of the consortiums in the market for EU border control, but also add new knowledge on the role of academia in the development of EU border control technology, which is an understudied phenomenon. This notwithstanding, the conjunction of universities and the military industry in research and development stands out when observing both both FP7 and Horizon 2020 consortiums. Indeed, just in Horizon 2020, a total of 42 consortiums working on border control projects, narrowly defined, involved academic institutions.

Moreover, these collaborations have several implications; large corporations may use collaborative projects to engineer and frame academic research or course content, where the latter can be used as PR for the company. They often also use such projects to recruit younger researchers. University participation in collaborative projects may lead, or indeed have as their stated deliverable, the "up-take" of technology by end-users such as state agencies, or creation of patents for technologies or the establishment of small business ventures, both of which are increasingly encouraged by university managements.

At other times the links between security industry and academia are even more blatant, such as BAE Systems's official collaboration with Loughborough University, the Airbus collaboration with Cardiff University, or its creation of an "Airbus Chair in Advanced Manufacturing" at the University of Sheffield. These links between academic and industrial actors on border control must be seen in the context of longer-standing connections between the sectors of academia and defence. Indeed, one recent study has found that universities have "longstanding relations with major security and defence companies in terms of supporting graduate programmes, sponsoring students, funding research programmes, adopting research findings of academics and making it marketable" (Kumar, 2017, p. 131). Border control is increasingly being militarized as actors traditionally associated with the defence sectors have entered and facilitated, the creation of an emering market for their products in EU entry governance. The FP7 and Horizon 2020 consortiums illustrate that with this transformation the historical association between academia and defence, is also increasingly observable in border politics.

Academic institutions must therefore be recognized as actors involved in the markets and political economy of EU border control. Their participation, as that of other actors like research organizations, consultancy and communication firms, means that they enter into the constitution of certain epistemic communities ripe with norms and knowledges. This kind of knowledge production thereby seeks to transform the wider understanding of societal issues and norms, that is, expectations, rules and standards, deemed appropriate to address them (cf. Finnemore and Sikkink, 2001; Baird, 2018). The expectations, rules and standards around which FP7 and Horizon 2020 consortiums on border control have convened, have been dominated by actors from the security industry framing social context in alignment with commercial interests.

In 2018, the Commission tabled its proposal for the successor of Horizon 2020, namely the €100 billion research and innovation programme entitled Horizon Europe, to run between 2021-2027 (European Commission, 2018d). The programme's general objectives include delivering "scientific, economic and societal impact from the Union's investments in research and innovation so as to strengthen the scientific and technological bases of the Union and foster its competitiveness, including in its industry". Among its more specific objectives are "to strengthen the impact of research and innovation in developing, supporting and implementing Union policies, and support the uptake of innovative solutions in industry and society to address global challenges" (Ibid., p. 28) A programme entitled "inclusive and secure societies" is to realize those ambitions when it comes to the security industry, and, by implication, also the border control component of EU entry governance.

3.3 Industrial interest in creating a market for border control

According to a 2015-study contracted by the European Commission and conducted by Dutch consultancy company ECORYS, an "EU security industry" combined to generate an annual turnover of close to €200 billion and employing nearly 4.7 million people (ECORYS, 2015). Of the seven Member States surveyed by ECORYS, the midpoint estimates for turnover and employment were: The United Kingdom: €37,2 billion/435.000 people; France: €32 billion/300.000 people; Italy: €18,6 billion/159.000 people; Spain: €9,9 billion/86.000 people for Spain; Poland: €1,6 billion/67.000 people; Estonia: €1,3 billion/14.000 people. A strong correlation was observed between the estimated industry size and that of the national economies (Ibid.). ECORYS also estimated that the percentage of EU security industry turnover could be further divided into different activities, some of which included distribution (20,5%), installation (18,8%), maintenance and servicing (11,6%) research and development (9,9%), design and engineering (9,7%) or system integration (5,5%).

A reoccurring uncertainty with such estimates is, however, the difficulty of distinguishing border control as a subset of the market for security. This is because many of the products and technologies have dual, or multiple, uses. Technologies purchased for one purpose (migration control) may also be repurposed over time (population control) as the definitions of security and border practices overlap. Accordingly, depending on political and economic expedience, the export of security and defence technology during externalization projects, can be framed as either the export of civil security or of defence capabilities. In the post-9/11 political and marketized EU landscape, border control technologies and practices supervene the distinction between internal policing, traditionally seen as falling within the civilian sphere, and external security, traditionally seen as falling within the military sphere (Bigo, 2006). Border control technologies therefore elude clear-cut dichotomies like security/defence or civil/military, and it has been suggested that they should be defined as security technologies spanning capacities for fighting both war and crime (Bigo, Bonditti, Jeandesboz and Ragazzi, 2008).

Crucially, the overlap between security and border control is not only determined by the materiality of the technologies. The development of these is very much also the creation of politics and economy. Research conducted on behalf of the European Parliament has questioned whether the "EU Brand" of a single security market, including border control technology, was in fact an economic reality, or rather a policy objective developed by the Commission in close conjunction with industrial interests which profit from such a market (European Parliament, 2014). Thus, the European Commission also responded to the post-9/11 environment by expanding the sphere of traditional security concerns to a global scale and a range of new issues, facilitated both by political discourses linking together crime prevention, maritime or aviation security with the combat against irregular migration. And they are also facilitated by the aim of technology suppliers to expand market shares or develop new, emerging markets, through discourses of "dual purposes", "civilian spill-over effects" and the need to resist the "fragmentation" of the European security market faced with competition from Asian countries (Bigo, and Jeandesboz, 2010; European Commission, 2012b).

This trend then goes beyond the issue of border control, and so the interest in contracts pertaining to EU entry governance can be seen as a general implication of the widening of the

security market (Ibid.). For some years now, traditional defence industrial conglomerates have been relabelling themselves as “security industrial actors” concerned with the border control needs of the EU and its Member States (Jeandesboz, 2016). And while the market for EU border control is also characterized by many SMEs, the political and economic gravity of the large actors of the defence industry also has a significant effect on the dynamics of the market for EU border control (Jones, 2016). Indeed, as Ben Hayes noted already in 2006; “the security-industrial complex has developed as the traditional boundaries between external security (military) and internal security (security services) and law enforcement (policing) have eroded” (Hayes, 2006).

3.3.1 Security Creeps. Border control as the nurturing of a European security industry

The European Commission has invested much in trying to create a common-European security industry. In February 2004, the Commission granted €65 million to the Preparatory Action for Security Research subsidizing 39 projects between 2004 and 2006. In 2007, the European Commission launched its first European Security Research Programme under the heading of “Secure Societies: protecting freedom and security of Europe and its citizens (European Commission, 2020b).

The ESRP followed a four-year period where the strategic priorities guiding the Research Programme had been developed through several Commission-initiated expert forums. These included the 2003 Group of Personalities (GoP), the 2005 European Security Research Advisory Board (ESRAB), and, alongside the launch of the Research Programme itself, the 2007 European Security Research Innovation Forum (ESRIF). They were all meant to develop and strengthen a public-private dialogue within the research programme. However, what transpired did not include all kinds of private actors, but rather those from the largest security and defence companies in Europe. Thus, out of the Forum’s 65 working group members, only three were members of the European Parliament, while, by contrast, high-level representatives from the major actors of the European arms industry were granted seats on all of the forums (Hayes, 2009).

This was also reflected in the policy recommendation of the forums. On the GoP advising on the future priorities of the European Security Research Programme, the Commission had invited on board representatives from Airbus, Thales, BAE Systems and Finmeccanica. On the ESRAB, had been invited representatives from Airbus, Thales, BAE Systems, Finmeccanica, and Safran, and on ESRIF were representatives from Finmeccanica, Airbus, Safran and Thales. Similarly, for the development of the EU’s Security Industrial Policy, announced in 2012, representatives from Finmeccanica, Airbus and Thales had been invited.

Besides the composition of each of these forums, the trajectory of the commercial interests into EU policies was also facilitated by the fact that each of the forums recognized and built upon the recommendations of the earlier ones. Thus, the GoP warned that "time is of the essence. Europe needs to act quickly if it is to remain at the forefront of technology research, and if industry is to be able to exploit the results competitively in response to the rapidly emerging

needs for sophisticated security-related products" (GoP, 2003). ESRAB's recommendation identified four "mission areas" for future security research, namely: border security; protection against terrorism and organized crime; critical infrastructure protection; and restoring security in case of crisis.

Mirroring the GoP-report, ESRIF also emphasized the need "to bring together at a European level the 'demand' and 'supply' sides in order to jointly define commonly agreed strategic lines of action for European security research", and to increase support for technologies that the actors from the European security and defence sector was itself producing and selling, such as surveillance and navigation satellites, drones, authentication technologies, biometrics and motion sensor systems (ESRAB, 2006).

Similarly, ESRIF's third working group on border security recommended increased funding to research and development to border control technologies, since "authorities involved in border surveillance activities" needed a technical framework capable of "considerably improve their situational awareness". This awareness, the Forum continued, could require deployment of drones, biometrics, new technology radars and satellites (ESRIF, 2009). In 2007, following the ESRIF- ecommendations, a common-European ESRP was established with a €1,4 billion budget from 2007-13 through the FP7 program, entitled "Secure Societies: protecting freedom and security of Europe and its citizens" (European Commission, 2020b). It included the subsidizing of 35 projects in 2008 and 78 projects in 2009. (Lemberg-Pedersen, 2013).

In a 2010 Communication, the Commission had formulated ambitions for integrating and harmonizing industrial policy in order to boost competitiveness. Through thematic headlines like "Europe needs industry", "Strengthening the single market" and "Capitalising on globalization" the industries of security and space were singled out, among others, as having potential for growth, thus needing subsidising frameworks. Space, in particular, was framed as "a driver for innovation and competitiveness capable of fulfilling critical citizen security needs" (EC, 2010a). Aligned with the views of commercial security companies, this Communication also announced a dedicated Security Industrial Policy, which was duly launched in a Commission Staff Working Paper in 2012.

Here, the European Commission stated that "A competitive EU security industry is the *conditio sine qua non* of any viable European security policy and for economic growth in general" (European Commission, 2012b). The European border security market is clearly stated as an emerging market with potential for growth. Thus, the document notes the potential of aviation, maritime and border security, and estimates the European border security market at between €4,5 – €5,5 billion, and the global market to be worth €9,9 billion (Ibid.). This included technologies like Border-perimeter interoperable communication systems, Virtual border systems, Checkpoint, fence and barrier hardware, Border-perimeter people screening systems, Border-perimeter people and workforce biometric identification systems, and Border-perimeter construction projects (Ibid.). Although later disappointed by the Commission's rejection of subsidising the industry according to its own high expectations (Jones, 2016), at the time, the lobby groups of the border security companies, the European Organization for Security (EOS) and the Association of AeroSpace and Defence Associations of Europe (ASD) were "delighted" to welcome the "long awaited Security Industrial Policy," as stated by the EOS (Ibid.) In a similar manner, the ASD

described the policy as a "giant step forward towards unlocking the potential of Europe's Security Industry" and expressed expectations of "working closely with the European Commission on the details of the proposals and to contributing to their implementation" (ASD, 2012).

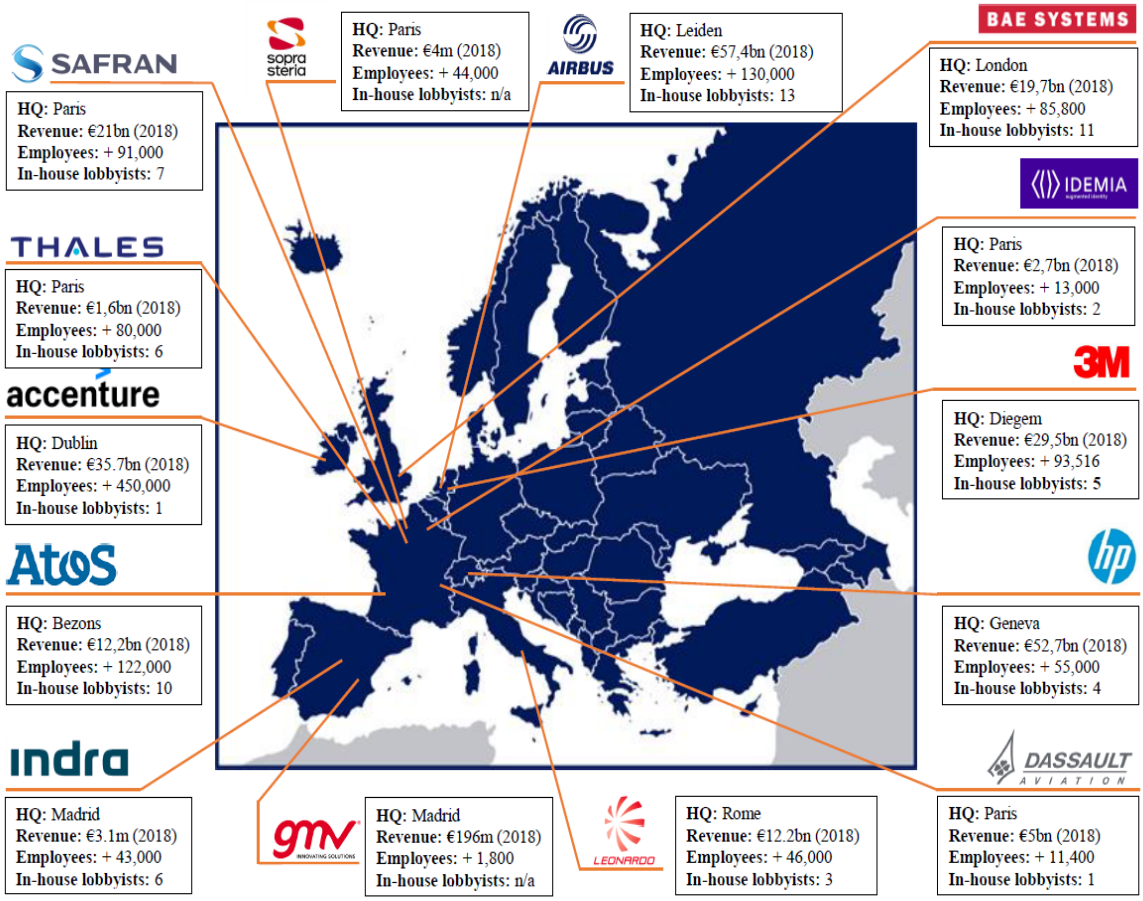


Figure 6 – Large contractors on the market for EU border control

The present report focuses on reoccurring actors on the EU market for border control (Figure 6) from the sectors of biometrics and ICT, security and defence, and space. Through contracts for border control, companies from these sectors facilitate the dissolution, redefinition or re-territorialization of entry governance. Such contracts then embed border transformations in what we can call the market for border control, which is characterized by dynamics of supply, demand, loans and competition. Both national governments and EU institutions are responsible for the many tenders that companies respond to, and the market for border control is therefore intimately connected to both kinds of economies. Due to the multisectoral character of this market, the contracts vary greatly in character and complexity when it comes to services supplied, their material scope, the companies involved and the complexity of the political economic interests involved.

All of these sectors are characterized by complex forms of ownership, including conglomerates, joint ventures and SMEs. Several of the biggest corporate actors on this multisectoral market pursue conglomerate strategies involving parent companies and multiple subsidiaries spread across several industries in order to increase their potential markets and

contract portfolios. Thus, Thales completed the acquisition of Gemalto in 2019 thereby strengthening its position on the global market of identity and security (Thales, 2019a). Only two years earlier, Gemalto, in turn, had acquired the company 3M's Identity management business and its speciality of biometric technology for governmental and commercial actors (Gemalto, 2017). The multisectoral market for border control thus spans across several highly competitive, capital-intensive and volatile markets characterized by processes of buying, branching off, merging through joint ventures, or sub-contracting to other market actors.

As for subsidiaries, Airbus, for example, divides its products into markets of commercial aircraft, helicopters, defence, space and innovation. These are then targeted by subsidiary companies, such as Airbus Helicopters, Airbus Defence & Space, ATR, Stelia Aerospace, Elbe Fluzeugwerke, Airbus Corporate Jets, Airbus Military, Panavia Aircraft, Helibras and Airbus UK. Similarly, Italian Leonardo also divides its products into four divisions: Electronics, helicopters, aircrafts, aerostructures and cyber security. These are then targeted by subsidiary companies, including but not limited to AugustaWestland, MBDA, ATR, Telespazio, Thales Alenia Space, Leonardo US Holding., SELEX Galileo, SOGEPA, AugustaWestland Holdings, Selex ES International, Alenia Aermacchi, Sistemi Software Integrati, Finmeccanica UK, Finmeccanica Group Services, Finmeccanica Finance Telespazio Holding, Dataspazio, Datamat (Suisse), Leonardo UK, Ansaldo Argentina S.A., Alenia Hellas, Selex Sensors and Airborne Systems, to name but a few.

Although public institutions are integral for the processes whereby the construction, maintenance or operation of border control infrastructure is researched, developed and outsourced, the companies themselves can also be very pro-active. Some of their attempted influence on policy-making can be observed via the Transparency Register, where the companies voluntarily register activities and information. IntegrityWatch has compiled this information, and through it, it is possible to cast an incomplete gaze into how commercial interests in border control technology seek to place themselves in the machine room of EU multileveled governance.

3.3.2 Company profiles

Observing the largest contracts among the sampled data ranging from 2012-2018, it is clear that a small handful of European companies stand for the vast majority of these large-scale infrastructural projects. As will be detailed in sections 4 and 5, these companies have featured on multiple levels when it comes to EU entry governance realized through the development, maintenance and evolution of interoperable information systems and the EUROSUR system. Accordingly, these actors are briefly introduced below.

Airbus is a pan-European aerospace and defence company, mostly based in Germany and France. In 2018, it had revenues of €64bn (Airbus, 2019a) and currently employs over 130,000 people (Forbes, 2019). Founded in 1998, in 2004 Airbus took their first major bordering contract creating an integrated border system for Romania, in line with EU membership requirements, at a cost of €734m (Akkerman, 2016). Today, integrated border systems are just one area of specialization (Airbus, 2019b), alongside a comprehensive space programme with a number of subsidiary companies including Ariane Space and Astrium GMBH. In 2015 alone, this set of companies won contracts worth over €700m for satellite construction under the Copernicus project (ESA, 2019a). Airbus reported having 13 lobbyists placed in Brussels, estimating their costs

to between €1.500.000 and €1.749.000 (Airbus, 2020). The person with the main responsibility for EU relations is the Senior Vice Preseident and Head of Europe and NATO Affairs, Nathalie Errard. Figure 7 visualizes the meetings Airbus have had with Commission representatives between 2015-2019.

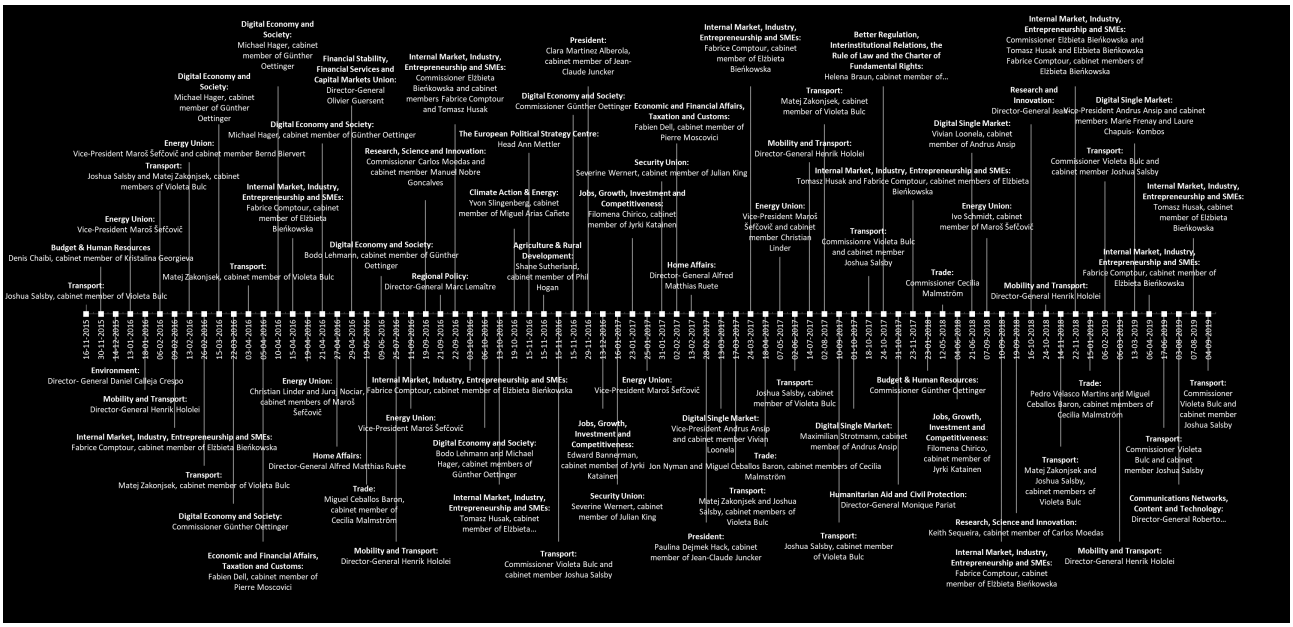


Figure 7 - Timeline over Airbus meetings with Commission representatives, 2015-2019

Accenture, originally Arthur Andersen, is a digital, technology and consultancy services company founded in Denmark in 1989, but based in Dublin since 2009. With a 2018 revenue of $39.6bn (Accenture, 2019), the company has over 450.000 employees (Forbes, 2019b). Accenture has partnered extensively with Morpho as part of The Bridge[3] consortium through which it was awarded a three-year framework contract, worth a total of € 27.568.971, for the maintenance of the EU's VIS-system. In 2015, Accenture was also contracted to construct both the EU's second generation Schengen Information System (SIS II), worth €2,2m, as well as the contract for system maintenance and user training for the Biometric Identity Management System (BIMS) set up by the United Nations High Commissioner for Refugees (UNHCR).

The company also led the VIS project, alongside many others in the border industry (Accenture, 2013). Accenture has reported 14 meetings with Commission representatives (Figure 8) and has a lobby budget estimated between €600.000 and €699.999. They only report one lobbyist, Babara Wynne, who is Director for the EU Government Relations.

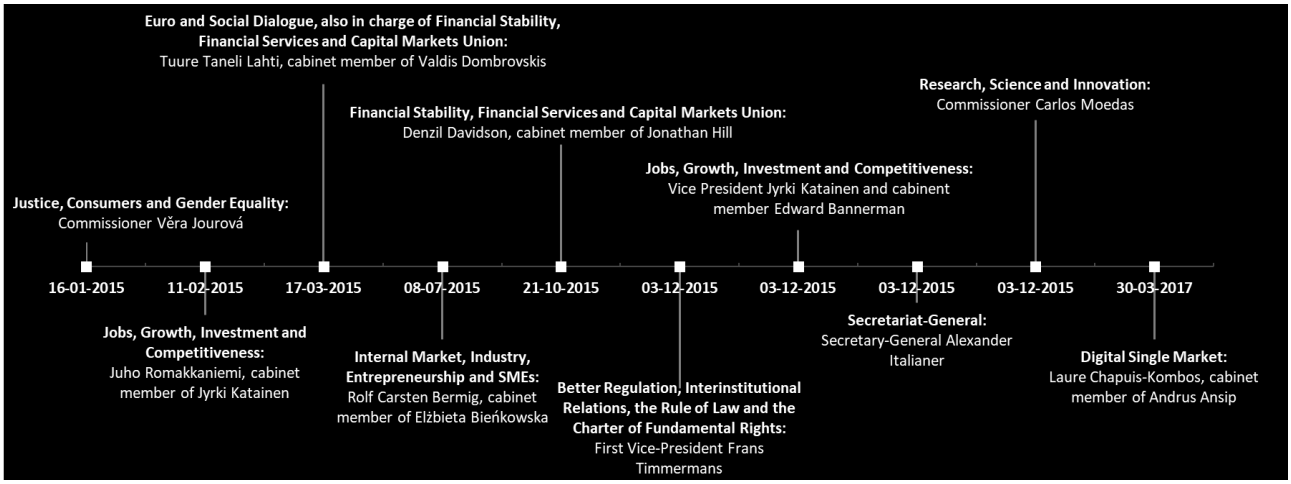


Figure 8 - Accenture meetings with Commission representatives, 2015-2017

Atos is a French ICT and biometrics technology company, founded in 1982. In 2018, the company boasted revenues of $11,3bn and had 122.000 employees (Forbes, 2019c). Atos entered the market for border infrastructures very early, as it was responsible for the development of the first-generation Schengen information System (SIS I). Since 2014 it has also been involved in consortiums for the SIS II system as well as the upcoming Entry/Exit System (EES). Its technology supply includes integrated maritime surveillance systems which, they claim, are responsible for saving migrant's lives through their use by the Spanish coastal patrols and border guards in the Mediterranean (Atos, 2017). Its former CEO Thierry Breton has controversially gone on to become France's representative at the EU Commission, as commissioner for Internal Markets (European Commission 2019b). Since 2014, ATOS have reported 20 meetings with European Commission representatives (Figure 9). Their budget for these meetings has been between €25.000 and €49.999. They report having approximately 10 in-house lobbyists based in Brussels. The person with the main responsibility is Alexandre Menais, who is General Secretary of the Group.

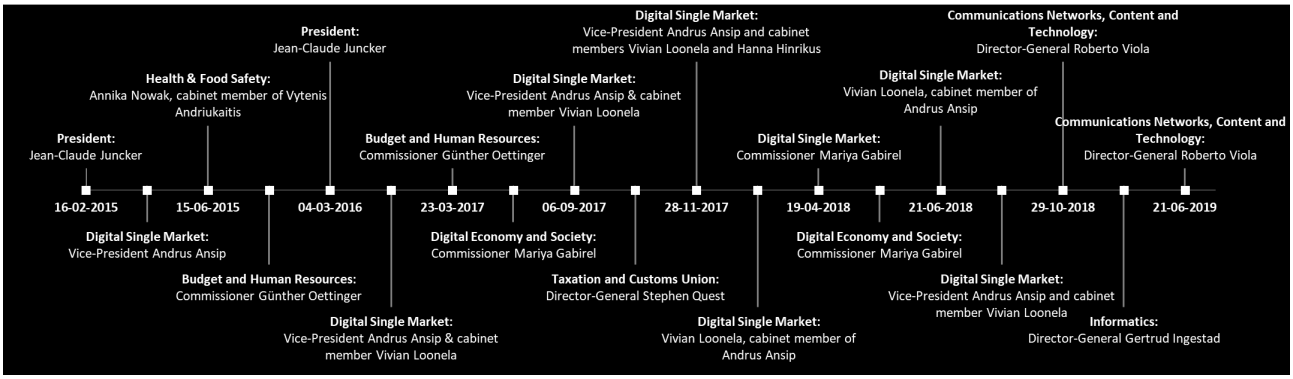


Figure 9 - Atos meetings with Commission representtives, 2015-2019

Leonardo (formally Finmeccanica) is an Italian arms and defence company specializing in the supply of helicopters to border agencies (Akkerman, 2019). In 2018, it reported revenues of €12,2bn and 46.000 employees (Leonardo, 2019). Finmeccanica identified border markets as an

important emerging strategy back in 2009 (Finmeccanica, 2009) and especially took advantage of the Italy-Libya 'Friendship Pact' in which €5bn was earmarked for providing surveillance equipment to be used in combatting irregular migration to Europe (Lemberg-Pedersen, 2013). Leonardo has a subsidiary joint venture company called Telespazio, owning 67% and where French Thales owns the remaining 33%. Through this the company has been able to land significant contracts within the space industry (Telespazio, 2019). Leonardo has registered 3 lobbyists in Brussels and a budget of around €300.000-400.000 per year. Reponsible for EU relations is the Vice President for International Relations, Massimo Baldinato. Its registered meetings with Commission representatives are visualised in Figure 10.

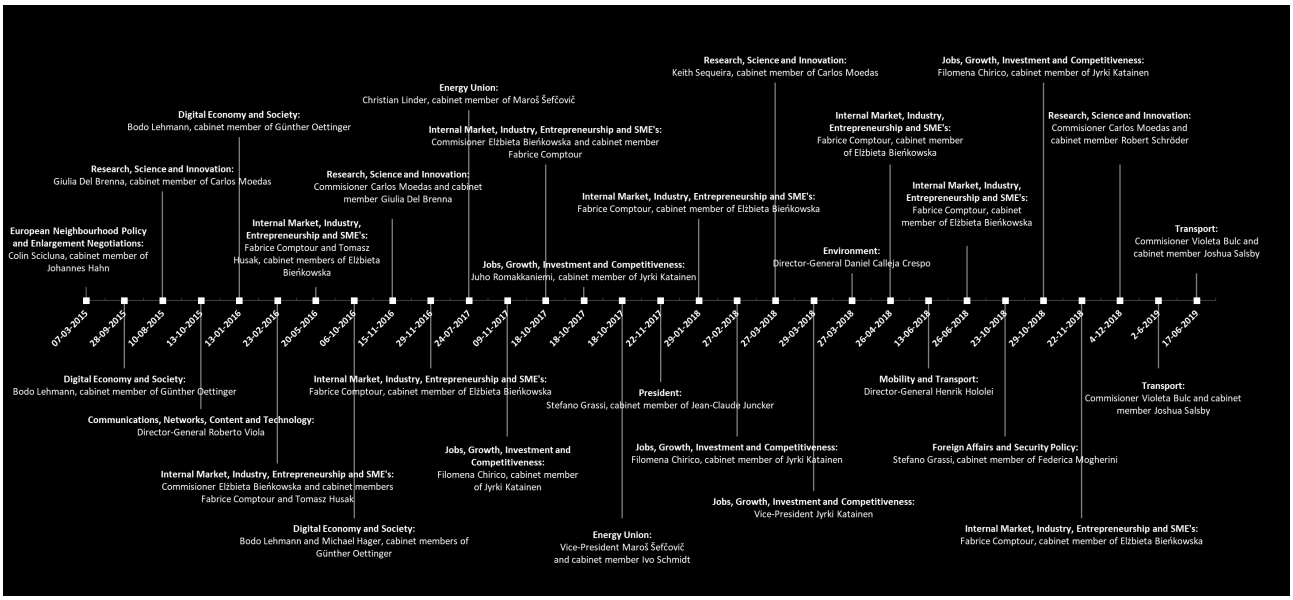


Figure 10 - Timeline over Leonardo meetings with Commission representatives, 2015-2019

Thales is a French security and defence company founded in 2000, that specializes in biometrics, radar systems and space technology. In 2018, it had a revenue of €15,8bn and over 80.000 employees (Thales, 2019b). Since 2012, Thales has been developing drone technology for use by Frontex (Akkerman, 2019). With Thales' acquisition of Gemalto – a company specializing in biometrics which had itself already incorporated 3M's Identity Management business – they have shown a clear interest in developing their company down this line (Ibid.). Through their joint venture company Thales Alenia (33% owned by Leonardo), they have also been awarded multiple large contracts in the space sector over the last half decade, securing over €600m in Copernicus contracts between 2015-18 (ESA, 2019). Thales have registered 6 lobbyists in Brussels, with a budget of around €300.000, and answering to the Senior Vice President for EU, NATO and EU relations, Marc Cathelineau.

Alongside these, both 3M and Gemalto also registered lobbyists. Thus, from 2014 and until its take-over by Gemalto, 3M registered five lobbyists, of which Maxime Bureau, Director of Government Affairs and EMEA was the main responsible. Its lobbying budget was between €600.000 and 699.000. Gemalto registered only one lobbyist, who from 2014 had three meetings with representatives from the European Commission. The person with main responsibility for the relation with the EU was Marie Figarella, VP Institutional Relations, with a budget between

€50.000 and € 99.999 at her disposal. Combined, the lobbying efforts of 3M and Gemalto on identity management has been instrumental in building Thales market position within this area. Figure 11 shows 3Ms registered meetings with Comimission Representatives between 2014-2017.

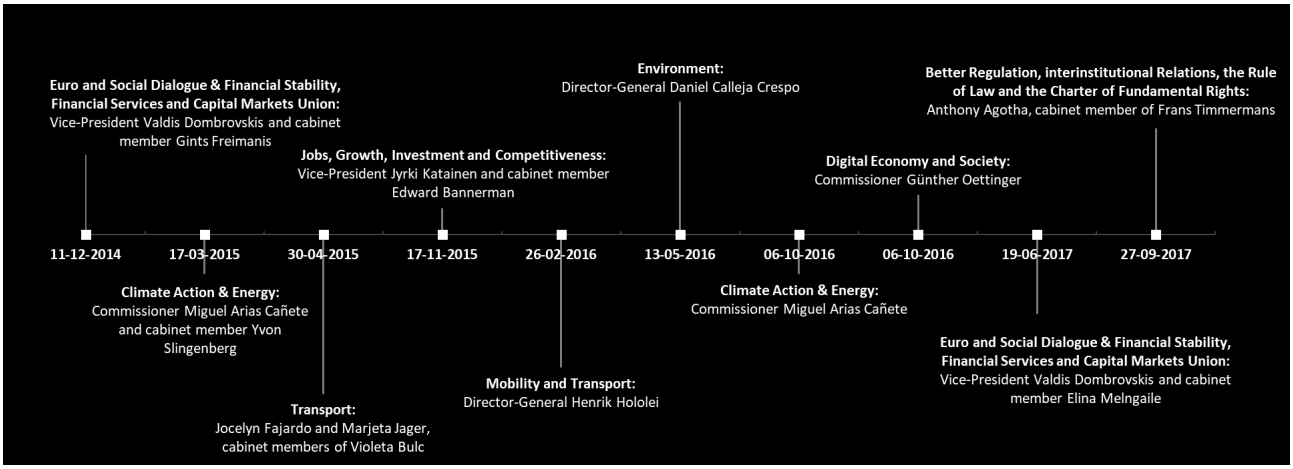


Figure 11 - 3M meetings with Commission representatives, 2014-2017

Indra is a Spanish ICT and consultancy aiming at becoming specialists in border security, particularly regarding biometrics for integrated border systems. In 2018, they achieved revenues of €3,1bn and employed 43.000 people (Indra, 2019). Founded in 1993, the company was reporting a significant interest in border markets by 2008 (Indra, 2008). By 2015, security and defence accounted for 19% of company revenue (Akkerman, 2016). Indra have been especially active in forming and leading consortiums in the border control arena; PERSEUS and Operation Seahorse being two examples (Indra, 2011). Indra registered six lobbysists in Brussels, with a budget between €900.000 and €1.000.000. The main responsible for lobby operations was Director David Luengo Riesco.

GMV was established in 1984 and specializes in the space and defence sector (GMV, 2020a). In 2018, the company had revenues of €196m, and employed 1800 people (GMV, 2020b). During the 1990's GMV began to develop systems for military use of satellite navigation (GMV, 2020a), and since 2010, the company has won pilots and several subsequent Frontex contracts for the development, and evolution of the EUROSUR project (GMV, 2020c). GMV has not registered its activities in the Transparency Register.

Safran is a French aerospace and defence company which created revenues of €21.5bn in 2018, and reported employing 91.000 people (Safran, 2019a). It was created in 2005 by merging two previous companies, Snecma and Sagem SA; via this heritage it claims to be the oldest aircraft manufacturing company in the world (Safran 2019b). Through its subsidiary company, Morpho, Safran has won a number of important border contracts in the ICT and biometrics sector, such as the VIS system (Accenture, 2013), and through the Ariane Group, a joint venture with Airbus, it is a lead contractor for the EU's Ariane 5 and 6 launch facilities, connected with the Copernicus programme. The company Safran has held nine meetings with representatives from the European Commission since 2014 (see Figure 12). They have seven lobbyists for these tasks, of which Marie

de Saint-Cheron, senior VP in European and Multilateral Affairs, is the person with the main responsibility. Their lobby budget is estimated to be around €495.000.

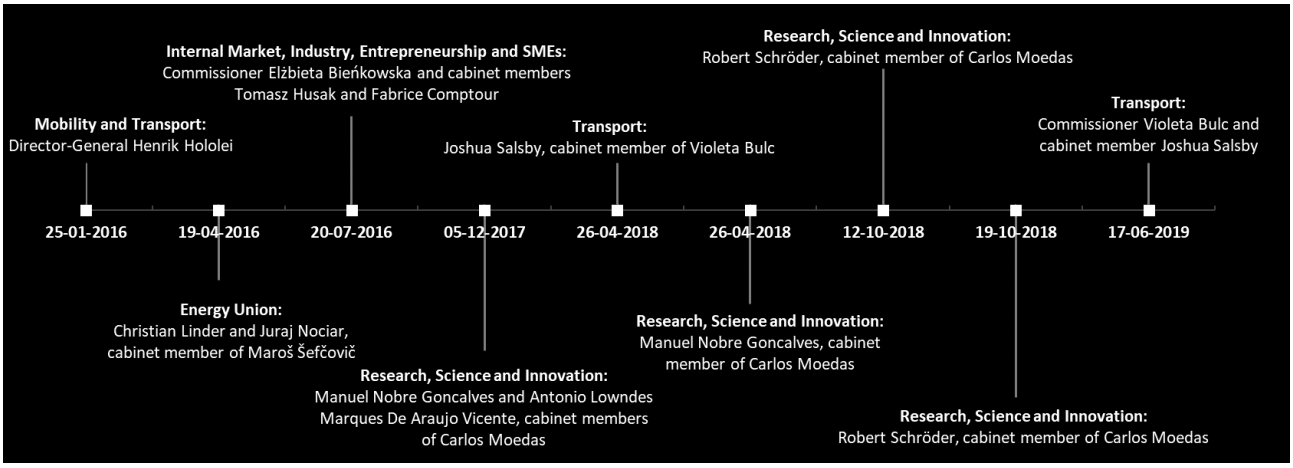


Figure 12 - Timeline over Safran meetings with Commission representatives, 2016-2019

Hewlett-Packard (HP) is an American ITC company founded in 1939. In 2018, it had revenues of $58 billion and employed 55.000 people (Forbes, 2019d). As a member of The Bridge[3] Consortium, it collaborates with Accenture and Morpho and has received multiple framework contracts to create the VIS database. HP has registered two in-house lobbyists, of whom Irena Bednarich, Director of Corporate Affairs in Europe, Middle East and Africa, is the person with the main responsibility. Since 2014 HP has reported 11 meetings with Commission representatives and a lobby budget between €400.000 and €499.999.

IBM is an American ICT company founded in 1919. In 2018, it had revenues of $79,6bn (IBM, 2019a) and employs 380.000 people (Forbes, 2019e). IBM has a dedicated border management division, providing technology solutions including real-time risk assessment (IBM, 2019b). In 2018, in collaboration with the Danish Ministry of Foreign Affairs and Danish Refugee Council, it co-developed a Predictive Modeling of Mixed Migration Flows-tool, the MM4Sight, designed to forecast the creation and direction of forced displacement, based on machine learning. It is one of the most prolifically lobbying companies when it comes to setting up meetings with representatives for the European Commission. IBM has registered nine lobbyists to strengthen their relationship with the EU, of whom Liam Benham, Vice President of Government and Regulatory Affairs in Europe, is main responsible. Since 2014, they have reported 90 meetings with representatives from the European Commission and have an annual lobby budget between €1.750.000 and €1.999.999.

Observing the relative size, lobbying systems and interactions with representatives from the European Commission, the most active companies on the market for EU border control differ in size, geographic origin, products and services. While some only seek out the Commission on an irregular basis, others organize strings of meetings throughout the year, and along different Commission portfolios. This point is crucial when trying to assess the relative influence yielded by these companies. For while they may primarily supply services for security, military, aerospace, ICT and biometrics purposes, they situate themselves on many more levels of influence with respect to EU policies, such as industry, jobs and growth, digital economy, financialization, the

internal market, mobility, energy, space and trade, to mention a few. The security and military industrial actors active on the market for EU border control are, in other words, intimately woven into the fiscal fabric of contemporary Europe.

3.4 Lobbyism and strategy on the market for border control

The kinds of interaction between the companies and the EU Commission described in the previous section are not the only way through which commercial interests are pursued. There is great opaqueness on these issues, for instance, when it comes to how such actors lobby the Commission on the phrasing and wording of communications and legislative drafts and acts. This is at least in part because of the daunting number of Directorate Generals, agencies, departments and associated funding instruments. The Committees and Sub-Committees of the European Parliament have also grown as a site of lobbyism efforts as its influence on Union law-making has been increasing over the last decade. But in general, the greater the lack of transparency, the higher likelihood of informal interventions in the drafting of policies, funding priorities and legislations (cf. Baird, 2018).

The lobbying efforts may take several forms. A widespread strategy is described by the interest organization ASD: Companies wishing to be "proactive and strive to generate new procurement opportunities" should engage with representatives from their Member State who are placed in the Programme Committee of the funding instruments desired by the company. Since these Programme Committees are responsible for deciding on the content of future Work Programmes, says the ASD, "companies can advocate vis-à-vis "their" national representative to increase the number of tenders open to industry and to include more projects on physical [security] capabilities rather than on institution building" (ASD, 2016, p.10).

The ASD underscores that particularly in the run-up to the mid-term reviews of funding instruments is there room to insert business priorities, as this "offers the opportunity to shift priorities and change the content of programmes for the remaining period of the budget cycle" (ASD, 2016, p.10). And from 2017, both organizations like the ASD and the EOS have been engaging in an intensifying proactive lobbying effort, in order to influence the setting of priorities for the next budget cycle between 2021-2028, where "more profound structural changes can be made to reform existing funding instruments or establish new ones" (Ibid., p.11).

To this end, companies employ both in-house lobbyists as described above, or external lobbyists, who can arrange meetings with the relevant Directorate Generals or higher-level Commission representatives, or approach MEPs. External lobbyists, like communications bureaus, may also orchestrate larger media campaigns in targeted European cities and financial centres on behalf of their client companies. Both kinds of lobbyists also collaborate or facilitate networks through intergroups or more informal extra-parliamentary groups, or approach national representatives on the Work Programmes. In the following, these practices are considered in some detail, in order to determine the vehicles and degree of influences they yield on the formulation of EU entry policies.

3.4.1 External lobby companies

In the European Parliament, interest groups, broadly defined, working for companies producing border control technology will typically assist their clients or members by identifying which MEPs to approach and which Committees or Sub-Committees, like those on Security and Defence, LIBE, Foreign Affairs and Industry, Research and Energy, are of highest relevance. When it comes to funding, which instruments are conducting mid-term reviews, will be deciding on future funding cycles, or preparing feasibility studies that might impact the demand, or market positionality, of the companies. Often, larger companies have both in-house lobby offices in Brussels, sometimes registered through the Transparency Register, but also hire external bureaus alongside these, such as law firms, communications bureaus and public relations firms. The largest of these external bureaus include Fleishman-Hillard, Alber & Geiger, Hill-Knowlton, Burson Marsteller, Europe Analytica, Gellis Communications, LOGOS Public Affairs, PA Europe or Havas Public Affairs (Public Affairs Networking, 2020).

For instance, FleishmanHillard Brussels works with several large companies active on the market for border control, including Atos and Airbus. It claims to help companies by using long-standing relationships with "industry influencers, policymakers and targeted trade media" thereby developing key alliances that facilitate programme development in Europe. Alongside this, they also promise "C-level engagement" with "Brussels audiences directly", that is, the facilitation of direct interactions with EU policy-makers (FleishmanHillard, 2020). Similarly, Alber & Geiger has offices in Brussels, Berlin and London, and boasts that they enlist "former European Commission officials, the Vice-President of the European Parliament, an EU ambassador and a former judge at the EU Court of Justice who know how to move client agendas" (Alber & Geiger, 2020).

Next to these, both informal extra-parliamentary groups and parliamentarily recognized cross-party groups are utilized by such actors. These kinds of informal groups typically consist of MEPs, representatives from interest groups, as well as actors from the industrial sector. Often business interests have been integral to their foundation, whereas the intergroups have been organized according to parliamentary rules (European Parliament, 2019; see also, 1999).

3.4.2 Intergroups

These are forums of MEPs assembled in order to promote specific topics or themes through informal exchanges and facilitated contact with extra-parliamentary actors. More than 70 groups were proposed for the 2014-2019 period; only 28 were formed for the period. This process is repeated every fifth year. While some intergroups are massively targeted by interest groups and commercial actors, others receive much less attention (Nedergaard, and Dagnis Jensen, 2014).

Of these intergroups, the Sky and Space Intergroup (SSI) is particularly relevant as a hub for security and defence lobbyism. It brings together MEPs, with institutional actors like the ESA, but also large military contractors like Airbus and Leonardo. From 2009-2014 the SSI Secretariat of 2-3 persons was even provided by the ASD, one of the biggest European lobby organization for the security and military industry. The ASD's President at the time was Leonardo's (then

Finmeccanica) CEO, Mauro Moretti, which further underscores the collusion of interests in this intergroup (Corporate Europe Observatory, 2011).

Each year the SSI organises the EU Aeronautics Conference with the support of ASD. Here they manage to gather over 300 participants, including Commissioners, Members of the European Parliament, CEOs, national experts and industry stakeholders. The conference, says SSI, "provides a platform for an interdisciplinary debate, by engaging policymakers, the industry and the scientific community, and aims at leading to tangible conclusions that will inspire future political initiatives"(EU Aeronautics Conference, 2018). Prominent speakers at the 2018 conference included; the President of the SSI, Monika Hohlmeier; the president of the European Parliament; the Vice President of the European Commission; the Commissioners for Industry and Transport, the Director-General of DG MOVE; and from the market for border control; the ASD and high level representatives from Dassault, Airbus, Indra, Thales and Leonardo.

The SSI's close ties to the military industry differs from another intergroup relevant for European border control, namely that on Digital Agenda. By comparison, it did not report receiving any administrative or financial support from industry (EU Parliament, 2015). Intergroups represent one medium through which commercial actors in the market for border control can pursue strategies of both indirect but also direct communication with EU policy makers.

3.4.3 Extra-parliamentary groups – the Kangaroo Group

When it comes to the more informal and extra-parliamentary groups, one relevant case in point is the Kangaroo Group. It presents itself as focused on "free movement and security", and as working towards abolishing internal borders and facilitating a Single Market, whilst strengthening the Union's external border control. The Group was formed in 1979 as "an informal group of friends in the European Parliament," it is now registered as a Belgian NGO. A look at its membership is illustrative of the ways in which such lobby groups exercise influence in and beyond the public bodies. In 2019 its members included honorary members in the form of a former French President; a former Italian Prime Minister; a former Spanish minister of foreign affairs; and a former president of the European Patent Office.

Among its 18 regular members were listed the Vice-President of the European Parliament; the vice-chair of the Committee on Foreign Affairs as well as four MEPs sitting on the Committees on Economic and Monetary Affairs; three from the Committee on Civil Liberties, Justice and Home Affairs; two from the Committee on the Internal Market and Consumer Protection; two from the Committee on Industry, Research and Energy and two from the Sub-Committee on Security and Defence (Kangaroo Group, 2020a). The Group also listed 37 members from other institutions, academia and experts, including professors, former MEPs and 38 members from industry, services and trade. These include representatives from Nokia, aerospace and defence companies Volvo and Saab, Safran Group, Airbus, the European Organisation of Military Associations and Trade Unions (EUROMIL), the German steel industry (Wirthchaftsvereinigung Stahl), and the British satellite and telecommnuications company Inmarsat (Kangaroo Group, 2020b). The Kangaroo Group's Brussels office is located down the road from the European Parliament, three minutes away on foot.

The Kangaroo Group seeks to develop "a truly borderless single market that is a win-win for business and consumers". But it also notes, that the open borders between Member States "will only be maintained if the external borders of the Union are adequately protected." To this end, the Group focuses on the "future of Frontex, Eurosur and the humanitarian and security aspects of the protection of our external borders." More concretely, it lobbies for the creation of common technical standards for an EU security and defence market eager to use technologies such as "Remotely Piloted Aircraft Systems and their admission to the European Airspace, intelligence, space situational awareness, the security of space based assets, and the next generation of satellite communications" for border control purposes (Ibid.)

The Kangaroo Group has also hosted a series of events, workshops and luncheons convening policy-makers and industrial representatives. Some of these have directly or indirectly been related to EU border control, such as a December 3, 2013 meeting on "EU's future space surveillance and tracking support programme", a March 18, 2014 meeting on "Surveillance of the External Sea Borders", a October 11, 2016 meeting on "European Foreign-, Security- and Defence Policy in the 21st Century – External Borders, Situation of the Refugees and the so-called Islamic State"; a December 6, 2017 meeting on "Space and Security Strategy for Europe" and a June 19, 2018 meeting on "Common Security and Defence Policy – current state of play". During these, Kangaroo Group members meet under more informal, and non-mediatized settings with EU and national policy-makers, other industry representatives and interest organizations.

The various groups often seek to influence political discussions and policy-making by getting together immediately ahead of more official parliamentary committee or commission-appointed high level expert-meetings. This allows for discussions in those formalized meetings to be "pre-cooked" by those experts who are also members of the informal groups (Parkin, 2011).

However, the relations between EU policy-makers and the border industry are not a one-way street for several reasons. Even if EU policy forums are massively targeted by interest-based organizations and actors, they are not empty containers void of their own priorities, to be dictated by external and corporate forces. Similarly, even if public policies and institutions form a crucial foundation for industrial sectors, commercial actors are far from passive socialisees of policy dictates. While many commentators, journalists and civil organizations rightly worry about the increasing influence of such commercial priorities on EU border policy-making, the possibility for maneuverability still exists, depending on the actors in question. In such cases, it is more accurate to say that both sides are engaged in norm diffusion through a constant re-appropriation, reversion and counter-narration. From this view, while the balance of power to shape discourses and policy-outcomes may be shifting, there is no stable point from which to observe cooperative systems and analyse norm diffusion, for the actors involved play interchangeable roles, depending on priorities and specific contexts (cf. Cassarino, 2018).

Such processes illustrate how new political priorities may also seep back into the discourses and priorities of commercial actors. For instance, the increased political awareness of environmental issues has come to feature more prominently in security industry discourses on maritime security. One example is Airbus discourses on the Sentinel-2 satellites, which were launched in June 2015, and used by the Frontex Agency through the Copernicus Programme. Thus, shifting the focus from its border control and migration management capabilities, the company

increasingly highlights its use for detecting maritime pollution and describes how companies and organizations increasingly rely on satellite imagery in this regard. In one new item, Airbus thus commemorated the World Cleanup Day 2019, by describing its collaboration with Waste Free Oceans and Ocean Cleanup, and how it uses machine learning to better detect plastic and other ocean waste (Airbus, 2019c). As with intergroups, the extra-parliamentary groups are often ideal for direct and secretive interaction with policy-makers.

3.4.4 Border security lobby organizations

Recent research indicates the view among Commission staff members that it is preferred not to deal directly with individual companies, but instead to go through self-described “brokers” or ”interlocutors”, like the EOS and ASD (Kumar, 2017). These function both as lobbying hubs and forums for industry collaborations. And when invited into public-private forums or EU research projects like the FP6 project Archimedes by public actors like the Commission, they also function as actors involved in multileveled policy-making on EU borders. They organize meetings with Commission representatives, conferences, workshops, High level Roundtables, and produce reports and white papers, in order to facilitate their members’ interests.

3.4.4.1 Aerospace and Defence Industries Association of Europe (ASD)

The ASD is the one of the most comprehensive lobby groups for the security and defence industry in Europe. Its Chairman is Eric Trappier, the CEO of Dassault Aviation, and the Vice Chair is Håkan Buskhe, CEO of SAAB. Member of its board include CEOs from the companies Indra, MBDA, Thales, Rolls Royce, Airbus, Naval Group, Kongsberg Defence & Aerospace, Safran, Leonardo and BAE Systems. ASD’s head office is based in Brussels, thus closely located to the corridors of power in the EU. Its lobby budget for 2015 was €298.000 (Jones, 2016), however, questions have been raised whether the actual lobbying budget is in fact significantly larger (Lobbyfacts, 2020b). According to the Transparency Register, ASD has registered 33 meetings with representatives from the European Commission since 2014.

ASD represents the interests of over 3,000 companies within the European Aeronautics, Space, Defense and Security Industries. It was formed in 2004 when the older industry associations EDIG, AECMA and EUROSPACE were combined. According to its own website, its members combine to employ 864.000 people, and generated a turnover of €228,5 million in 2017 (ASD, 2018). ASD is promoting the interests of its members by being in constant dialogue with EU institutions, like the European Commission and stakeholders, organizing public-private forums, and, through these, engaging in the multileveled governance of European security policy and legislation. Figure 13 visualizes all ASD meetings with representatives of the Commission between 2014-2018.

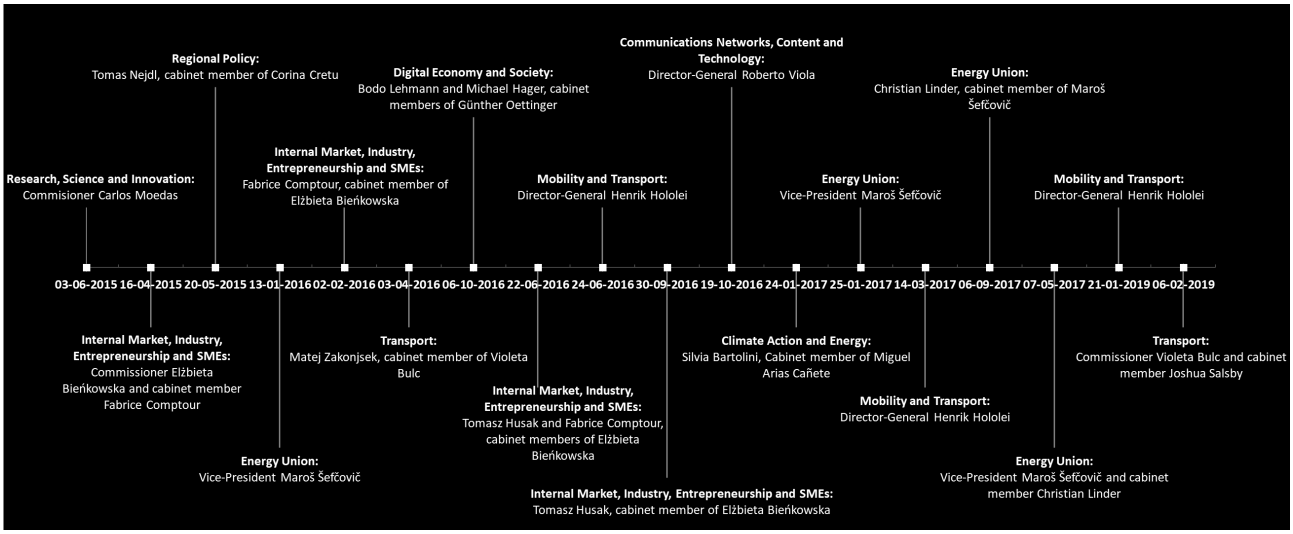


Figure 13 - Timeline 2014-2018 over registered ASD meetings with the European Commission

Additionally, the ASD also positions itself as an expert on policy matters, framing itself as an "intelligence hub for expert knowledge on industry-related issues" (Heinrich, 2015). Border security is a specific focus point for the lobbying organizations, who are keenly aware of the importance of the European Commission, EU-Lisa and Frontex when it comes to procurement, research & development, and the standardisation of border control technologies.

Concentrating its lobbying efforts on supporting investments in research and innovation and border management infrastructures, it encourages further harmonization of border equipment needs at European level, and seeks to stimulate the procurement of such equipment at the national level (ASD, 2020). ASD has also functioned as the secretariat for the SSI, which the Secretary General, Jan Pie, described in 2016 as "an extremely effective forum to engage with MEPs" (ASD, 2016, p.1)

3.4.4.2 European Organization for Security (EOS)

EOS was developed in 2007, from the already existing ASD, by the former CEO of Thales, Luigi Rebuffi, and operates in 15 different countries. Its chairman is Giorgio Mosca from Leonardo, and the Vice-chairman is David Luengo from Indra. Members of its Board include CEOs from the companies Airbus, Atos, Conceptivity, Gemalto, Indra, Leonardo, Laurea, Secunet, Naval Group, Smiths Detection and Thales to name a few (EOS, 2020a).

Most of its members are also members of the ASD. The EOS has stated its main objective as "the development of a consistent European Security Market sustaining the interests of its Members" (EOS, 2009, p.15) It claims to work closely with the Commission and Directorate Generals (DGs), and is regularly participating in EU Task Forces, expert groups and research projects funded by Commission instruments.

The EOS has argued that the most effective counter-measures to immigration require more common European, as opposed to national, border initiatives (Ibid.). This has led it to recommend the implementation of innovative surveillance technologies and the creation of EU-

funded programs to develop and implement an integrated management system for regulated borders. To this end, it recommended the formation of a public-private "EU Border Checks Task Force,"(Ibid., pp. 9-10) and stressed that Frontex should "be a relevant interlocutor for the supply industry" by coordinating the definition, test and validation of elements of common architectures, such as EUROSUR (Ibid., p.11).

That border control technology is of key interest to the EOS members, is illustrated by the groups' prolonged focus on the field. In a relatively short span of time, the organization has had a Working Group on Border Surveillance, chaired by SELEX ES, a subsidiary of Finmeccanica (now Leonardo) and a Working Group on Smart Borders, co-chaired by Morpho and Thales. Recently it has been pursuing the business of border control through its Integrated Border Security Working Group, co-chaired by Giorgio Gulienetti of (Leonardo) and Peter Smallridge (Gemalto), among others (EOS, 2020b).

The EOS claims to be engaging directly with the European Commission, the European Parliament, the European Council and EU agencies like Frontex and EU-Lisa. Among other things, the Integrated Group's objectives consist of; endorsing an integrated approach to procurement policy, in parallel to a comprehensive strategy for future ISF funding; building the reputation of security equipment manufacturers and fostering lasting relationships with European regulators; promoting cross-cutting applications of the technologies in the field of civil protection, land and maritime security; supporting the harmonization of EU Regulations and standards to ensure interoperability; and to encourage further funding and development of border security research (Ibid.).

The interest groups active on the market for border security often try to mirror the discourse and structure of policy venues in order to maximize the potential uptake of their strategic communication into the official policy-making processes. One example of this was when the EOS in 2009 established seven working groups covering more or less the same topics as the Commission-launched ESRIF forum, namely Green & Blue Borders, Surveillance, Security & Safety; Civil Protection (including crisis management); Energy Infrastructures Security and Resilience; Supply Chain Security; Air Passenger transport security; ICT networks, data protection, Information Society Security; Surface Transport Security (Hayes, 2009). By mirroring the discourses of central EU institutions, the company members of EOS try to steer and appropriate EU policy agendas according to their interests. Strategically mirroring framings of social contexts is thus used to facilitate the co-constitution of norms through collaboration on events or projects, but also decisions on contracts or subsidies channelled from institutions to the corporate members of organizations like the EOS. Figure 14 visualizes in a timeline, the EOS' meetings with Commission representatives distributed over portfolios, as registered in the Transparency Register.

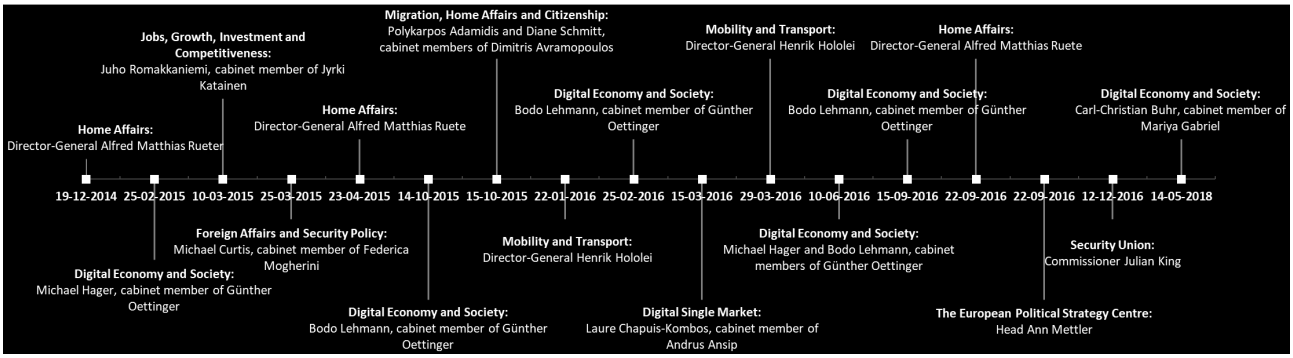


Figure 14 - Timeline over registered EOS meetings with the European Commission, 2014-2018

Another example has been pointed out by Chris Jones, namely how the FP7 programme was used to fund the EOS-coordinated project Archimedes, which ran from January 1, 2012 to December 31, 2014. The EU contribution amounted to €1.353.848 out of the overall €1.534.245. Its stated objective was to increase the market uptake of research and development in security technology, by promoting a "common innovation culture" and aligning research agendas between EU and Member States security policies.

This was to be achieved by bringing together so-called end-users and operators into a "permanent public-private dialogue" in order to reinforce cooperation with the supply side, that is, the industrial actors (Ibid., see also Jones, 2017, p 34). In its final report, the EOS claimed that it would be optimal if discussions involved the widest array of actors. However, in the same report it also explained that such an approach was not possible, as the dialogue had to be taken "in a closed and trusted environment that allows (when needed) sharing of confidential information" (EOS, 2015, see also Jones, 2017, p.35). Such "trusted" environments had of course already been established as part of the Archimedes project, through a number of industry stakeholder roundtables, organised by EOS.

Archimedes can thus be seen as one node in the multi-leveled public-private governance of the EUs policies on security industry and border control. However, that this can also create inconsistency between the different goals of Union policy-making is starkly illustrated in the final Archimedes report, where the EOS states that, seen in the light of boosting the European security and defence industry, fundamental rights are "politically correct but not necessarily a competitive advantage at MS and international level" (Archimedes, 2019).

3.5 Blurred forums and recalibrating EU research funds

Union policy-making may seem to take the form of constructing "wish lists" based on prevailing political knowledge regimes and priorities, according to which companies then develop technologies. These wish lists then form the basis of tenders and procurement processes through which corporate actors try to research and develop technology capable of meeting, or negotiating, the goals set by policy-makers. But the construction of knowledge that underpins the relations between EU institutions and industrial actors on border security is both complex and crucial for unravelling the multileveled governance of the EU borders.

First, focusing only on security discourses fails to reflect how language is imbricated within the technocratic networks responsible for producing and disseminating the discourses. Such approaches therefore often do not embed discourses in particular social practices and epistemic communities, and, consequently, risk not relating the power of language in relation to specific political and economic processes (cf. Husymans, 2006). Moreover, there is a tendency to privilege and widely report statements on border governance and security by national political leaders and government officials, whereas the institutions of the European Union are not reported nearly as widely. Although they are crucial for both common-European and national legislation, policy-making and bordering practices, these still tend to be debated by a narrow and specialist audience (Neal, 2009). Naturally, this lack of public insight into discourses, networks and processes fundamental for EU border policy-making is even more prevalent when it comes to how the more informal and extra-institutional interactions between technocratic, commercial and public actors influence the entry governance of the EU.

Second, norms are both embedded in and diffused through technologies (Guittet and Jeandesboz, 2010): Border technologies like EU satellites, databases or externalized surveillance co-create certain knowledge regimes replete with cultural frames of reference about the legitimate functions and consequences of border control practices. Hence, technologies like biometrics, but also satellite and drone surveillance or infra-red and motion detection, are more than apolitical wish lists. They are sites shaped by the continuously converging interests of multiple actors, both shaped by, and shaping, the preferences of EU policy-makers and companies alike.

Here, some studies have focused on how companies may seek to influence EU policy through "regulatory capture" (Dal Bo, 2006), understood as processes through which special interests affect public governance through processes so that companies are able to manipulate or subvert the formulation of laws or the public agencies supposed to regulate their activities. Regulatory capture is thus often understood as industrial actors' indirect formulation of regulation through public agencies and institutions (cf. Posner, 2013; Stigler, 1971). Such processes can be facilitated by a constant flux of brokering events, such as roundtables, Commission-initiated expert groups, consultations about research programmes and hardware/software fairs and meetings hosted by industry or public actors, co-shape EU entry governance. These brokering events can be described as "blurred forums" because they bring together public policy-makers with the private interest of technology suppliers.

3.5.1 Interests and networks for an EU border security policy

The run-up to the EU Security Industrial Policy in 2012 is an apt example of the kinds of blurred, public-private networking events and processes, which co-shape EU policies. In October 2010, the think-tank Security & Defence Agenda (SDA) organized a conference concerning "Fine-tuning EU border security." It brought together participants from heavy-weight communication bureaus like Fleishman-Hillard; representatives from Member State ministries of interior and defence, from European organizations like the Directorate General for Home Affairs, and Fisheries and Maritime Affairs, the Council of the European Union, NATO, as well as representatives from companies like Thales, Safran, Cassidian, Symantec, SAAB; non-state actors like the International Centre for

Migration Policy Development (ICMPD) and the IOM as well as ten representatives from the consultancy firm PriceWaterhouseCoopers. But not all reflected interests in security; some press officers, as well as representatives from, respectively, feminist socialists and the Bolivian government also participated (SDA, 2010).

Both in February 2011 and March 2012, the EOS and the Commissioner for Home Affairs, Cecilie Malmström, organized High Level Public-Private Security Roundtables. In the first one, European industrial actors, the Hungarian EU presidency, executive management of EU institutions and the Ministries of Interior of Member States were brought together. The Roundtable was to "explore ways of how the public and private side can together contribute to the implementation of EU security policies." Before the meeting, Malmström stated "I am looking forward to discussing with representatives of the European security industry how they can contribute to make our citizens safer" (European Commission, 2011b).

Notably, one day after the 2011 Roundtable followed another Brussels-based conference organized by SDA, now alongside the EOS. It was on "A New Partnership for European Security" and sponsored by companies like BAE Systems, EADS (now Airbus), G4S, Raytheon, Safran, the Finmeccanica (now Leonardo) subsidiary Selex Sistemi Integrati, Smiths Detection and Thales, to name a few. The conference focused on using EU policy to further the competitive advantage of European companies, and in a session entitled "Securing Europe's borders," the Director for Migration and Borders, from the Commission's Directorate General for Home Affaairs, Jean-Louis de Brouwer (also invoted to speak during the first SDA conference), and MEP and member of the LIBE Committee, Simon Busuttil, were paired with Massimo Piva from Sistema Integrati and Jean-Marc Suchier, from Safran Morpho. Moderated by the EOS and SDA, participants were tasked with discussing whether a more integrated border management system should become a cornerstone of a "comprehensive" European security policy (SDA, 2011; also, Jeandesboz, 2016).

Already in May 2011, the Commission held another High level summit, namely a Conference on Defence and Security Industries and Markets. Its focus was the transfer and procurement of defence technology, how to build up the demand side of the security market, and discussions of the risk of cuts to defence and security budgets after the 2008 financial crisis. It was hosted by Antonio Tajani, the Vice-President of the European Commission, responsible for Industry and Entrepreneurship, and Michel Barnier, the EU Commissioner for Internal Market and Services. Invited speakers included the Chief Executive of the European Defence Agency, representatives from Swedish, Italian and Polish Ministries of Defence, and the CEOs of MBDA and Thales, the Chairman of Finmeccanica (now Leonardo), as well as the President of the ASD. During the conference, it was emphasized that Europe needed to set higher ambitions for Common Defence and Security Policy, something Vice-President Tajani underscored required a strong and competitive defence industry (EC, 2011c).

Then, on October 18, 2011, as preparation for the Commission Communication, the European Commission organized a workshop on Security Industrial Policy, with the aim of bringing together stakeholders from the public and private sectors to discuss measures for strengthening the European security industry. Themes focused on were standardization, civil-military synergies and limited liability of third parties. Participants included the French and Italian representatives to FP7 Programme Committee – security theme, representatives from ministries of research,

defence and interior from several Member States, EU institutions, like the Directorate General for Enterprise's Head of Security Research & Development, and the European Defence Agency, as well as research organizations like ECORYS, and companies like Finmeccanica and Smith Detection. At the level of interest-based organization, the workshop also included participants from the EOS, ASD, the German European Security Association (GESA) and the Confederation of European Security Services (CoESS)(EC, 2011d).

When the Security Industrial Policy was published, it was, in other words, also the result of much hard work from the security and military industry, eager to reinvent itself as an "EU Brand" of security that included border control. The various actors had worked for a policy with close relations between technology providers and end users, with US-level subsidies to research and development to boost competitiveness. Moreover, it was hoped that it would be characterized by bridging the civil-military gap through dial functions, which, incidentally, would be equivalent with the militarization of European border control. Only rarely did the many blurred public-private forums initiated by the Commission, or the numerous conferences and workshop, from the GoP, over ESRAB and ESRIF and the formulation of the ESRP, to the public and private workshops and High Level Roundtables, include non-governmental or civil society voices which could be expected to be critical to this industry wish list.

3.5.2 Work Programmes, Advisory Groups and Technology Platforms

Companies and interest organizations target various policy venues as vehicles of proactive influencing in order to generate new procurement opportunities. Here, influencing Member State representatives on the Programme Committees which decide the priorities of Work Programme topics and calls, represents one more such strategy.

With the beginning of FP7, the Commission revised its funding mechanism by setting up blurred public-private forums such as Advisory Groups (AGs) and European Technology Platforms (ETPs), Joint Technology Initiatives (JTIs) and Joint Undertakings (JU). These forums can be seen as procurement at a pre-commercial stage, since the suppliers of border control technology win contracts for research and development of the technologies before these reach the market. Since such AGs and research and development platforms are typically undertaken in collaboration with potential "end-users", like the Commission, EU agencies, border authorities, national coastguards or customs administrations, the effect of this public-private interaction is often to undermine the market competitiveness otherwise invoked as justification for increased subsidies as it is pre-empted by already-agreed procurement demands. As such, while heralded as innovation by the Commission, these initiatives certainly also mirror the interests of a narrow elite of the largest European security and defence companies in establishing complete end-to-end supply chains for their soft- and hardware (cf. Jones, 2016).

The members are allegedly sitting on AGs in their personal capacities, and not as representing organizations or countries. However, interested industry stakeholders are closely engaging with the groups either by approaching their members, or when representatives or former employees are nominated as AG members. For instance, looking at the members of two AG under FP7s, respectively for Space (SAG) and Security (SecAG), the distinction between members' personal and professional capacity becomes blurred as does the information about it.

Thus, one section the Commission website (European Commission, 2011f) lists members like Paul Kamoun and Jean-Jacques Tortora as coming from, respectively, the University of Nice-Sophia-Antipolis and Eurospace. However, in the SAG's own report (European Commission, 2011a) Kamoun is listed as the Chairman of the ASD working group on GMES. And both lists fail to mention that Kamoun was also Vice President for Thales Alenia Space at the time. Similarly, although Tortora was the Secretary-General of Eurospace, Eurospace is also the Space group of the ASD. In 2010, the Security AG also listed members allegedly sitting in their personal capacity, but who were nonetheless also representatives for companies like Cassidian (Jacqueline Argence), Finmeccanica (now Leonardo) (Giovanni Barontini), Siemens (Angelika Staimer), SAGEM/Morpho (Jean-Marc Suchier), the EOS (Luigi Rebuffi), alongside Frontex, the Spanish Ministry of the Interior, Europol, and the British Home Office.

The same pattern was observable in the Horizon 2020 Advisory Groups. Thus in the group for Space (SAG), while members like Tortora continued, new ones were former or current CEOs of aerospace companies (Luca Rossettini for D-Orbit), while another member, Barbara Ghinelli, had worked for Astrium (now Airbus), including a decade as the head of its unit for Copernicus Business Development. In the Protection and Security Advisory Group (PASAG), the appointed chair was the former CEO of Finmeccanica, Alberto de Benedictis.

ETPs were created after Commission proposals in 2000 and 2002, Council support in 2003, and Commission Action Plans and Guidelines in 2003 and 2004. They are extensions of industry associations intended to provide advice for research funding from the perspective of business needs and capabilities, and thus to promote competitiveness through public-private partnership and agenda-setting (Briani et al., 2010). Concern has been expressed that European Technology Platforms (ETPs) effectively come to function as lobby forums, since industry representatives here sit side by side with EU agencies, and Commission representatives. Such fears were not dissuaded when in 2007, the then-Commissioner for Research, Janez Potocnik, defended ETPs by saying that they "can play a key role in better incorporating industry's needs into EU research priorities by bringing together stakeholders, led by industry, to define a Strategic Research Agenda and to suggest possible directions for its implementation" (CEO, 2011b, p.5).

In negotiating the FP7 Work Programmes, the Commission received inputs from the AGs and ETPs. While the Commission was responsible for drawing up the annual Work Programmes, it did so through advice from the AGs in particular. This advice was delivered via a yearly document, which forms the basis for preparing the annual calls if endorsed by Programme Committees. Crucially, the selection process determining particular topics is undertaken by the AGs, which guide the Commission, resulting in a draft Work Programme to be approved by the Programme Committees.

In 2010, there were enthusiastic descriptions of the ETPs as "unique in the history of the FPs" since "there is real evidence that the stakeholders can play an active part in the preparation of the WPs", making the ETPs "probably the single most important source for the Commission with regard to defining the topics in the WPs" (Andrée, 2008, p. 35). This responded to calls from the industry through the 00's, and expressed through blurred forums like the GoP and ESRAB, to be inserted into the strategizing processes on research and development. The focus on markets of border control had also featured explicitly as part of this argumentation, including some

suggestions to raise the Commission-funding of the ETPs themselves from a 50/50 deal with industry, to 75% Commission funds; that ETPs should be "mission-oriented" particularly when it came to border control and that the central coordination role held by Frontex should be transformed so that the Agency could enable the security industry to overcome the "demand side market failure" in European border politics (by which was meant a lacking political demand for the level of procurement of border security products desired by industry) (Briani et al., 2010)

The Commission responded to the push for increased standardization of technologies in order to facilitate a "single EU border market" through Frontex coordination, by revising the Agency's mandate. It went from "following up on" industry developments to "proactively monitor and contribute to the developments in research relevant for the control and surveillance of the external borders" (European Parliament, 2011a). Moreover, it was placed on the SecAG, and also allowed to build a permanent pool of equipment itself through purchase or lease, rather than loaning equipment from Member States as before. This effectively placed the agency in multiple roles: It was no longer only monitoring and fostering industry, coordinating Member States' border politics, but also becoming an end-user of industrial actors eager to expand the Union's border control. Alongside its placement on the SecAG, the Agency would also play a larger role in developing and deciding the funding streams for EU research programmes. This legislative drive was continued with Regulation 2016/1624 stating that Frontex should "participate in the development and management of research and innovation activities relevant for the control and surveillance of the external borders, including the use of advanced surveillance technology, and develop pilot projects" to this effect (European Parliament, 2016a).

In 2015, the ETPs were fused with European Industrial Initiatives and turned into European Technology and Innovation Platforms (ETIPs) (European Parliament, 2017a). Thirty-six ETPs were effective under Horizon 2020 themes decision making, including Integrated Mission Group for Security (IMG-S), the ASD, Big Data Value (BDV) and the European Cyber Security Organization (ECS). Among these, IMG-S frames itself as a European network of experts in security with 230 members from 119 organizations across 24 countries. It has formed the Aerospace Security and Defence – Strategic Research and Technology (ASD-SRT), a Synthesis and Coordination Group (SCG) and seven working groups, including on surveillance and identification, communication systems and cyber security. Its mission is to "provide input to the Horizon 2020 Secure Societies Work Programmes via its thematic groups." Among the members of the ASD-SRT are Thales, BAE Systems, Leonardo, Dassault and Airbus. Other members include Cassidian, Indra, Cea, SAAB, and Fraunhofer (IMG-S, 2020).

Also at the level of pre-determining the research priorities of the EU, the examples of ETPs and AGs illustrate the multileveled commercial influence on the formulation of EU entry governance.

3.6 Silences and criticisms

This section has detailed how the market for EU border control is multisectoral, but dominated by the security and defence industry. However, through FP7 and Horizon2020 consortium, academic institutions are increasingly partnering with commercial actors from these industries, and thereby become intimately imbricated in the development of EU border control technology.

This has implications for the formation of knowledge, as they enter into certain epistemic communities already ripe with norms. Moreover, the industrial conglomerates also use consortiums to engineer academic research, course content, or to recruit researchers. University managements on their side enter into these collaborations expecting “up-take” of technology through patents or business venture spin-offs.

The security and military industry seeks to exercise influence on the formulation of EU entry and border policies. This happens through numerous meetings with Commission representatives, the intergroups working around the Parliament, extra-parliamentary forums like the Kangaroo Group, and interest organizations like the EOS and ASD. Yet other forums are not created by industry, but by EU institutions themselves, such as Frontex or EU-Lisa (see also section 4). At the same time, through discourses on the “dual purposes” and “civilian spill-over effects” of military and security technology, the major actors on the market for EU border control lobby EU institutions by replicating their focus on resisting market “fragmentation” through standardized and interoperable border technologies. The commercial influence on multileveled governance must also include the Commission’s decision to establish Advisory Groups and European Technology Platforms, and to appoint industry representatives to sit on, or chair these, to advise on FP7 and Horizon2020 funding priorities.

The framing of technological border infrastructures as a politically neutral growth area to be cultivated in order to promote European industrial competitiveness, abstracts from the violent and politically contested character that EU border politics have attained during the last decades. There is a worrying correlation between the last decade’s roll-out of border control interventions and associated technological infrastructure, and increasingly perilous and life-threatening migration routes for third country nationals. The EOS statement that fundamental rights are politically correct but not necessarily a competitive advantage, testifies to the troubling implications of depoliticized narratives of technological optimization concerning EU entry governance.

At another level, this framing ignores how the standardized technological infrastructures lobbied for by the security and defence industry also have the effect of shaping EU entry governance around contested norms. In this regard, framing societal reluctance to accept surveillance technologies as an image problem to be overcome by an “EU single market brand” does not address the key challenges at stake.

Another dominant discourse deployed by industry in order to justify increased subsidies is the need to level the security-industrial playing field with Asian and American economies. Accordingly, the ETPs and later ETIPs and their role in shaping EU border technologies are promoted as fostering EU competitiveness. However, the AGs and ETPs/ETIPs have also been criticized for prioritizing capital-intensive, technological and industrial conglomerates at the expense of civil society actors, SMEs and socio-economic research.

Pre-commercial procurement undermines the free exchange of ideas alongside market competitiveness by pre-empting it through already-established procurement demands. This occurs despite the fact that market competition is otherwise invoked by the same industry as justification for increased subsidies. While heralded as innovation by the Commission, these initiatives mirror the interests of a narrow elite of the largest European security and defence

companies in establishing complete end-to-end supply chains for their soft- and hardware for the EU borders.

4. Entry Governance and Interoperable, Biometric Borders

The development of large-scale entry governance systems has occurred at a rapid pace during the last decades. Parallel to industrial calls for more standardization and interoperability, political visions of integrated border systems have grown. This has tied the political and technical processes closely to procurement and research and development from corporate and industrial actors. These have been hired to consult on, design, develop, maintain and evolve the information, identification and surveillance systems.

The following section details this development with a particular focus on four EU databases pertaining to entry and deploying biometrics to that end. These are the Schengen Information System (SIS), Eurodac, the Visa Information System (VIS) and the Entry/Exit System (EES); the construction of all of which have involved actors from the ICT, defence and biometrics sectors. These function as a digital border registering alphanumeric and biometric data from all third-country nationals (TCNs) and visa-holding or exempt travellers entering the Union. EU-Lisa has been incremental to the pursuit of this development since its 2011-inception through EU Regulation No 1077/2011. Its headquarter lies in Talinn, Estonia, and an operational office in Strasbourg, France.

Two other databases of relevance, namely European Travel Information and Authorisation System (ETIAS) and the European Criminal Records Information Exchange System (ECRIS-TCN) established in 2019, have been excluded from the inquiry. This is for reasons of focus and scope. ETIAS does not include biometrics, and while the ECRIS-TCN database does, it has evolved out of the sphere of law enforcement of the European Criminal Records Exchange System. While this illustrates the tendency towards expansive interoperability in EU databases, this deliverable's ambition is to strengthen the public-private processes shaping the technological infrastructures of immigration politics during the last decades.

4.1 EU-Lisa and the four information systems

EU-Lisa was established as the agency responsible for the operational management of the major four large-scale IT systems in the EU, the European Dactyloscopy Database (Eurodac), the Schengen Information System (SIS), the Visa Information System (VIS) and the future Entry/Exit System (EES) (EU-LISA, 2019b). This has been framed in terms of a desire to protect the internal Schengen zone from what the European Commission has defined as "terrorism, cross border crime and irregular migration" and for "stronger control of our external borders" so that in the future, "no critical information should ever be lost on potential terrorist suspects or irregular migrants crossing our external borders (European Commission, 2016a).

EU-Lisa manages data via its Biometric Matching System (BMS), which is a search engine that systematizes biometric data through technologies measuring, analyzing and processing digital representations of unique biological data traits for the purpose of identification and verification (Ajana, 2013). Biometric technologies are widely used because they are supposed to be cheaper, faster, lesser prone to errors and easier to share than human verification. Most of the EU systems

under scrutiny here function for identification purposes; that is, where biometric data stored in a computer system in order to identify a person who is otherwise not identifiable, for instance because they do not have ID or travel documents (known as one-to-many matches); rather than for the purposes of verification, where biometric data is used to verify an already-known identity (one-to-one matches). The most common way to register those crossing EUs external borders is by entering their alphanumeric (e.g. name, gender, age) or biometric data (e.g. fingerprints, iris scans, palm prints). As such, biometric data is particularly sensitive as it is unique for those registering.

The EU databases have been developing according to which types of individuals are registered; Irregular migrants found in member states can be registered into SIS, asylum seekers are registered in Eurodac and those entering on a legal visa are registered in VIS. The four EU information systems combine biometric identification technology with computerised data processing, that is, diffuse borders that cannot be geographically localised, but instead rely on both physical and virtual locations as well as institutions of control and surveillance connected through digital data networks (Tsianos and Kuster, 2016; Amoore, 2006; Amoore, Marmura and Salter, 2008; Guild, Carrera and Geyer, 2008).

4.1.1 The Schengen Information System

The SIS (now SIS II) was the first large-scale IT system put in place in the EU, and was designed to compensate for the abolition of internal border controls in the Schengen Area by facilitating the free movement of people within the Schengen Area (European Commission, 2016a). It was set up through the 1990 Schengen Convention and became operational in 1995 by the Member States Germany, France, Netherlands, Belgium, Luxembourg, Portugal and Spain, a number later expanded successively, in particular in 2001, when four Nordic countries were included. At the time, the system was discursively framed as a more efficient fight against illegal immigration (Broeders, 2007). SIS II was then established in 2006 by Regulation (EC) 1987/2006 of the European Parliament and of the Council. In 2007, it was once more expanded to include the nine eastern European countries that had joined the EU three years earlier. In 2013 then followed the launch of the SIS II system.

The SIS functionality consists of three components: A central database and system physically located in Strasbourg; national systems located in each member state, but continuously communicating with the central database; and an in-build communication infrastructure making it possible for Member State authorities to enter, delete and search for data via their national systems. Searches take place on the basis of both alphanumeric data (for instance name, sex, birth, nationality) but also on biometric data, such as fingerprints. The latter is typically framed to be the most secure and correct way of identifying a person, and is used as a way to verify the identity of a person who has already been registered on the basis of his/her name. The database does not only contain data on those registered, but also instructions for competent authorities on what to do with the person or object once found (European Commission, 2016a).

4.1.2 The Eurodac

Eurodac was established in 2000 via Council Regulation 2725/2000 as an information system to compare the fingerprints of asylum seekers, in order to determine if persons had applied for asylum in more than one EU Member State. In 2013 it was revised, such that it enabled national and Europol law enforcement access to the database (Orav and D'Alfonso, 2017). Eurodac underpins the Dublin III Regulation and its predecessors and their aim to limit the possibility of applying for asylum in more than one country, and singling out one Member State as responsible for processing such applications. Originally, Eurodac stored fingerprint data and alphanumeric data concerning the gender of the person, but the 2013 Regulation expanded this purpose by demanding fingerprints from all persons over the age of 14. These were further divided into three groups of people: asylum seekers (category 1), persons who cross European borders in irregular manners (category 2) and people found to be staying irregularly on EU territory (category 3) (European Commission, 2016c) Data on category 3 is, for the time being, only processed and not stored in the system. Additionally, Eurodac also stored information about the member state of origin, place and date of application of asylum, fingerprint data, gender, reference number used by the member state of origin, the date on which the fingerprints were taken and the date on which the data was transmitted to the central unit. In 2014, the central unit of Eurodac was moved from Luxembourg to EU-Lisa's data centers in Strasbourg, although this is a matter of contention in the discussions surrounding the Eurodac recast proposal.

4.1.3 The Visa Information System

The VIS was created via Council Decision 2004/512/EC in response to a call by the 2002 Seville Council for a common identification system for visa data under the heading "measures to combat illegal immigration". The system became operational in 2011 and made it possible for Member States to identify migrants who travel legally to the EU, but then overstayed their visa. This system is used by member states to facilitate short-stay visa procedures, while at the same time helping border, asylum and migration authorities to check the necessary information on TCNs, who need to travel to the EU (European Commission, 2018b). It consists of a central IT system physically located together with the SIS, in Strasbourg, and a communication infrastructure that link the central system to national systems. It contains data on visas requested, issued, refused, annulled, revoked or extended; and on fingerprints, photographs, and links to other visa applications. Additionally, the system also store details about the person or company that issued an invitation or is liable for the cost of living during the stay, meaning that the family members or companies "vouching for" visa applicants can be held accountable if they overstay their visas.

4.1.4 The Entry/Exit System

The *EES* was prepared through a feasibility study that the Commission contracted the company Unisys to conduct in 2008 (Unisys, 2008). It was then announced by the Commission in 2013 (European Commission, 2013a) and further developed in a communication to the Parliament and Council (European Commission, 2016d), and established in 2017 via Regulation 2017/2226, as part of the package of legislative proposals on so-called "Smart Borders". It was framed as modernising

the Schengen Area's external borders, and expected to be rolled out in 2020. It consisted of three components: The recording of time and place of entry and exit for TCNs entering the Schengen Area (a type of data not recorded by the other databases); a regulation for a Registered Traveller Programme (RTP) so that pre-screened third-country nationals could benefit from smooth entry at the EU's external borders; and an amendment of the Schengen Borders Code, taking into account the existence of the EES and RTP. The EES is to be applied to TCNs who are admitted for a short stay visa to the territory of the Schengen member states or whose entry for a short stay has been refused (European Parliament, 2017a, paragraph 9). It is based on the explicit aim of facilitating the mobility of visa-holding travellers while intensifying the identification of TCNs not fulfilling their visa requirements.

Taken together, the Eurodac, SIS II, VIS and the EES, have been framed as the next generation of border and migration enforcement aspects of entry governance of the EU. In so doing, it is clear that in its vision of a forward-looking entry governance, the Commission relies tremendously on the idea of technological fixes. The next section, however, details how very little reflection has been made on the feasibility and realizability of such technological fixes for solving diverging interests between Member States. This despite the fact that such divergence has also impacted the development of the databases, effectively creating windows used by commercial and other informal interests to intervene in EU policy-making. It is therefore critical to investigate what kinds of public-private relations, economies and trajectories are at work beneath the surface of the large-scale border infrastructures, and how they impact the discourses and proposals for establishing and recasting the databases

4.2 Commercial interests and the early rise of interoperable EU borders

From the beginning, the political drive towards contructing border infrastructures with interoperable information systems has involved actors from the ICT, defence and biometrics sectors of Member States. These have been hired to consult on, design, develop, maintain and evolve the information systems, including their biometric functions. Their activities illustrate that the market for such technologies is extremely lucrative and growing. Thus, a 2010 market analysis estimated that products for biometric fingerprint technologies would reach a market volume of around $15 billion in 2015 (Tsianos and Kuster, 2016). By 2019, the global biometric market was estimated to grow from $33 billion to $65,3 billion by 2024 (Market and Markets, 2020).

Since its operational launch in 2013, EU-Lisa has been responsible for issuing contracts for the development of the large-scale information systems. The Agency has also been made responsible for additional framework contracts covering services for management, supervision, corrective and evolutionary measures and external support. This therefore requires constant interaction with the European ICT, defence and biometrics sectors. With yet another large-scale IT system, the EES, to go online in 2020, it is however, worth noting how the creation of EU-Lisa itself was a direct result of complex problems during the development of the SIS II system, stemming from diverging political and economic interests between Member States, their national industries and the Commission.

The contract for SIS I, launched in 1995, was granted to French company Atos. This took place within a context where transnational networks of security professionals and justice and

home affairs bureaucrats were actively reconfiguring EU mobility governance towards the governance of borders as the management of insecurity. The securitization policy drive was strengthened after the terror attacks on 9/11 in 2001. Yet, between the EU institutions, this policy drive also created difficulties in reaching political agreement on the legal basis of SIS I. This made for uncertainty about the system's functions and purposes and created problematic path dependencies influencing also the SIS II system, and later the Union's Smart Borders package.

Relations between EU institutions, Member States but also commercial actors from Member States' national industries were crucial for this development. In 2004, the European Commission signed a €40 million contract for the development of a combined SIS II/VIS with a multinational consortium of European ICT companies. This was the first of many increases in the budget compared with the Commission's original estimate in 2001, of €15 million. The consortium was led by French Steria and Belgian HP, and also included Belgian Ateria, German Mummert und Partner and Primesphere from Luxembourg (European Commission, 2004a). The contract decision was, however challenged by Dutch Capgemini Nederland B.V. who filed a court case against the Commission in 2004, leading the Court of First Instance to put the SIS II project on hold for months in 2005, before resuming the contract.

SIS II was projected to be completed by October 2007, but political pressure for new functions from Member States like Germany, Spain and France in line with the securitization of immigration, such as storage and transfer of biometric data, and access to SIS II to Europol and Eurojust, posed challenges for the design process (Council of the EU, 2009a; European Parliament, 2004). The Steria and HP-led consortium was instructed to design the SIS II-system so that new functions could continuously be added to its infrastructure – even if no political agreement had actually been reached about what these functions should be (Parkin, 2011). Paradoxically, then, the design of SIS II's technological infrastructure had been determined in advance of a political agreement about the database's scope and purpose. A path dependency can be observed from these earlier development, and to today, where EU-Lisa also requests such open-ended designs in its contract tenders.

The political problems spilled over into design and contractor issues that would end up postponing the launch of SIS II for six years. The legislative process was rushed through the EU decision-making bodies after pressure from the Council of Ministers, but the systemic design-process did not match the political time table. Technically, the Steria and HP-led consortium was unable to meet the deadline of October 2007, and also experienced a series of critical test failures between 2008-2010. Politically, this led to a tug of war between the Commission favouring the SIS II, and the economic and political interests of a group of Member States, arguing that the Commission did not safeguard national investments; that it overruled national influences on the technological development of the system; and that the SIS II costs were spiralling out of control from the original estimate of €15 million in 2001 to one of €143 in 2010.[1]

[1] The group of Member States intervening the most against the Commission's SIS II-plans, were the same who had been developing the Schengen I, illustrating a fight over ownership of the SIS infrastructure (see Parkin, 2011, p. 18).

In 2007, the Portuguese government successfully seized the opportunity created by the technical deadlock and successfully lobbied for an interim solution where the Portuguese database, developed by Portugal's Border and Foreigners Service and the Portuguese ICT company, Critical Software, was cloned. This was reluctantly accepted by the Commission, and the result was the "SISone4all"-system capable of facilitating the lifting of internal border checks to the EU Member States that were expected to join the Schengen area by December 2007. Pressure mounted to abandon the SIS II project altogether in favour of another option supported by Austria, Germany and France, the so-called SIS 1+RE. This was argued to be cheaper than the SIS II infrastructure.

The Council and Commission agreed that as a plan B, the French authorities launched a call for tender for SIS 1+RE with the desired SIS II functionalities on April 1 2009. The contract was awarded to French company Atos (also behind SIS I) and the infrastructure to be developed by technical experts from the Member States in accordance with the French, German and Austrian preferences (Council of the EU, 2009b). The SIS 1+RE contract was, however, never effectuated because the Council finally opted to continue with the original Steria-contract for SIS II. It was implemented on May 27, 2013, and announced shortly thereafter (Sopra Steria, 2013).

But by then, the Commission was already fast at work with visions of new upgraded functionalities to the database. Thus, a few months earlier, it had announced the Smart Borders package, consisting of the RTP and the EES. The initiative was framed as the Union "moving towards a more modern and efficient border management by using state-of-the-art technology" (European Commission, 2013a). However, even if this was shrouded in many political statements, the RTP and the Smart Borders-terminology was taken off the table again quickly thereafter. But the EES remained, now with a stated ambition of interoperability with the existing systems, including the SIS II. At the same time, EU-Lisa had commenced its operations out of Tallinn in December 2012, and it was hoped that that the new agency would be able to balance the intricate political-economic interests underpinning the EU border systems (Jeandesboz, Bigo, Hayes and Simon, 2013).

EU-Lisa would not, however, commence its balancing act between maintaining the EU's large-scale information systems and entertaining too close relations with European industrial interests, on a blank slate. The situation was in fact quite the opposite, since the technological research and development structuring EU entry governance, had been proceeding fast alongside the SIS II controversy. This had taken place in yet another level open for commercial interventions, namely the formulation of FP7 and later Horizon priorities for research and development.

4.2.1 Commercial interventions – priorities under FP7 and Horizon 2020

The Security Advisory Group (SecAG) appointed by the Commission to inform the research priorities of the FP7 annual Work Programmes (2007-2013) included several experts affiliated with major companies from the European security and defence industry. The recommendations and focus of the group appeared to reflect this constitution.

For instance, during an October 2009 SecAG-meeting, the group concluded that the EU security research needed to be more "mission oriented", and that the Commission needed to

require more technological experiments, tests, validation and demonstration of almost all topics. Standardization and interoperability were also highlighted as something "positive for the security providers as well as for the end users and the citizens", and were to be reinforced through R&D projects. A note recommending this focus for the Work Programmes for 2011-2013 was accordingly prepared for the Commission (European Commission, 2009).

During the ninth meeting of the group, in April 2010, the willingness of the Commission "to emphasize the industrial policy dimension of the programme" was lauded, as its reflections on standards for the security domain were welcomed (European Commission, 2010a). Some months later, the group set up seven sub-groups to pro-actively facilitate the choice of priorities in the FP7 Work Programme 2012 on security. As part of this effort, workshops were organized, including on Maritime Border Security and intelligence gathering and information sharing (European Commission, 2010b).

At the twelfth meeting of the SecAG, a representative of the Joint Research Centre of the Commission was invited to the meeting and agreed with the members that standardization of the security sector was important to support innovation and reduce "the fragmentation of the security market and enhance interoperability of security systems in Europe." (European Commission, 2010c). In its final report for 2011-2012, for instance, the SecAG emphasized the need to "increase the engagement of end-users in the research projects [as] an important way to focus research and accelerate its uptake" (European Commission, 2012a). Recommendations along these lines had dominated the SecAG since its inception at the beginning of FP7, and its effect can be traced observing the resulting formulation of Work Programmes and their calls.

For instance, during the 2007 Work Programme, a topic was called "SEC-2007-3.1-01 – Integrated border management system (phase 1)". The Work programme describes it as a demonstration programme defining the strategic roadmap for ensuring EU-wide awareness with the goal to be "the demonstration of a comprehensive and integrated border management system relating to the Schengen co-operation and the European Union's external borders". This system, the Commission stated under this topic, should provide concentric layers of protection from pre-entry control measures through to co-operation inside". This was seen as requiring, in one layer, surveillance systems capable of "improving situational awareness and detecting anomalous behavior of people and platforms (vehicles, boats, aircraft)".

For the other layers, the topic requested that projects developed "[i]dentity management systems including documentation, equipment and supporting for the accurate identification and authentication of individuals as well as positioning and localization systems "to track and trace individuals, goods and platforms." It also requested projects able to "fuse data from disparate systems (identity management, inteliigence etc.)" (European Commission, 2007, p. 20). The specificity of the call clearly links to the then-ongoing discussion about SIS II, but also flags interoperability as a Commission priority. Moreover, the call also illustrates how in the mid-00's, the visions of large-scale EU surveillance systems had not yet been distilled into the two more separate tracks of database and a surveillance network for the land and maritime borders.

The research consortium European Global Border Environment (GLOBE) won this specific call. The project lasted between 2009-2011 with the EU funding the entire budget of €9.600.000, and was coordinated by Italian E-Geos. It also included, among others, GMV Aerospace and

Defence, Indra Sistemas, the Italian and French branches of Thales, Thales Alenia, Airbus, Deutsches Zentrum für Luft und Raumfahrt, as well as German and Italian universities and the Joint Research Centre of the European Commission.

Among GLOBE's objectives was listed the creation of the framework for an "integrated global border management system". It also promised to look further into the social and economic impact of border problems and to pay special attention to conceptualizing the needs of "end users", such as coast guards, police and other national institutions from several Member States, which, it noted, was therefore "well known by the partners of the consortium due to the close relationship with these institutions through the hands-on experience that all companies have in the different border control areas." GLOBE lasted from 2008-2009, and was awarded the total cost of €999.891. it was coordinated by Spanish Telvent Interactiva, and also included, among others Spanish GMV Aerospace and Defence, French Altran, Austrian Cogent, Portuguese GMVIS Skysoft and Norwegian Institutt for Fredsforskning.

The SecAG for Horizon 2020 was chaired by the former Finmeccanica CEO Alberto de Benedictis. It immediately struck chords similar to its predecessor, when it came to public-private interactions in EU border systems. During its first meeting on February 27, 2014 the group discussed how to handle cases of funding close-to-market research topics. Distinguishing first between practices for "public procurement for innovative solutions" and those for "pre-commercial procurement", the group then argued the need for their convergence. To the Commission, it suggested that the SecAG itself should develop a pre-commercial procurement strategy involving the fusion of civil and military needs (European Commission, 2020). Moreover, in July 2016, PASAG published a report where it determined five key areas that should structure research and development on security, which included border and external security, fighting crime and counter-terrorism, and building a competitive European security industry (European Commission, 2016, p. 5). They then proceeded to set out 2030-visions for each area "to ensure that what gets funded today represents stepping stones along a technology roadmap that has the ultimate objective of delivering tomorrow's vision" (Ibid). These visions included that "EU citizens of good standing should be able to cross all land, sea and air, internal and external EU borders, with no physical barriers". At the same time controls should be "triggered by alerts activated throughout the EU and not exclusively at border crossings" leading to "a single EU-wide entry protocol and monitoring" of non-European citizens mobility within the EU". (Ibid.)

To achieve this, the group argued, it would be necessary to step up investments in security technology in order to create "an integrated border management" through a "technology investment road map" and large-scale pilots in cooperation with industry and end-users covering "systems, equipment, tools, processes for rapid identification for both control and surveillance issue." (Ibid.). PASAG informed the Commission that such an effort would lead to the creation of "new markets" for advanced security products "with access to an open EU and export market",. Among the emerging technologies it recommended were IT architectures and AI embedded autonomous systems, the management of which should also be undertaken by the private sector (Ibid., p. 6).

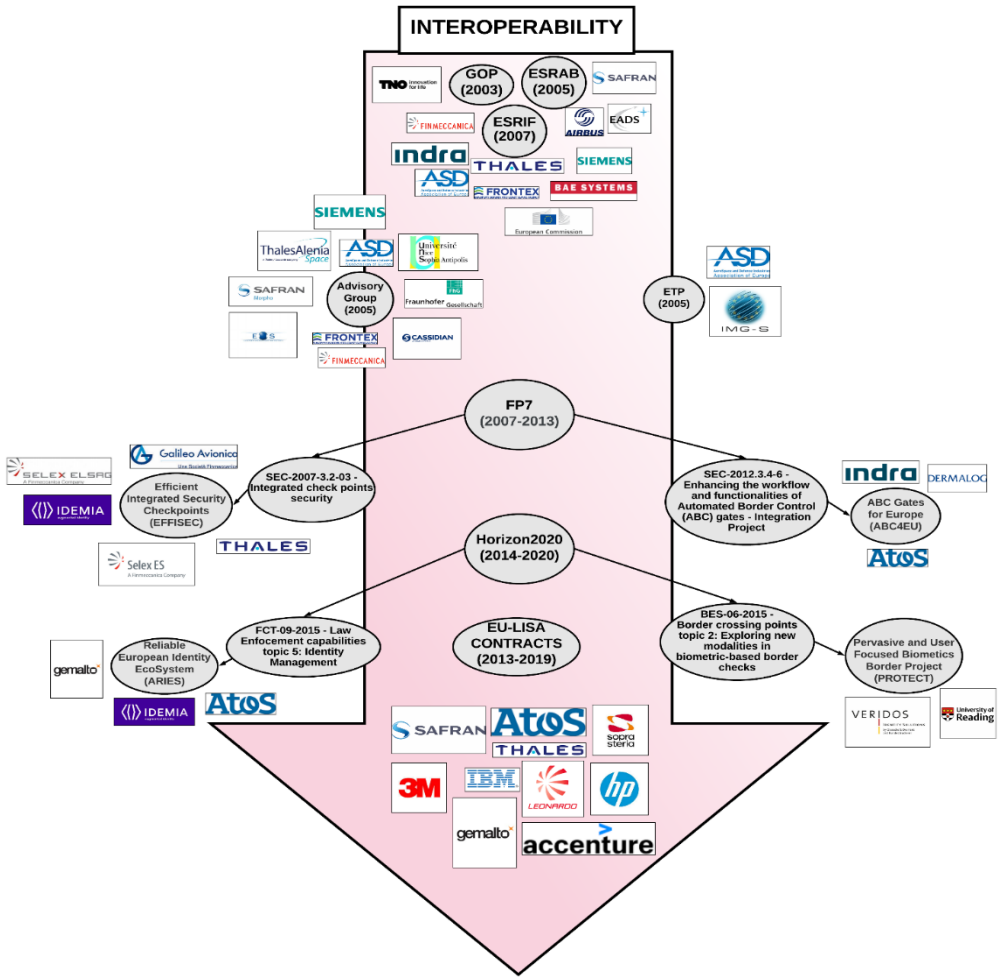


Figure 15 - Phases and private actors developing interoperable EU borders, 2003-2019

When observing the policy drive for interoperability from a more elevated vantage point, it transpires how commercial interests have been involved in shaping the infrastructures of interoperable and standardized entry control on multiple levels. As such, Figure 15 illustrates the path dependency, or lock-in effect (Menz, 2013) characterizing the multileveled evolution of interoperable EU border systems.

These include the Commission's launch of blurred forms like the GoP, ESRAB and ESRIF between 2003-2007 and the AGs and ETPs after 2005. Through these, European biometrics, security and defence companies have not only been influencing the formulation of annual Work Programmes and specific topics under FP7 and Horizon 2020's, in Figure 21, exemplified by SEC-2007-3-2-03 or SEC-2012.3.4-6. They have also participated in the research consortiums responding to these calls, and thus placed themselves on the receiving end of EU research funds. In Figure 15, these consortiums are represented by the projects EFFISEC and ABCG4EU (FP7) and ARIES and PROTECT (Horizon 2020), but this is only for illustrative purposes, as both funding instruments channel funds out to a myriad of other projects, many of which pertain to border

control. Finally, Figure 15 also conveys how some companies have also been reaping the contracts on interoperable and standardized border systems awarded by EU-Lisa since 2013.

Illustrating the SecAG focus on interoperability and standardization, combined with the recommendation of autonomous and robotic border systems, was the autonomous swarm of heterogeneous Robots for BORDER surveillance (ROBORDER) project (Figure 16).

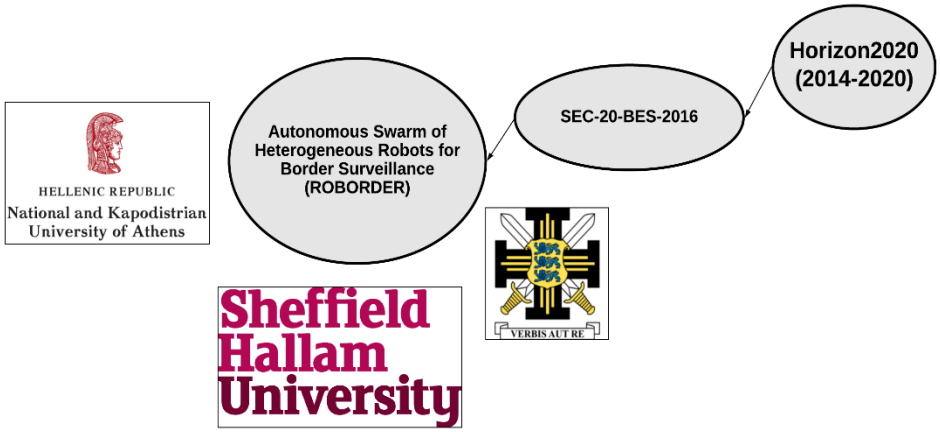


Figure 16 - H2020 project, The autonomous swarm of heterogeneous Robots for BORDER surveillance (ROBORDER) project

ROBORDERS' funding derived from the 2016 Work Programme, which, in accordance with the SecAG recommendations featured a topic entitled "SEC-20-BES-2016 – Border Security: autonomous systems and control systems" and a sub-topic on "autonomous surveillance". It requested from applicants systems that would be "interconnected, interoperable and capable of exchanging information among themselves". ROBORDER was granted the funds, and supported with €7.999.315,82 out ouf €8.997.781,50 by the EU. Its members included Estonian Academy of Security Sciences (€130.812.50), the English Sheffield Hallam University (€473.375) and the National and Kapodistrian University of Athens in Greece (€418.750). Moreover, just like the PROTECT consortium in Figure 21, ROBORDER illustrates an observable development whereby securitized militaried research previously undertaken by defence actors, are increasingly being pursued by academic institutions under the label of border surveillance.

Alongside the trajectory of interoperability designs identifiable between AG recommendations for EU research priorities and the consortiums awarded funds, the commercial interests in interoperable, standardized and large-scale border systems were also purused by other, networking means.

4.2.2 Commercial interventions - events, studies and roundtables

EU entry governance is imbricated in multiple, different and at times differing associations and interests. These have been constantly re-assembled through a series of events and conferences organized by EU agencies like Frontex and EU-Lisa, and meetings with Commission representatives. Figure 17 visualizes the meetings between biometrics companies and the Digital Single Market representative for the Commission.

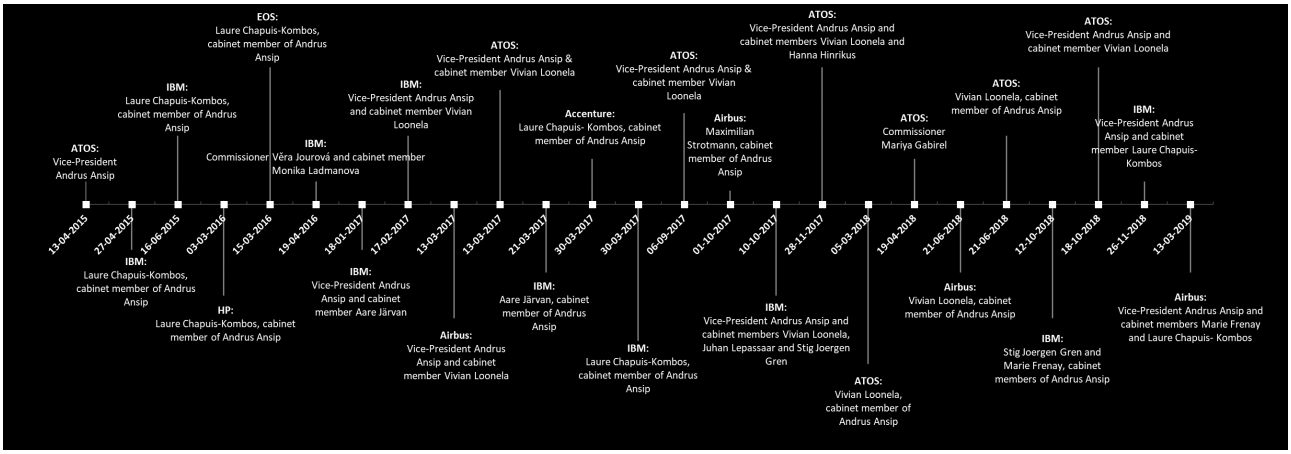


Figure 17 - Digital Single Market Commission representative meetings with biometrics companies, 2015-2019

Following the Commission's Smart Borders proposal in 2013, a Pilot was initiated, resulting in a report in 2015. At the same time, the European Commission contracted the consultancy company PriceWaterhouseCoopers to undertake a cost analysis of the Technical Study on Smart Borders (Price Waterhouse Coopers, 2014). The pilot tested and researched 18 air, sea and land borders crossing points in 12 Member States, involving 58.000 travellers and around 350 border guards. Biometrics such as fingerprints, facial images and iris scans were rolled out in Automated Border Gates and kiosks (EU-Lisa, 2015). In terms of commercial supply, the pilot assessed that the required technologies for fingerprinting and facial imagining were already widely available on the market; while the technology for iris scanning existed, and was available. Automated Border Gates technology for exit checks was already in place along several Schengen borders, and thus available, whereas further refinements to existing technology were needed to assemble the devices of kiosks (Ibid.). A questionnaire about the cost of equipment was circulated and five companies on the market for biometric borders responded. However, in both reports, all market actors have been anonymized, and neither deals with the political economy of the biometric market for border control (cf. Ibid.).

PriceWaterhouseCoopers identified costs for the development, implementation and subsequent operational management of a Smart Borders system. In the end, the Cost Analysis estimated that for three years of development and one year of operations, the costs of a joint Entry/Exit and Registered Travelling Person system would be €381 million, while the same for a seven-year period would be €553 million (Price Waterhouse Coopers, 2014). So-called Member State toolboxes were recommended, whereby Member States would estimate the magnitude of the costs that they will need to fund using national budgets (Ibid.).

Another level through which the EU policy-making developed was when, on June 14, 2016, EU-Lisa organized an Industry Workshop in Strasbourg focused on how the hotspot approach in Greece and Italy had to work properly to ensure the internal security of the EU. Besides speakers from the two agencies, also representatives from Oracle, Accenture and Sopra Steria were invited. EU-Lisa related to the industrial actors that "[t]echnologies were needed to address aspects related to IT security, interoperability, networks, mobility, infrastructure and data" (EU-Lisa, 2016, p. 2). The two former companies presented the promise and speed with which

their contracts with, respectively, the German BAMF agency (for processing asylum applications) and the UNHCR (for extracting iris, face and fingerprint biometrics from refugees in camps) were completed. By contrast, and perhaps born out of the SIS II-experience, Sopra Steria underscored that new large-scale systems are complex, may take years to implement and involve building new layers upon existing systems (Ibid.). The following year, the Commission called for identifying gaps, and promoting interoperability between, strengthened existing IT systems for border management (European Parliament, 2016b). To this end, it established the High-Level Expert Group on Information Systems and Interoperability. Coordinated by the Directorate-General for Migration and Home Affairs, its experts were nominated by Member States, Schengen Associated Countries, and EU Agencies.

The Group met five times between June 2016 and April 2017, before producing its final report. Among their recommendations featured; that the Commission continued to fully associate the European Data Protection Supervisor (EDPS) and the EU Fundamental Rights Agency (FRA) with system developments in the area of justice and home affairs; that Member States should prioritize assessing the feasibility of facilitating access for law enforcement, asylum and migration authorities to Eurodac. Moreover, it was recommended that Member States should redouble their efforts to fully implement the SIS I and the VIS and continue to cooperate with the Commission and EU-Lisa on introducing technical and operational improvements of the systems within the existing legal bases. This recommendation, however, illustrates the continued, uneasy relationship between the political, technical and legislative evolutions of the interoperable EU borders, since the Group also recognized that these legal bases were in the process of substantive recasting. Furthermore, the report was completely void of any discussions about industrial actors, as well as their competition and connections to the national industries of Member States (European Commission 2017a). Other conferences in this period included the Frontex-EU-Lisa conference on EU Borders – Getting Smart through Technology in Tallinn, Estonia on October 16-17, 2018, and on October 9-10, 2019 the International Conference of Biometrics for Borders in Warsaw, Poland, which brought together experts, practitioners from private sectors with representatives from EU institutions, like the Commission, Europol and EU-Lisa, as well as the IOM, the Organization for Security and Co-operation in Europe (OSCE), the Fundamental Rights Agency (FRA) and the International Centre for Migration Policy Development (ICMPD).

EU-Lisa has thus interpreted its role to mean the quick establishment of extremely close relations to commercial actors in the EU borders. Its close orbit to these interests is manifested through a series of tenders and framework contracts for maintenance, upgrades and evolutions. Traversing the problematic and co-constitutive relation between policy and technology development, these coincided with the Commission's proposals between 2016 and 2018 to recast Eurodac (2016), SIS II (2016), and VIS (2018).

4.3 Shifting from smart to interoperable borders

The proliferation of Commission recasts 2016-2018, after the fall of the Smart Borders package, coincided with tense political debates about the increase in migration to the Union since 2015. The Commission perceived this as a "migration crisis" characterized by migrant invisibility for Member States authorities (European Commission, 2016c). In line with the already existing drive towards interoperability, it proposed as a remedy the upgrading and expansion of "information

exchange"-infrastructures allowing collaboration between Member States on the identification and return of migrants (cf. European Parliament, 2018a).

The introduction of new layers of assessment for persons entering EU territory through large-scale information systems coincides both with urgency-driven political dynamics, and with measures for migration management adopted on the basis of Article 77 TFEU. Coupled with the technical drive towards standardization and interoperability characterizing the evolution of these information systems, these developments could have the effect of further harmonizing EU entry governance (Koopmans and Gonzales Beilfuss, 2019, pp. 76-7).

Motivating the Commission focus on interoperability, seems to be assumptions that such technologically driven solutions can solve the deep political problems of lacking Member State collaboration and solidarity on matters of migration management. As such, the spill-over of challenges from intra-EU -struggles and into the ambitions for standardized, large-scale information systems illustrates one notable risk with an exclusive focus on technological fixes to complex political situations. This indicates a lack of reflection on the interests of commercial actors who are pro-actively pursuing contracts and market shares by connecting to the interoperability agenda through EU forums and institutions. Arguably, however, the drive to marketize EU entry governance is an influential reason for the belief in technological remedy to challenges with entry governance.

In this context, the Commission's 2016 proposal to recast Eurodac is noteworthy because it widens the kinds, categories and storage of data in the system, such as a data retention period extended from 18 months to five years; a lowered age of registration from fourteen to six years of age; and facial recognition technology. But it also opens up for third country authorities to be able to access Eurodac for return purposes, transfering some personal data to that effect. This exchange of highly sensitive biometric data was framed by the Commission as solving the problem of asylum applicants refusing to have their fingerprints taken, and as making sure that asylum seekers and refugees were registered in their first countries of arrival (Orav amd D'Alfonso, 2017; European Commission, 2016c). However, this is controversial as it would also require selective interoperability with the information systems of third countries.

Concerning the VIS database, the European Commission proposed to revise its regulation in 2018. This would transform it into a system more capable of "preventing security risks and the risk of irregular migration to the EU" on account of the Commission's perception that Union-wide visa policies had changed "drastically" due to "migration and security challenges" (European Commission, 2018c). The means to achieve this was to make VIS interoperable with the other large-scale systems through the European Search Portal (ESP) and the Biometric Matching System (BMS). BMS had been constructed through a 2006-contract from the Directorate General – Justice Freecom and Security. It was budgeted at €157, which was awarded to a Bridge consortium, consisting of Sagem Défénsé Sécurité (part of Safran), Accenture and Daon, as well as Bull and Uniqkey (Accenture 2008; Daon 2008).

The Portal would allow border guards, through one single search, to trawl both the VIS, Eurodac, SIS II, EES, Interpol System, European Travel Information and Authorization System (ETIAS), and the European Criminal Records Information System (ECRIS and ECRIS-TCN) all at once (European Parliament, 2017b). Moreover, this interoperability was to make it easier to transfer

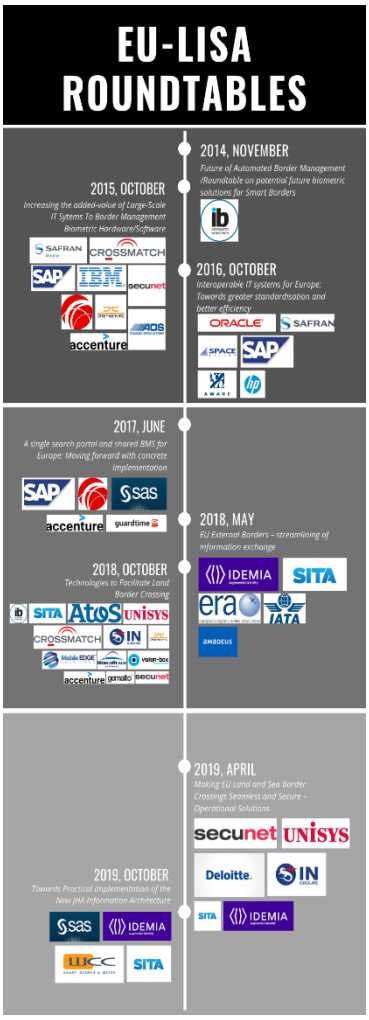
categories of data, which were to be expanded, like Eurodac. For instance, the Commission suggested to store also information lowered fingerprinting age (from 14 years to 6 years) and on longer stay visas and residence permits issued by Member States. If realized, this would add an additional 22 million entries to the system's current 52 million visa applicants (Statewatch, 2018).

Concerning the recast to SIS III, the European Commission undertook a comprehensive evaluation of SIS II, which concluded that the efficiency and effectiveness of the database should be strengthened (European Commission, 2016c). To this end, three new proposals for expanding the use of the database were included: increased border management; increased police and juridical cooperation; and increased returns of TCNs from EU territory, all of which required expanded interoperability and standardization (European Parliament, 2017b). According to the Commissioner for Migration, Home Affairs and Citizenships, Dimitris Avramopoulos, these extensions were necessary in order to "close information gaps and improve information exchange on terrorism, cross-border crime and irregular migration. In the future, he said; "no critical information should ever be lost on potential terrorist suspects or irregular migrants crossing our external borders" (European Commission, 2016e). To this end, more data should be collected and more searches be made mandatory. The biometric data should also be made multi-modal, that is, based on fingerprints, facial images, photographs and palm prints, claimed to constitute more reliable references points for accurate and conclusive comparisons. Second, by making it mandatory to store and share information about return decisions and entry bans in the new SIS III, the system would evolve into an instrument for monitoring TCNs subject to return decisions (European Parliament, 2018b).

The original EES-package ratified in 2017 proposed, among other things, to record the time/place of entry and exit for TCNs entering the Schengen Area, information that none of the other databases record. In registering and tracking people's travel histories, the EES was also envisioned as complementing alerts already recorded in SIS. Moreover, a Registered Traveller Programme (RTP) was to allow pre-screened third-country nationals to benefit from facilitated border checks at the EU's external borders. However, only the EES component was adopted, while the RTP and the smart borders-terminology was dropped.

Similar to the VIS and SIS II, the EES is to consist of a central system that operates as a computerised central database of biometric and alphanumerical data. All member states will have National Uniform Interfaces on their territory. The system is moreover to be interconnected and thus interoperable with the VIS database via a Secure Communication Channel established between them, as well as between the EES Central System and the National Uniform Interface (EU-Lisa, 2017; European Parliament, 2017b). The EES-plans also include the development of a web service through which carriers, such as maritime transport and airplane companies, can determine whether TCNs holding a Schengen short-stay visa have already used the number of entries authorised by their visa. As a result of this, also private companies will be integrated into the daily management of the technological infrastructure of third country nationals's entry into the EU. This represents an extension of the carrier liability regulations in place since the 1990s.

This expansion of the political wish list visible in the three Eurodac, SIS and VIS-recasts as well as the envisioned EES system corresponds to a similarly significant expansion in the volume of technological upgrades and infrastructures required to realize those wishes. This fast-paced



evolution of the interoperable EU border systems means that the establishment of new infrastructures, and upgrading these has become a central and permanent priority in EU border policy-making. Moreover, the flurry of new systems, such as the SIS to SIS II, Eurodac, the BMS, VIS, and now EES, also serve as simplifying arguments for one another (cf. Jeandesboz, 2016). Trading on the lock-in effect generated by the need for interoperability, each system is used to justify the continuous evolution of the others, leading to circular arguments for the technical feasibility and functional interoperability of the large-scale systems.

When it comes to commercial interventions in the multileveled EU governance of entry, the flurry of systems and upgrades also leads to a corresponding flurry of border contracts. It is pivotal to identify these and the actors behind them in order to comprehend the multileveled governance processes behind the EU borders.

Figure 18 - EU-Lisa Roundtables, themes and participants, 2014-2019

4.4 EU-Lisa Roundtables

Illustrating the close relations between EU-Lisa and industrial actors, however, are the Agency's Roundtables. During these, representatives from EU institutions, industry actors as well as foreign agencies are regularly invited as experts within the field. From the first roundtable in 2014 until mid-2019, EU-Lisa has hosted ten such roundtables (see Figure 18). This recurrent dialogue between the Agency and industry is motivated as a way to ensure clearer communication, but may also result in a natural affinity for public-private cooperation between the partners (Akkerman, 2016). At the Roundtables, it possible for industrial actors to liaise with government representatives and communicate their preferences and suggested solutions to the development of IT systems. Roundtables, as well as conferences, are important sites for the industry in order to influence the policies and choices of technological solutions underpinning the large-scale information systems.

The Roundtables have several effects. On the one hand, if the same company is invited to several roundtables, their chances to influence EU-Lisa decisions on technological solutions

becomes proportionately higher. On the other hand, this strategy also requires companies to constantly develop high-tech solutions, even before problems corresponding to the technological capacities exist. As such, they both influence the political agenda so it corresponds to the already developed solutions, but also be challenged to respond to sudden, and potentially infeasible, political wishes.

Through the EU-Lisa Roundtables, the relations between the Agency, companies, functional preferences and awarded contracts can be further examined. For instance, during the 2014 Roundtable which focused on the "potential future of biometric solutions for Smart Borders" and Automated Border Gates, the main aim of the roundtable was to establish contact between eu-LISA and the industry to "exchange information and views regarding proven methods and solutions and to share ideas for future developments that may be relevant in the context for and the purpose of the forthcoming Smart Borders pilot" and its testing of technical solutions for the EES and RTP (EU-Lisa 2014a).

Based on this need for technological solutions in identification processes, EU-Lisa stated that they needed to "be aware of state-of-the-art hardware and software solutions and upcoming developments that could be useful in Smart Borders and that may improve system performance and/or effectiveness". However, the Agency also stated that "the aim is to assemble and share thoughts; under no circumstances should the event be considered as a prelude or an advantage to future procurement exercises". Twenty-five companies were invited to the Roundtable (EU-Lisa, 2014b, p. 14). For the 2015 Roundtable, headlined "Future of Secure and Efficient IT service provision", nine companies were invited alongside representatives from DG Home, a Member State and the EU funded research project ABC4EU. The companies included Morpho, Augmentiq, Accenture, Jenetric, AOS, Secunet and CrossMatch. Two industry sessions were organized, on "identity and risk" and "biometric hardware and software" (EU-Lisa 2015b).

In 2016, under the heading "Interoperable IT systems for Europe: Towards greater standardisation and better efficiency" EU-Lisa, once again invited industry to a Roundtable. Invitees included three representatives from the Agency itself, one from Europol and seven from the industry (EU-Lisa, 2016b). EU-Lisa framed the event with reference to the Commissions recent communication on Stronger and Smarter Information Systems for Border and Security. Then, three representatives from the industry presented their perspectives on interoperability, namely one from the German ITC company, Oracle, the tech company SAP, and from French Safran (Ibid., p.3).

After the presentation followed a panel discussion with participation of Deloitte, Space Hellas, Aware, and HP. The 2017 Roundtable focused on the development of a single search European portal and shared Biometric Matching Service. At the event, 55 representatives participated from industry, alongside staff from eu-LISA, EASO and Frontex, and on the agenda was a follow-up on the Commission's High Level Expert Group on Information Systems and Interoperability which had worked throughout 2016-17. Amongst the industry participants were Accenture, SAP, Guardtime, Augmentiq and SAS providing inputs on potential architectures for the interoperable systems, including blockchain technology.

In 2018, EU-Lisa hosted two industry Roundtables. The first was entitled "EU External Borders – Streamlining of information exchange". The stated goal was to facilitate a platform for entities involved in the carriers of travellers to and from the EU by air, sea and/or land. Industry

input on the development and implementation tools for advanced passenger checks was requested. It gathered 39 representatives from the industries, including the companies Amadeus, SITA and Idemia, as well as four EU member states, three EU Agencies and the European Commission (EU-Lisa, 2018a).

The second industry Roundtable in 2018 focused on technologies to facilitate land border crossings at the EU's external borders and how they could be governed after the EES became operational. Here, 15 industry presentations were given, and in total, the event gathered 101 participants from 38 different companies, industry associations, academia and government agencies.

EU-Lisa's executive director, Krum Garkov opened the event saying that there is "a great need for end-to-end solutions fulfilling the needs of EU external control, particularly at land borders" and continued by stating that EU-Lisa is open to dialogue with the industry in order to fully understand what the industry can offer (EU-Lisa, 2018b). The Director for the Border Security Programme from Uniysys held a presentation together with a colleague from Mobile Edge, and other industry representatives came from Accenture, Atos, Gemalto (owner of 3M, Jenetric), Integrated Biometrics, Crossmatch and SITA. Also, a representative of In Groupe stated that land "border crossing processes must be adapted to local populations, infrastructures and threats" (Ibid.).

A representative from Gemalto repeated earlier statements that the company was "particularly interested in the EES initiative which is hugely dependent on biometrics and checking of travel documents". The company thus viewed biometrics as "the big winners of the EES initiative. And no longer just in airports, as is currently the case. Particularly busy sea terminals and land border posts will become the first clients of the famous eGates currently reserved only for air travellers" (Gemalto, 2019a).

Finally, in 2019, EU-Lisa hosted two Roundtables in April and October, but invitees have only been announced for the former (EU-Lisa, 2019f). The theme for the April event was "Making EU Land and Sea Border Crossings Seamless and Secure – Operational Solutions". Invited as speakers were two representatives coming from The United States and Canada, one representative from a EU member state, two eu-LISA representatives and lastly six representatives from different companies. Participating companies included Unisys, In Groupe, Secunet, SITA and Idemia (former Morpho and Safran).

4.4.1 Tracing EU-Lisa contracts

Commercial interests have been a mainstay during the development of the interoperable EU border systems. This transpires in several ways. First, the winners of framework contracts are placed favourably for harvesting future chains of contracts (for the first such EES contract, see Figure 17). Second, the political desire for open-ended systems capable of being continuously updated allows for (controversial) functions to be inserted into the design of border systems, even if no political agreement has been reached. Third, such EU-wide framework contracts also create path dependency at the national level, since systems like SIS, VIS, Eurodac and EES (as well as

EUROSUR) require that Member States update their national systems along the technological lines set out by those contracts.

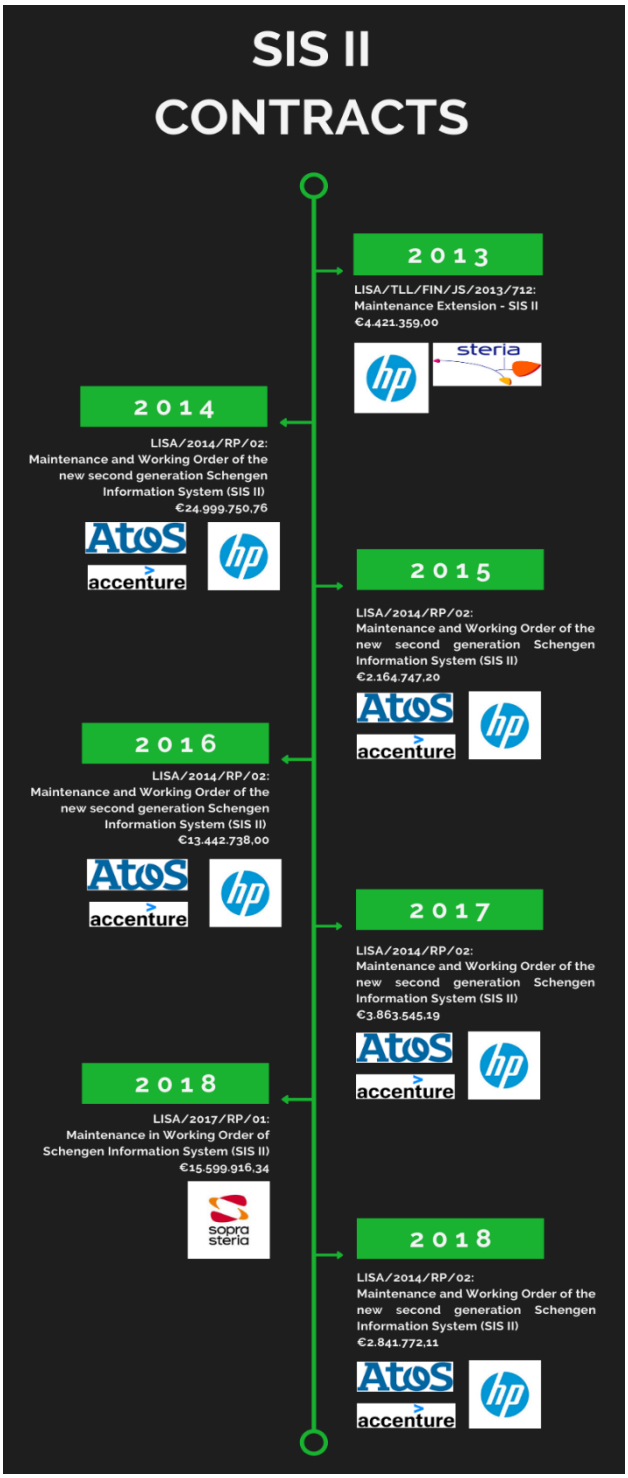
However, as feared by Member States during the SIS II controversy, such framework contracts also place a few companies favourably on the EU border database market.[2] At the same time, the seemingly upscaled roll-out of expensive and advanced surveillance infrastructures also illustrate how this outcome may have been facilitated by commercial actors using the role as security experts to frame ever-larger spheres of grave security concerns in need of technological solutions they themselves supply.

The discourses of technological fixes and optimized information sharing are prevalent and have continued to influence the chains of contracts awarded by EU-Lisa, and before that, the Commission. This illustrates that expensive border infrastructures are sometimes developed before problems corresponding to the technological capacities have come into existence, or for problems that may never actually do so. At other times, the volatile conditions of immigration politics in the Member States have meant that technological solutions are constantly reconfigured and repurposed beyond their original intent. Technological supply may sometimes create its own demand, while political dictates seek to create their own realities.

While the future flexibility of systems might be useful from a political perspective, there are also political risks with the large framework contracts for the Eurodac, SIS and VIS systems managed by EU-Lisa. This is because these frameworks require contractors to design systems allowing possible expansions and updates inserted by future political preferences. Figures 19-22 illustrate how, since its inception, EU-Lisa has served as an accelerator for the technical and commercial vision of interoperable EU borders upon which political proposals for recast have been modelled. Accordingly, since 2016, this has led to an upscaling of the advanced border systems regulating the entry of migrants to the EU. Notably, this has also resulted in multiple large framework contracts, which have typically been awarded to the same companies and consortiums.

Figure 19 - EES contracts awarded by EU-LISA, 2019

[2] Many of these required national projects funded by the EU's External Border and Internal Security Fund. For reports on the case of Spain, see (cf. Fundación Por Cause, 2017; Casajuna, 2017, p. 50)



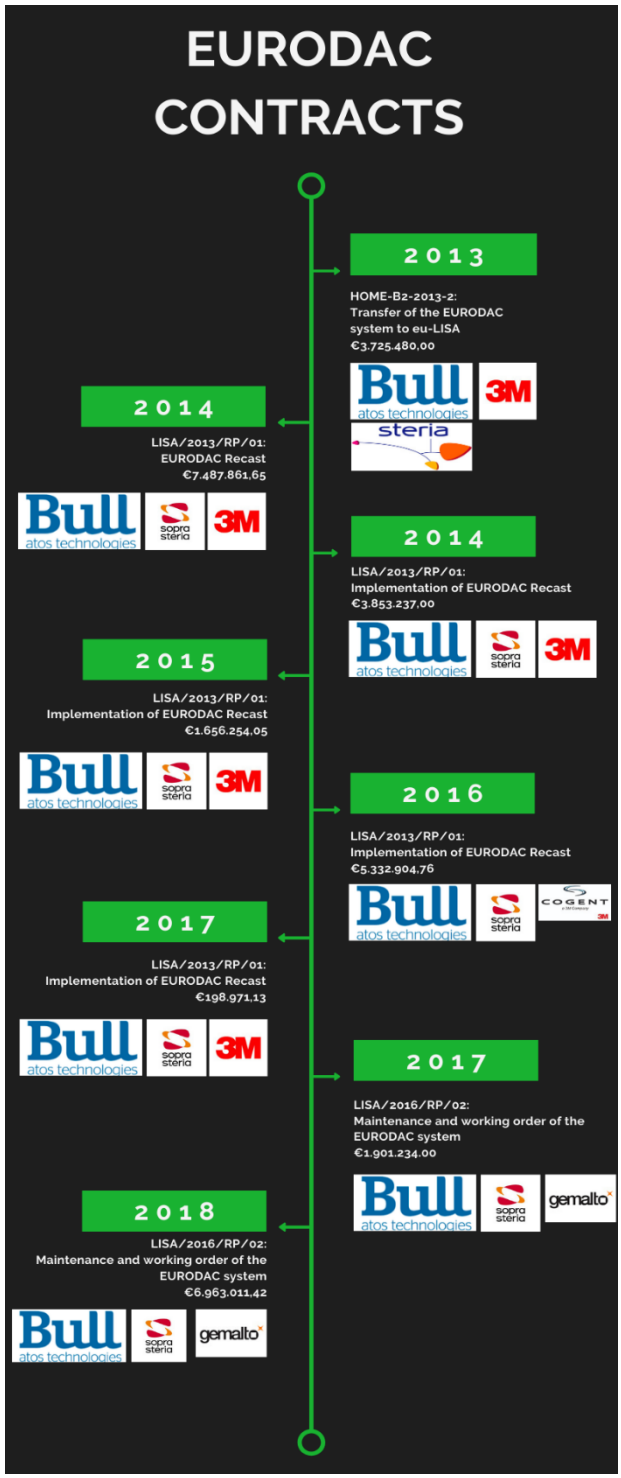


Figure 20 - SIS II contracts awarded by EU-Lisa, 2013-2018

Figure 21 - Eurodac contracts awarded by EU-Lisa, 2013-2018

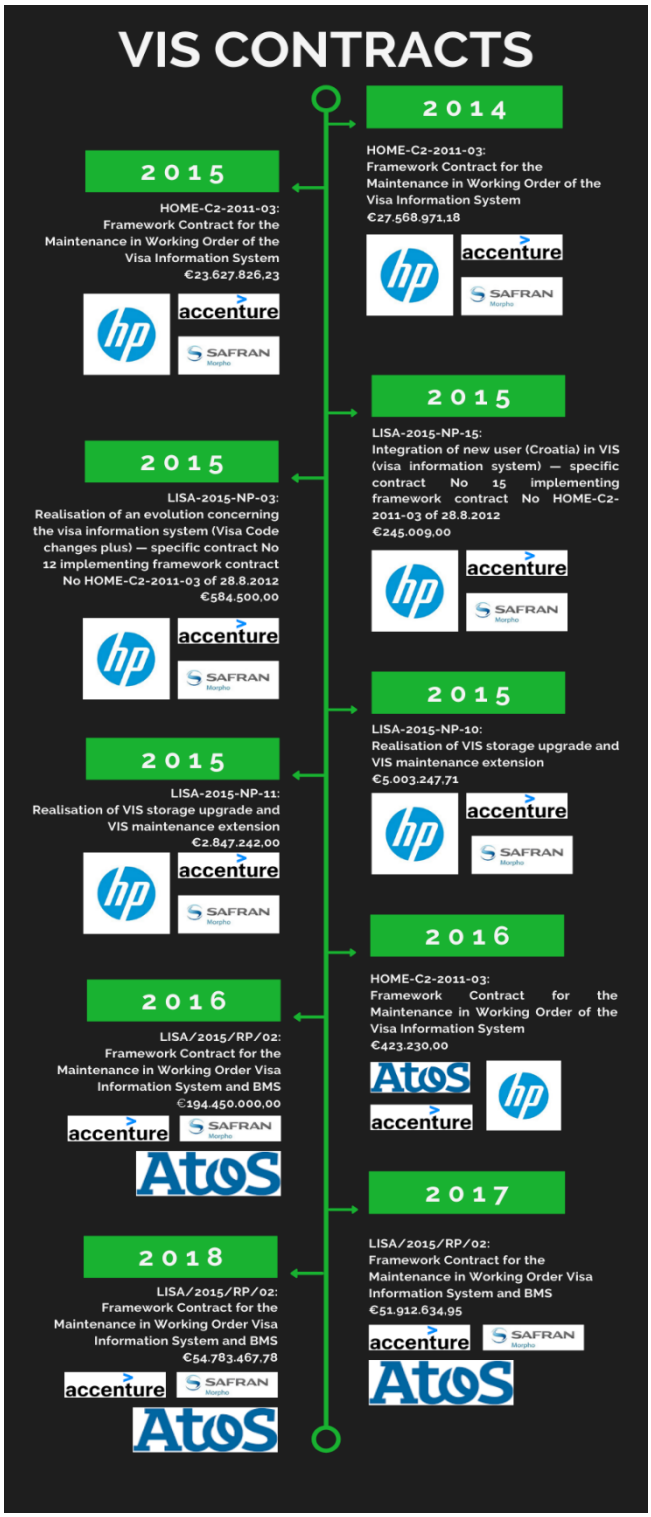


Figure 22 - VIS-contracts awarded by EU-Lisa, 2014-2019

Earlier research (Jeandesboz, Bigo, Hayes and Simon, 2013, p. 47) has critically examined the feasibility of the Commission's cost and impact assessment of the EU's smart borders package, by comparing it with similar large-scale database projects in the United States (US VISIT), United Kingdom (UK e-Borders) and the Union's own SIS II. It found that, similar to the SIS II process, the total estimated costs for the EES and RTP have risen from €100 million (estimated by the Commission in 2008) to €1.34 billion in a 2011-estimate. The repeatedly spiralling costs of the EU border databases, and their lacking transparency and inaccuracy, was found to be created by project management issues arising particularly from the multiple interventions from the contracts with commercial actors, especially "when the number of bodies able to intervene into the implementation process is significant, which results in lines of responsibility and accountability being blurred" (Ibid.).

This development also yields risks in terms of lock-in effects. Thus, when EU-Lisa grant successive contracts not just for development, but also for maintenance and evolution, to the same consortiums, the involved companies become indispensable, and are granted roles as unrivalled experts in the systems of border control they themselves have designed.

4.5 Silences and criticism

Following the turn from the so-called smart borders towards a renaissance for the longer-spanning policy drive towards interoperable and standardized information systems, several concerns have been voiced. While the Commission have tabled many expansion and linkages between the information systems during the renegotiations of Eurodac, VIS and SIS, and the launch of EES, the reasons given for increased data retention periods, lowering age of biometric registration (Statewatch, 2018), multi-modalities or the inclusion of commercial companies in searches across the systems have not been sufficiently motivated. Instead, the overall rationale of interoperability risk being used to conflate distinct phenomena like migration management, internal security and the fight against terrorism, is invoked. Moreover, even though interoperability is portrayed as an apolitical and technological development, it cannot be separated from the political and legal contexts it is implemented in (cf. EDPS 2017, p. 9, 12).

This includes the contested and life-threatening context of irregular entry to the EU, as well as the spill-over effect when political challenges stemming from intra-EU -struggles are deemed solvable by being transferred into information exchanges via large-scale information systems. It also includes the interests and activities of commercial actors pro-actively pursuing contracts and market shares by connecting to the interopability agenda. However, the tracing of EU-Lisa workshops and framework contracts illustrates how commercial interests have been a mainstay throughout the development of the interoperable EU border systems. Closely associated with this, is the debates about opaque and spiralling costs, as in the case of SIS II, or associated with the required subcontracts for national systems yielded by larger framework contracts harvested by the same small group of conglomerates.

Although EU-Lisa activities are obvious entry points to consider the political economy underlying the interoperability agenda, an arguably more influential stage in EU entry governance is found in the influence yielded on the strategic funding priorities of FP7 and Horizon 2020. Here, European Technology Platforms and Advisory Groups, both with members from industry, are supposed to provide neutral and divested advice, yet the analysis indicates that they instead have framed the EU's research agenda in ways which have channelled millions of euros to projects performing tests, demonstrations and validations of various aspects of interoperable border systems. This represents subsidies and pre-commercial procurement practices, and is as such aligned with the discourses of increased investments and competitiveness of the security and military industry.

EU policy-makers concerned with entry governance face several challenges arising from the lock-in effects generated by EU-Lisa's close interactions with a limited number of industrial actors. First, the continued reliance on contracts with external partners risks creating an internal institutional vacuum for the kinds of knowledge required to understand the infrastructural-technological dimension of EU border control. This challenge is of a general kind and means that it becomes difficult for policy-makers to disentangle the perspective of potential commercial profit from that of technological expertise, when dealing with technology suppliers. That is, it become difficult to discern whether the alleged expert input is guided by crucial technological assessments, or by a company's desire to win, or position itself for, future contracts.

Second, profit-driven actors may not perceive a need to raise critique of fundamental assumptions for EU policies, if this undermines potential future contracts. Combined, these three challenges mean that EU policy-makers may experience a knowledge-asymmetry when negotiating with commercial actors about the shape and form of EU entry governance; they may not be able identify profit-driven rather than expertise-driven recommendation; and they may have limited access to crucial critique of their own political priorities.

5. EUROSUR: Building a European market for external border surveillance

The European Border Surveillance System is a multipurpose system for monitoring and controlling migration accross the EU's external borders, employing technologies such as satelites, radars, drones, aircrafts and offshore sensors. In December 2011, EUROSUR was given a projected budget of €244m Euros until 2020 through COM(2011) 0873. Under this regulation, each Member State is to create a National Coordination Centre (NCC) responsible for national border crossing points. EUROSUR is thus designed to connect National Coordinations Centres (NCC) of all Member States in the Schengen Area as well as some other associated countries (Migration and Home Affairs, 2019).

By 2013, EUROSUR was set to be operational, and preparations were made to extend the system from the initial 19 to all 30 Schengen countries. In 2014, the Council announced an Action Plan for a European Union Maritime Security Strategy (EUMSS), aligned with the plans for EUROSUR (Council of the European Union, 2014). To this end, the 11 remaining National Coordination Centres, replete with technological infrastructure and networks, were set up. In 2015, the Commission adopted a EUROSUR Handbook that specified the technical and operational guidelines for the system.

The Frontex Agency occupies a key role in EUROSUR by maintaining a common-European situational picture and "common pre-frontier intelligence picture" about the situation at Europe's borders and the pre-frontier area. Frontex is also responsible for coordinating the so-called common application of surveillance tools, that is, the monitoring of specific areas, vessels through satellite of ship monitoring systems. The ambition is the rapid exchange of information, cooperation and joint border control response.

Dominating the technical studies, pilots and policy documents that have facilitated EUROSUR are discourses on "a system of systems", "real-time border monitoring" and the "life-saving of migrants". At the same, scholars have pointed to the existence of a time lag between the registration of events, and their translation into meaning (and urgency) by the EUROSUR system (Pugliese, 2013; Tazzioli, 2016). Moreover, others have noted that alongside the humanitarian appeal, another standard justification for many of the EUROSUR components and subprojects has been an alleged fight against illegal migration (cf. Lemberg-Pedersen, 2013), while others again argue that the system's evolution represents a steady and technocratic development towards more encompassing border surveillance (Rijpma and Vermeulen, 2013).

The processes through which EUROSUR have been pursued since 2003 are highly illustrative of the multileveled governance of EU entry politics. More particularly, they are characterized by the interests and influence of large European military and security companies. More concretely still, the development of this infrastructure have been closely intertwined with a

policy drive to make the border surveillance of the EU space-based. Moreover, it is also linked to the longer-spanning tendency to externalize border control.

5.1 EUROSUR and externalization

EUROSUR is linked to European externalization policies through the function ambition of building relations with third countries. For instance, the 2015 EUROSUR Handbook states: "A well-structured and permanent exchange of information and cooperation by Member States with neighbouring third countries is key to preventing illegal immigration and cross-border crime and for contributing to the saving of migrants' lives." (European Commission, 2015*a*, p. 52).

While externalization is beyond the scope of the current inquiry, it is worth noting that since the mid-1990s, and accelerating through the 00s, European externalization policies have facilitated a profitable export market for the security and defence industry. In order to set up border control infrastructures, third countries purchase traditional military hardware, like helicopters, ships and vehicles, and other technologies, like biometrics, drones and surveillance infrastructures (Briani et.al., 2010; Lemberg-Pedersen, 2013). Thus, between 2005 and 2014, companies from the EU member states granted arms export licenses to the Middle East and North Africa worth €82 billion (Akkerman, 2016).

In general, externalization illustrates how EU border policies have blurred the line between entry governance and pre-emptive migration control. And while such exports are often pursued through bilateral venues, common-European activities like EU Trust Fund for Africa and EUROSUR have also evolved to support the material infrastructures of control spanning between EU and third countries. This is intertwined with the aforementioned increase in security and military assistance to third countries located along main migration routes, stated as a policy goal the Valetta Summit and the Khartoum Process.

However, although EUROSUR documents are generally careful not to state any direct connections to controversial actors involved in border control in collaborating states, the same care is not always reciprocated by those actors. For instance, the president of the the contested Libyan Government of National Accord (GNA) has repeatedly requested that Libyan authorities be granted access to the EUROSUR system (Akkerman, 2018, p. 51). While Libya has so far not had any formal success, its naval operations are de facto functioning through the EUROSUR system, as the Italian MRCC, and authorities from other Member States, which have been integrated in the system, are already providing the technological infrastructure (Moreno-Lax and Lemberg-Pedersen, 2019).

5.2 Early contracts before EUROSUR – CIVIPOL, MEDSEA and BORTEC

One of the earliest plans for a surveillance system for the EU's external borders was formulated in a 2003 feasibility study of the European Union's maritime borders, which was outsourced to the consulting firm CIVIPOL Conseil. Exemplifying the blurred boundaries between public and private interests, CIVIPOL is part of the French Ministry of Interior, but while the French state owns 40%

of the firm, several European security and defence companies, like Airbus, Safran and Thales, each own 10% (cf. Akkerman, 2017, pp. 78-9).

In the 2003 feasibility study, CIVIPOL framed immigration through militaristic and criminalizing discourses. Immigration to the EU was described as placing "migratory pressure" on the Union, and those facilitating irregular migration as "transnational crime organisations". Remarkably, the report even stated that because of undocumented migrants, the situation in certain EU countries was reaching a critical point that threatened "industrial peace." (CIVIPOL, 2003, 18). According to the CIVIPOL analysis, this put pressure on EU "front-line states", which thereafter offloaded the associated costs to "second-line countries". The feasibility study recommended as "an absolute necessity" setting up a comprehensive system of integrated border management (CIVIPOL, 2003, p. 46).

Ambitiously, but perhaps unrealistically, the report states that the aim of such a system should be "100% security along the coastlines of the Schengen area [which] involves improving surveillance of approaches, streamlining and automating control of entry and exit points and boosting operational intelligence capabilities" (CIVIPOL, 2003, p. 76). It also repeatedly stressed that the countries from which migrants seek to move or escape, should be encouraged and supported in checking and setting up surveillance systems on their coastlines (cf. CIVIPOL, 2003, pp. 54, 73).

As to the financing of this border surveillance vision, CIVIPOL (2003, p. 80) stated that not enough resources were committed, and argued that while the capital costs of setting up of the control infrastructure would be high, the running costs of automated surveillance operations would be lower than the price of staffing border points, so the investment in such a technological option should be promoted. However, reflecting the attitude of Member States' towards common-European initiatives taking over national priorities of border control that dominated the early 00s, CIVIPOL described itself as "rather cautious" on the issue, but, crucially, did not "rule out" European financing. In fact, it went on to lay out three possible courses of financial action, namely joint European services, measures targeting non-European countries and pilot operations.

The CIVIPOL study is noteworthy for several reasons. First, because it is a clear example of how industrial security and defence actors are both positioning themselves and also being positioned by EU institutions, as unrivalled experts on a policy area, even though they have clear commercial interests in it. Second, because the study, at a very early stage, and through controversial framings, introduced a set of ideas for border surveillance and control, and its financing, which would be followed. Indeed, more than 15 years on, many of the ideas, then found controversial and drastic, have since then come to characterize the EU border practices, such as SIVE-like maritime surveillance, drone patrols and the investment in biometric identification technology in coordination with the VIS and Eurodac systems of all authorized crossing points in Schengen. Alongside the French state's ownership of stocks in these three companies, CIVIPOL can be seen as illustrating the public-private collusion of commercial interests in border control contracts (see also section 6).

The GoP appointed by the Commission in 2003 to provide strategic advice on future European security research, mirrored these priorities. Thus, with representatives from Thales, EADS/Airbus, BAE Systems and Finmeccanica, industry interests dominated the resulting report. It

framed the need for increased surveillance and monitoring against a backdrop of the fight against terrorism and organized crime and recommended systems interoperability through sensor, space-based and IT technologies (GoP, 2003, p. 18). This coincided with an agreement between the European Commission and the European Space Agency (ESA) to prepare for a GMES Space Component, namely the Sentinel family of satellites. GMES operations would commence in 2011. ESA has launched the Sentinel satellites from the Spaceport in French Guiana, a South American former colonial territory, originally colonized during the westward European expansion of the slave-based Atlantic sugar economy.

Several of these CIVIPOL and GoP-recommendations were picked up by the Commission. In 2005, the European Council adopted the "Global approach to migration: Priority actions focussing on Africa and the Mediterranean" (Council of the European Union, 2005). This included a request to explore the technical feasibility of establishing a surveillance system covering the whole southern maritime border of the EU and the Mediterranean Sea. While the Frontex Agency had just been launched in 2004 with a coordinating mandate, the Commission attempted to seize the policy trend and proposed to establish a permanent Coast Patrol Network for the southern maritime external borders. This was undertaken by two initiatives coordinated by Frontex. The first was the MEDSEA study consisting of the Agency and a core team consisting of France, Greece, Italy and Spain. The MEDSEA final report about the establishment of a Mediterranean coast patrol network was published in July 2006. It identified as fundamental “the coverage of the entire EU southern maritime borders,” emphasizing the need for operational cooperation and coordination between national and EU authorities as well as a coordinated EU approach. Moreover, it encouraged EU support for the development of third countries’ border infrastructure, to the point that these could be included in the surveillance network (MEDSEA, 2006).

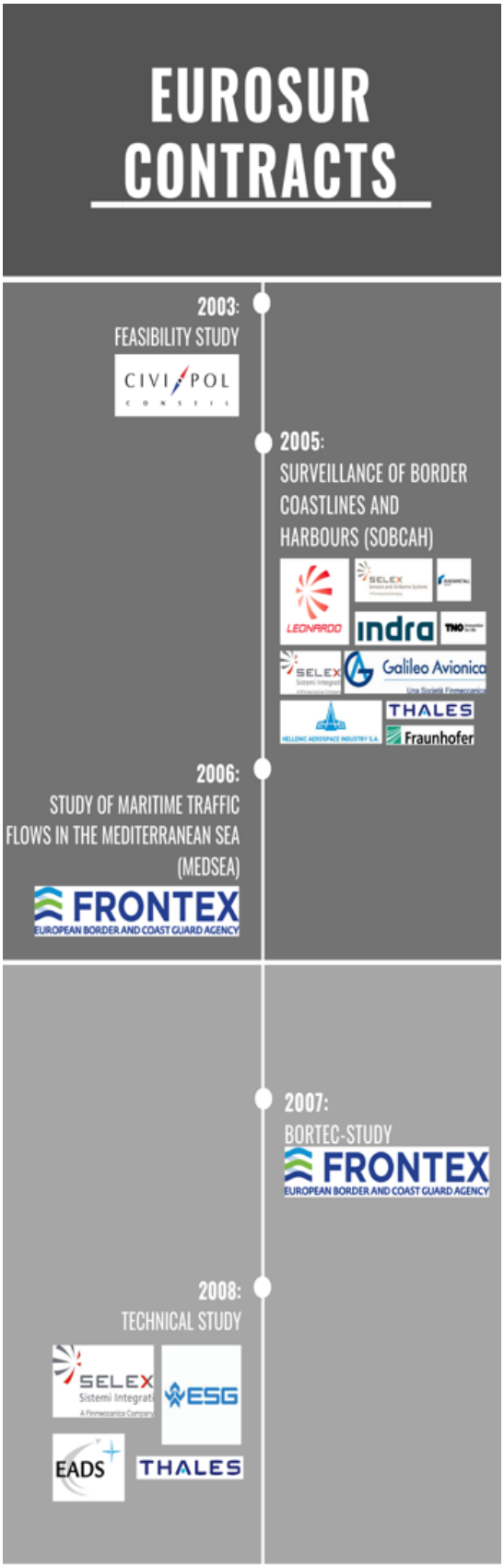
Following the Council and Commission ideas about a border surveillance network in 2005 and 2006, the Commission decided to launch and support several projects aiming at developing EUROSUR-like infrastructures. This happened through several different instruments, one of which was the 2006 Preparatory Action for Security Research (PASR), which also dealt with security and anti-terrorism more generally. However, a particular project of relevance for EUROSUR was the Surveillance of Border Coastlines and Harbours (SOBCAH) with the stated goal of identifying “the main threats relevant to “green” and “blue” borders” by analyzing scenarios including container security, vehicles and small boats “anomalous behaviours and biometrics. SOBCAH lasted 18 months and the Commission supported the project with €2.010.600 out of €3.007.109. It was coordinated by the Finmeccanica (now Leonardo) subsidiary, Galileo Avionica, and partners included SELEX Sensors and Airborne Systems, SELEX SI, Hellenic Aerospace Industry, Thales Research & Technology, Thales Underwater Systems, Rheinmetall, Indra Sistemas, as well as The Netherlands Organization for Applied Scientific Research and Frauenhofer-Gesellschaft zur Förderung der angewandten Forschung (Preparatory Action for Security Research, 2006, p.58).

Frontex also carried out the BORTEC study on a EU Border Surveillance System, which was presented to Member States in January 2007, but immediately classified and therefore not published. As with MEDSEA, it also relied on input from the Joint Research Centre. Moreover, the BORTEC core team experts came from the Member States from the region. It was supported by Member States, the Commission, as well as the European Maritime Safety Agency (EMSA), ESA and the European Union Satellite Centre (EUSC) among others. Its aim was early detection of

targets so that they could be intercepted before hiding or disappearing at sea or land. To this end, it made an analysis of maritime surveillance systems and operators in Portugal, Spain, France, Italy, Slovenia, Malta, Greece and Cyprus. It also suggested exact numbers and types of equipment to be purchased, such as patrol boats, aircraft or vehicles (European Commission, 2011*h*, Annex 1.2, p. 24). The conclusions of the BORTEC study aligned with a Commission Communication issued a few months earlier, on November 30, 2006, which had also reaffirmed the need to reinforce the management of the EU's southern maritime borders. Soon thereafter, the European Council confirmed the priority of creating such a European Surveillance System.

Then, in 2007 Decision No.574/2007/EC of the European Parliament and the Council meant the adoption of new strategic guidelines for the External Borders Fund between 2007-2013. These new strategic priorities were beneficial for industrial actors as the decision emphasized the need for "support for the development and implementation of the national components of a European Surveillance System for the external borders" through the External Borders Fund, and for the creation of a permanent European Patrol Network at the EU's southern maritime borders. The Decision also noted that for such projects, the financial Community contribution could be increased to 75% for certain priorities, like investments in establishing or upgrading national coordination centres; national surveillance systems; and "for the purchase and/or upgrading of equipment for detection, identification and intervention at the borders (e.g. vehicles, vessels, aircraft, helicopters, sensors, cameras)" (European Commission, 2011*h*, Annex 1.2, p. 11).

In February 2008, the Commission communicated eight steps of the EUROSUR Roadmap. These included a Phase 1 with streamlining and interlinking national border surveillance systems through national coordination centres (NCCs), a EUROSUR communication network and collaboration with third countries. Phase 2 then planned the development of common tools for border surveillance at EU level through research and development projects, the common application of surveillance tools and the establishment of a common pre-frontier intelligence picture. Phase 3 then involved setting up a common information sharing environment (CISE) for the EU maritime domain, both for the purposes of internal Member State security and for common-European coordination (European Commission, 2008).



Also in 2008, and following the path developed through the CIVIPOL, MEDSEA and BORTEC studies, the EU's Directorate General for Justice, Freedom and Security called for a technical study to be completed in 2013. This was for a system providing full situational awareness of cross-border movement through a "common pre-frontier intelligence picture" (CPIP) by aerial and satellite images including on migrant mobility in third countries. As illustrated by Figure 23 The study was awarded to the German conglomerate ESG, which then subcontracted parts of the study to the Finmeccanica subsidiary SELEX-SI, French Thales, US-based AGIS and the European conglomerate EADS (Lemberg-Pedersen, 2013, p. 157). Between January 2009 and January 2010, technical and management concepts for national border surveillance systems and the NCCs were examined, as well as the system architecture for the EUROSUR communication network and the CPIP. Moreover, in November 2009, a mini pilot was conducted at the land borders of Finland, Poland and Slovakia, and the sea borders of France, Italy and Spain. Three different scenarios, namely terrorist strike across “green borders” (land borders), Chechen women migrating irregularly across green borders and irregular migration and search and rescue in the Central Mediterranean, were tested. This took place in, respectively, Poland, conducted by ESG and Frontex, in Rome conducted by SELEX, and in Toulouse, conducted by Thales.

Figure 23 - Early contracts and studies related to EUROSUR, 2003-2008

In the final report, ESG proposed a network architecture of EUROSUR along four major functionalities: communication, information sharing, coordination and exchange of situational pictures. When it came to the more specific planning of border equipment, the ESG-study had the appearance of a general and vast procurement list for the Commission and the Member States. Thus, 33 "phenotypical" border segments were identified and technical cost estimates for establishing or upgrading the technological infrastructure were given. This list, however, encountered dissatisfaction in the EUROSUR Member States' expert group, where appointed national experts contested it. It was argued that the technical concepts were underdeveloped and not specific enough as binding technical requirements. What followed would be a diffusion into parallel streams. One where Frontex would take over contractual responsibility for EUROSUR's framework contracts, and another where the continued research and development into the infrastructure would be channelled out to actors of the European defence and aerospace industry through the newly established FP7.

5.3 Lobbying for EUROSUR – FP7, Horizon 2020 and GMV

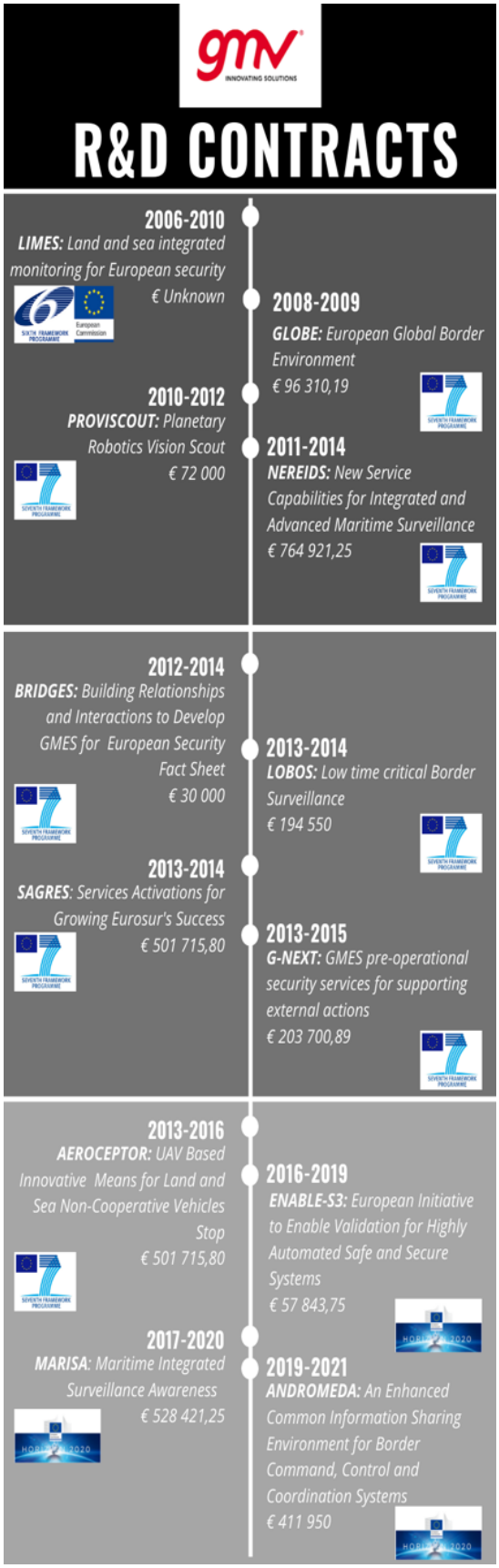
The later stages that transformed the militarized visions of a surveillance network for the EU borders into what became known as EUROSUR were connected to Commission's launch of the FP7 (between 2007-2013) and Horizon 2020 (between 2013-2020). These funding instruments were instrumental in building the system, with more than twenty FP7 projects dedicated to different aspects of the network (cf. Heller and Jones, 2014; Baird, 2016).

As was also the case with the drive towards interoperable information systems for border control, the blurred boundaries between commercial interests, public subsidies and policy-making were also observable during the annual work programmes. Accordingly, the drive towards a space-based surveillance network for land and maritime borders can also be traced back to both the Advisory Group on Secutiry, SecAG, and the Advisory Group for Space, SAG, guiding Commission and the Proogramme Committee on the priorities of the FP7 and Horizon 2020 work programmes.

Like SecAG, SAG also featured several members with ongoing or past ties to the European aerospace and defence industry. In a preliminary 2011-report sketching priorities for the future Horizon 2020 programme, SAG noted that "European space budgets have stagnated", that Horizon 2020 "must support the competitiveness of European industry". Moreover, it framed as a problem "an unfortunately fragmented European institutional market leading to insufficiently exploited synergies between the civil and defence sectors." (SAG, 2011, p. 17)

In the final 2012-report on Horizon, SAG summarized their views on the use of space for the security of European citizens, noting that earth observation alongside satellite communications and navigation can be used to monitor humanitarian sitautions, borders, movements and changes that could threaten national civil security." (European Commission, 2012c, 20, 26). At the same time, it also reiterated earlier comments that the many funds committed for the GEMS development during FP7 had effectively been blocked for innovation and research and development.

The Space theme was allocated €1,43 billion under the FP7 2007-2013 budget, while €1,4 billion was allocated to the Security theme. Both of these instruments were used to build EUROSUR in accordance with the 2008 EUROSUR Roadmap. Overall, the company GMV turned



out to be one of the main beneficiaries of such research and development funds, and thus also one of the most influential actors when it came to shaping the infrastructure of EUROSUR, as visualized in Figure 24.

This evolved through the formulation of several topics like "SEC-2007-3.2-01 Main port area security system (including container)"; "SEC-2007-3.3-02 Surveillance in wide maritime areas through active and passive means"; "SEC-2009.3.2.2 Sea border surveillance system – integrated project"; "SEC-2009.3.4.1 Continuity, coverage, performance (incl. UAV), secure data link"; SEC-2010.3.1-1 European-wide integrated maritime border control system – phase II Demonstration Programme"; "SEC-2012.3.1-1 Increasing trustworthiness of vessel reporting system"; "SEC-2012.3.5-1 Development of airborne sensors and data link – integration project" and "SEC-2012.3.1-2 Pre-Operational Validation (POV) at EU level of common application of surveillance tools". These were then to evolve onwards into a Common Information Sharing Environment (CISE).

Thus, for instance, the FP7 Security call, formulated the topic "SEC-2007-3.3-02 – Surveillance in wide maritime areas through active and passive means". In it, the requirements of applicants was stated clearly: "The task is to develop novel, automatic surveillance capabilities through manned and unmanned platforms (land/sea/air/space), equipped with several sensors and sophisticated data fusion processes." (European Commission, 2007, p. 23).

Figure 24 - GMV contracts under FP6, FP7 and Horizon 2020 contracts related to EUROSUR, 2006-2021

Two of the projects granted funds under this topic were the Autonomous maritime surveillance system (AMASS), and the Wide maritime area airborne surveillance (WIMAAS) projects. AMASS, running between 2008-2011, was granted €3.450.460 out of an overall budget of €5.465.308. It was coordinated by Carl Zeiss Optronics from Germany, and, among others included Spanish research and education institutions as well as the Armed Forces of Malta. WIMAAS, also running between 2008-2011, was granted €2.737.169 out of €4.001.123, coordinated by French Thales, and included the Finmeccanica subsidiary Selex Galileo, French Dassualt Aviation, as well as the university of Malta and Spanish engineering and aviation companies.

The topic "SEC-2007-7.0-02 – European Security Research Networks (incl. for standardisation" stated that "the task is to establish European networks of Member States and Associated Countries, private sector security research requirement owners, operative end-users and technology supply chain experts." (European Commission, 2007, p. 34). This was awarded to An interoperable approach to the European Union maritime security management (OPERAMAR), who in its project statement described an ambition to "provide the foundations for pan-European Maritime Security Awareness by addressing the insufficient interoperability of European and national assets." (Cordis, OPERAMAR). OPERAMAR lasted from 2008-2009, and was granted €669.132 out of €669.134 - having to pay €2 itself. It was coordinated by Thales Underwater Systems and also included Finmeccanica subsidiary Selex SI, Indra, the Joint Research Centre of the European Commission, as well as Thales Systemes Aeroportes.

Similarly, the 2010 Cooperation Work Programme for Space formulated the topic "SPA.2010.1.1-05 - Contributing to the "S" in GMES – Developing pre-operational service capabilities for Maritime Surveillance". Linking closely together the EU's Global Monitoring for Environment and Security (GMES) with priorities for border control, the call informed potential applicants that EU "border surveillance can benefit from tools developed for surveillance in the maritime domain" and that it "is therefore important for Europe to advance its technology in the surveillance of the maritime domain" through satellite technology. In particular, the call specified that "the development of further monitoring capabilities from space is needed, for example overcoming constraints in relation to new surveillance and tracking technologies such as the detection of small boats used for illegal migration and related cross-border crime by using satellite based radar and optical imaging." Thus, "space-based data may also lead to information on suspicious behaviour inside or outside EU waters, including Exclusive Economic Zone (EEZ) of EU member states globally." (European Commission, 2009, p. 21). Among expected impacts, the call listed "significant end-user involvement" and "significant uptake of products and services" (Ibid., p. 23).

Three consortiums used to test and evolve the plans for a space-based surveillance network were granted funds under this topic. These were namely Development of Pre-operational Services for Highly Innovative Maritime Surveillance Capabilities (DOLPHIN), Simulator for Moving Target Indicator System (SIMTISYS) and New service capabilities for integrated and advanced maritime surveillance (NEREIDS). Singling out NEREIDS as a way of example, it lasted from 2011-2014, received €3.999.852 out of €6.026.984, was coordinated by GMV Aerospace and Defence and included also Thales, GMVIS Skysoft, Eosphere, the Guardia Civil, the European Union Satellite Centre, NATO and the Joint Research Centre from the European Commission.

Projects like PERSEUS, AMASS, WIMAAS, OPERAMAR and NEREIDS illustrates how the entry governance of the EU has been shaped continuously by multileved governance realized through the framework programmes. Before the idea of a surveillance network spanning all external EU borders was named EUROSUR, the Work Programmes of FP7 Security and Space were highly active in distributing millions of euros on to a mushrooming market for EU border security dominated by a handful of the largest security and defence companies.

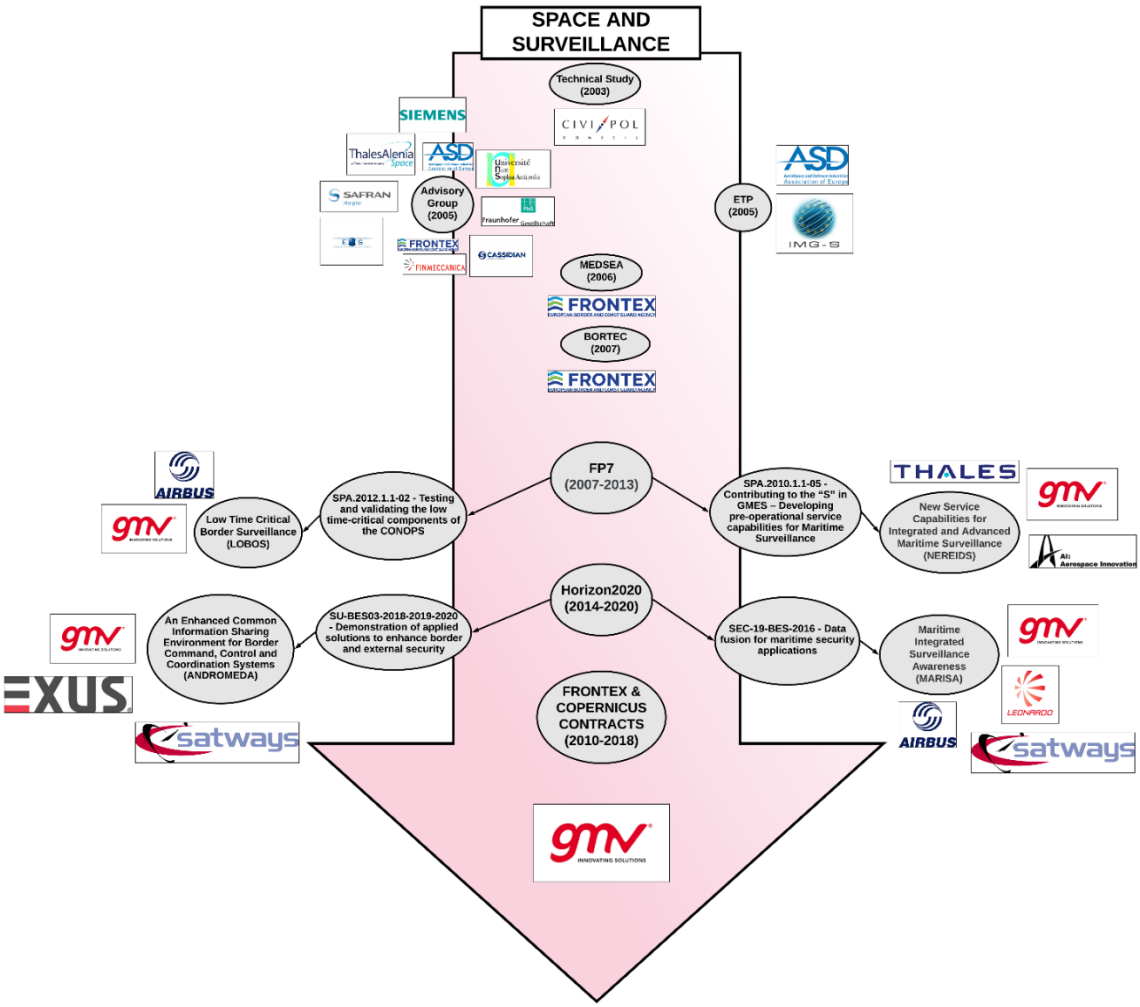


Figure 25 - Phases and private actors developing space-based surveillance networks, 2003-2018

As illustrated by Figure 25, both before, during and after EUROSUR was developed, GMV also participated in many FP7 and Horizon 2020 consortiums for the development of its infrastructure, such as earth satellite observation systems, through projects like NEREIDS, LOBOS, ANDROMEDA, MARISA as well as Services Activation for Growing Eurosur's success (SAGRES), to name a few. In a manner similar to EU-Lisa, the relations to the aerospace and defence industry that surrounds Frontex's management of contracts pertaining to EUROSUR also exhibits tendencies of capture, path dependency and lock-in effects. Frontex has thus shown a remarkable consistency in its choices regarding the companies of the main framework contracts for EUROSUR.

Since 2010, when the Agency put up for tender a €1,5 million contract for a pilot project testing Eurosur between Frontex and selected Member States, until today, it has been the Spanish Aerospace and Defence company GMV, which has won all contracts. In 2012, GMV won a contract for the enlargement of the EUROSUR project as regards the National Coordination Centers and Frontex, the amount of which was secret. That same year, the company issued a press release saying that "the EUROSUR project fits in perfectly with GMV's ongoing strategy of internationalizing its defense and seurity activities and consolidates its leadership within European border surveillance activities" (GMV, 2012).

After the European Parliament had approved the EUROSUR package in 2013, more contracts followed; In 2013 came a €1756.895 contract for maintenance and development of the network. In 2014, GMV again won a €12.5 million contract for the evolution, support and maintenance of the EUSOSUR system. In another press release, the company called EUROSUR the "the brain child" of Frontex (a description bypassing the CIVIPOL study in 2003), celebrated that the European Parliament had "taken in" the system developed by GMV, and noted that GMV would now assume responsibility for "execution, management and supervision" of the project until 2018 (GMV, 2014).

Figure 26 - Frontex contracts to GMV related to EUROSUR, 2010-2018

Accordingly, during this period, GMV was awarded a series of framework contracts visualized in Figure 24. In 2014 and 2015 followed by two other contracts that and the following year worth €1.264.264 and €2.042.403. Similarly, in 2016 and 2017, the company was awarded contracts worth €2.597.863 and €1.744.950 for the provision of services and delivery of goods during maintainance and development of the EUROSUR network, and in 2018 a similar contract worth €889.863. Moreover, the close relations to Frontex were also lucrative for GMV outside the EUROSUR context, as the company was also awarded an increasing number of other contracts, unspecified expect for "software development services" or sometimes "border surveillance". Thus, in 2015, it also won a contract for software development service worth 342128,.15. Similar contracts followed in 2016 (worth €1.018.742), in 2017 (worth €833.803) and in 2018 (worth, respectively, €810.819 and €1.887.738). In 2018, GMV won a framework contract for ICT products and services associated to EUROSUR (European Commission, 2011h; GMV, 2014; Frontex, 2014; 2018). This flurry of contracts is visualized in Figure 26 above.

And while GMV has been a big beneficiary of contracts during the evolution of EUROSUR has shaped and profited from the development of this space-based EU border surveillance network, a number of the other largest aerospace and defence contractors have also benefited, such as Spanish Indra, who lead the consortium for PERSEUS and also the Seahorse Network, and has been responsible for selling much of the satellite equipment which the EU has purchased on behalf of its North African partners in border control (European Parliament, 2018c).

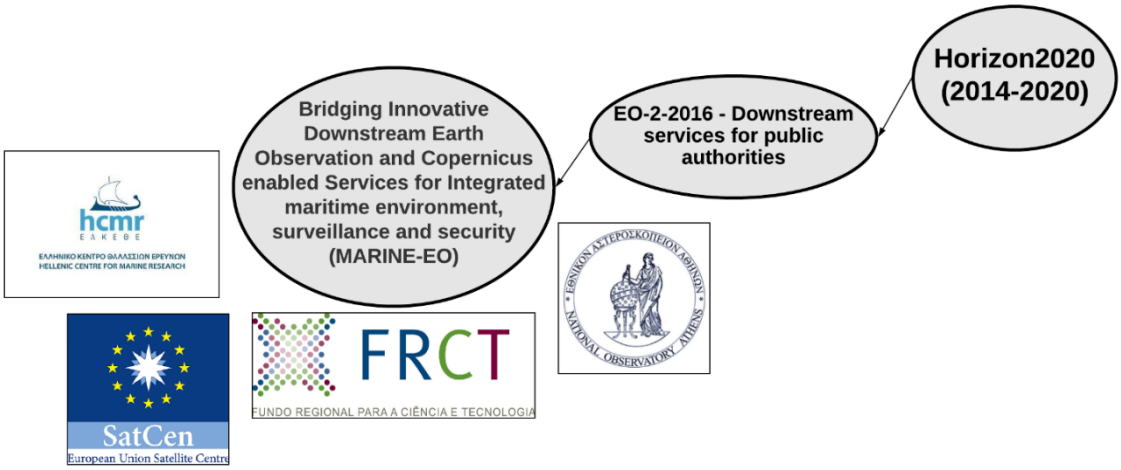


Figure 27 - H2020 project, Bridging Innovative Downstream Earth Observation and Copernicus enabled Services for Integrated maritime environment, surveillance and security

A range of national and common-European public institutions have also benefited from funds to border control research, exemplifying the pre-emption of market competition stated clearly by the AGs. This is illustrated by the Marine-EO consortium shown in Figure 27. Derived from the topic "EO-2-2016 – Downstream services for public authorities", it teamed up an "end user group" consisting of five maritime authorities and four research organizations from Member States in order to develop, test and validate services covering marine monitoring and security, propose support sets to integrate these services into operations, and strengthen transnational

collaboration in maritime awareness and surveillance. As a project objective, it notes that "Pre-Commercial Procurement is a powerful tools to tackle these three points"

Yet, while the EUROSUR project might be tailored by a mushrooming border security market, its costs have long been problematized, in a manner similar to the interoperable EU information systems. In fact, one year before it was launched, an influential study raised concerns, similar to those against the EES, that the estimated budget was radically miscalculated and speculative (Hayes and Vermeulen, 2012, pp. 51-2). Points of critique were that the estimate did not include operational costs, or the roll-out of required sub-systems for national border crossing points. The authors instead provided alternative estimates ranging between €318 million and €913 million. They also noted that the plans of funding the project through the ESRP and the External Borders Fund, both of which channel money through Member State authorities, and through their discretion, would only add to the lacking transparency (Ibid.).

Although EUROSUR published a report in 2018, suggesting that the system had only cost around €130m (European Commission, 2018e, p. 8), the ways in which this number had been reached were not extrapolated. Moreover, the foreseen further roll-out of the system to national border crossing points through the Internal Security Fund and the upcoming Integrated Border Management Fund (IBMF) was also not detailed. A 2019 report by Mark Akkerman estimated the system to have cost €338 million – based on EUROSURs own numbers from 2012, (Akkerman 2019, p. 23) and in the 2019 ICF-study on possible evolutions of the system, the proposal is valued at €1,1 billion between 2021-2027 (ICF, 2019, p. 43).

The issue of Member State discretion is controversial. Further confirming the uncertainty and lacking transparency, the ICF study's statement that the extent to which NCC's operational plans are shared with third countries is left at the discretion of Member States (Ibid., p. 48) is contradicted by the operating rules of EUROSUR as they were approved by the European Parliament in 2013, namely that Member States "states must not use Eurosur to send third countries any information that could be used to identify a person whose request for international protection is being processed or whose life or physical integrity could be at risk" (European Parliament, 2013a).

5.4 Border control from outer space. The Frontex-EUROSUR-Copernicus connection

In 2012, GMES was renamed Copernicus, and in November 2015 the programme entered into a partnership with Frontex (Copernicus, 2019). Under this agreement, the European Commission delegated the border surveillance component of Copernicus Security Service to Frontex with the objective to support EUROSUR through the provision of "real time data on what is happening on land and sea around the EU's borders (Copernicus, 2019). Copernicus received a total funding from the EU Commission of €3,24mia for 2014-2021, a budget increased to €5,8 billion by the Parliament in April 2019 (Copernicus, 2018; Space News, 2019). Out of this, €500 million is earmarked for security purposes, such as border protection, civil protection and humanitarian interventions, through the Space and Situational Awareness (SSA) programme and the new

Governmental Satellite Communication initiative (GOVSATCOM) (Legislative Train Schedule, 2020).

To this end, the Commission allocated €47,6 million to Frontex between 2015-2020 for activities such as the coastal monitoring of international waters, maritime surveillance, vessel and anomaly detection, tracking and reporting and environmental assessment. In 2016, the European Parliament's Committee on Foreign Affairs produced a report on Space capabilities for European security and defence (Committee on Foreign Affairs, 2015). In the report, the Committee expressed a conviction that "current and future space-based capabilities […] will provide Member States and the Union with improved dual-use operational capacity for the implementation of the common security and defence policy" including areas such as "external action, border management, maritime security, disaster management, humanitarian aid and transport" (Committee on Foreign Affairs, 2015, p. 5).

In 2018, in a European Commission proposal to regulate Frontex, the provision of Copernicus data to generate EUROSUR Fusion Services was suggested. These were to be expanded to support checks at Border Crossing Points, Air Border Surveillance and monitoring of migration flows and also to "significantly step up the effective return of irregular migrants" (European Commission, 2018f, p. 27). However, illustrating the discursive slide between framing migrants as *a* risk and *at* risk that characterizes the ongoing "humanitarianization of border control" (Lemberg-Pedersen, 2019), Frontex Executive Director Fabrice Leggeri at the same stated that the Copernicus Programme "has the potential to reduce the death toll of migrants at sea by spotting vessels in need of assistance" (Frontex, 2015). As such, Copernicus and before it GMES were pulled into the orbit of security priority, that is, illustrating how the final frontier for more than a decade has been transformed into a medium through which to pursue national or EU domestic security objectives in the form of border control, deportation and externalization politics (cf. Akkerman, 2019, pp. 31-2).

The volume of projected investment has attracted attention from the aerospace and defence industry; this has also been observable in the European Parliament's discussions. Many of the biggest aerospace and defence contractors involved in EU border control were already receiving multiple contracts from Copernicus (see Table 4). Thus, in 2015, Airbus received a string of contracts for satellite production at its facilities in Stevenage and Farnborough (UK), Toulouse (France) and Leiden (Netherlands), totalling around €200 million (European Space Agency, 2019). Its subsidiary Astrium was contracted for €350 million at their Munich plant. EADS – also under the Astrium umbrella of Airbus – received a number of contracts totaling nearly €25m for satellite construction in Madrid. Furthermore, another subsidiary, the Ariane Group, received a contract worth €70 million. Leonardo received contracts for satellite construction worth €50, while GMV Aerospace and Defence won contracts for €9 in Spain and Germany. Moreover, Telespazio, the Leonardo-Thales joint venture also won €65 million in contracts for systems operation, maintenance and evolution. Thales itself won contracts for €500. The year after, Airbus won a further fifteen contracts totaling €130 million, while Leonardo's contracts were worth €9,2 million and Thales' €42 million.

5.5 Silences and criticism

The early phases of EUROSUR exemplifies how the project was framed in militaristic terms from the CIVIPOL study in 2003 and onwards. But even though the fatal reality at the European borders has undoubtedly deteriorated in the following period, the accelerating and comprehensive development of EUROSUR has increasingly invoked also humanitarian purposes – as well as the original environmental use - for the use of space-based monitoring technology.

The Advisory Groups linked to research funding used to develop and evolve the EUROSUR system - SecAG, PASAG and SAG – have struck somewhat different balances towards the project, with the two security groups more eagerly embracing the border surveillance narrative than the SAG, which has correctly noted how the development of GMES, and later Copernicus, has shifted funds away from space R&D. All groups have, however, framed investments in border surveillance networks as important in order to boost European industrial competitiveness, a discourse which is mirrored by the Sky and Space Intergroup. Much of this development has been engineered in specialized and closed forums, such as expert task forces, feasibility studies, groups and platforms, with minimal and critical oversight from civil society.

GMV has been a big beneficiary of the EUROSUR evolution and Pre-Commercial Procurement strategy, involving pro-actively shaping the EU research environment in order to receive subsidies under both FP7 and Horizon 2020. And in general, Frontex's relations to the aerospace and defence industry and the management of contracts pertaining to EUROSUR exhibits similar tendencies of capture, path dependency and lock-in effects as EU-Lisa.

However, while massive investments are desired by industrial actors, civil society and parliamentary circles have been more skeptical, taking issue with opaque estimates and costs for the "system of systems". Criticism has turned on the fact that the Commission's original €338 million estimate did not include operational costs, nor the roll-out of required sub-systems for national border crossing points. The borderline study instead provided alternative estimates ranging between €318 million and €913 million.

This illustrates how space, the final frontier, now for more than a decade has been transformed into a medium through which to pursue the fortification of the national or EU frontier in the form of border control, such as data facilitating deportations or the externalization of control and containment of refugees to non-European countries.

6. Financial dynamics underpinning the political economy of EU border control

Most analyses of PMSC involvement in border control in the EU or elsewhere stop at the level of private companies when it comes to analyzing the political economy of border control (see however Lemberg-Pedersen, 2013; Kumar, 2017). As detailed in this deliverable, EU subsidies for research and development certainly represent important and vied-for pre-commercial infusions of capital for actors on the market for EU border control. But although such a focus is therefore crucial for examining the political economy of multileveled EU entry governance, it is incomplete unless the scale of inquiry is elevated to include the financial sector as well. These actors include the banking sector, investment firms, European financial institutions, pension funds, insurance companies and Member States' export credit agencies (ECAs). Tables 5-14 below illustrate one aspect of this, namely the shareholders of the largest companies involved in EU border control infrastructures. Sources are: marketscreener.com, cnn.com and investors3M.com

Airbus SE	% of shares	Shares owned
Société de Gestion de Participations Aéronautiques	11.0	85,835,477
Gesellschaft zur Beteiligungsverwaltung GZBV mbH & Co.KG	11.0	85,709,822
Capital Research & Management Co. (World Investors)	7.06	54,941,887
Capital Research & Management Co. (Global Investors)	4.95	38,485,639
Sociedad Estatal de Participaciones Industriales	4.16	32,330,381
PRIMECAP Management Co.	2.12	16,513,798
Fidelity Management & Research Co.	2.09	16,285,922
The Vanguard Group, Inc.	2.04	15,867,684
Invesco Advisers, Inc.	1.41	10,978,315
FIL Investment Advisors (UK) Ltd.	1.34	10,410,049

Table 5 - Shareholders, Airbus, December 5, 2019.

Leonardo	% of shares	Shares owned
Italian Ministry of Economy and Finance	30.2	174,626,554
Capital Research & Management Co. (World Investors)	3.64	21,016,851
Norges Bank Investment Management	2.98	17,252,008
Fidelity Management & Research Co.	2.32	13,400,022
FIL Investment Advisors (UK) Ltd.	2.25	13,018,551
Schroder Investment Management Ltd.	2.17	12,544,913
The Vanguard Group, Inc.	1.92	11,109,933
Capital Research & Management Co. (Global Investors)	1.54	8,908,270
DWS Investments (UK) Ltd.	1.41	8,123,867
AllianceBernstein LP	1.33	7,668,183

Table 6 - Shareholders, Leonardo, December 5, 2019.

Thales	% of shares	Shares owned
TSA	25.7	54,788,714
Dassault Aviation SA	24.7	52,531,431
Thales SA Employees Stock Ownership Plan	2.62	5,575,167
DNCA Finance SA	1.96	4,166,939
DWS Investments (UK) Ltd.	1.88	4,009,373
Ostrum Asset Management SA	1.82	3,876,838
Amundi Asset Management SA (Investment Management)	1.55	3,295,295
T. Rowe Price International Ltd.	1.50	3,202,618
BlackRock Investment Management (UK) Ltd.	1.41	3,007,084
The Vanguard Group, Inc.	1.38	2,937,885

Table 7 - Shareholders, Thales, December 5, 2019.

Indra Sistemas	% of shares	Shares owned
Sociedad Estatal de Participaciones Industriales	18.7	33,052,038
Corporación Financiera Alba, S.A.	10.5	18,584,043
Fidelity Management & Research Co.	9.16	16,186,689
Norges Bank Investment Management	3.56	6,286,384
FIL Investment Advisors (UK) Ltd.	3.51	6,206,027
Invesco Asset Management Ltd.	2.98	5,262,198
Threadneedle Asset Management Ltd.	2.94	5,199,369
Schroder Investment Management Ltd.	2.93	5,184,511
T. Rowe Price International Ltd.	2.86	5,056,529
BlackRock Fund Advisors	2.65	4,676,644

Table 8 - Shareholders, Indra Sistemas, December 5, 2019.

Safran	% of shares	Shares owned
Agence des participations de l'État	11.7	47,983,131
Sagem SA Employee Stock Ownership Plan	7.32	29,956,234
Capital Research & Management Co. (World Investors)	4.38	17,937,656
TCI Fund Management Ltd. (The Childrens Investment Fund)	4.06	16,624,819
Capital Research & Management Co. (Global Investors)	3.14	12,863,597
BNP Paribas Asset Management France SAS	2.31	9,441,897
The Vanguard Group, Inc.	2.25	9,207,423
Fidelity Management & Research Co.	2.02	8,258,229
Wellington Management Co. LLP	1.79	7,329,753
BlackRock Investment Management (UK) Ltd.	1.74	7,121,936

Table 9 - Shareholders, Safran, December 5, 2019.

Accenture	% of shares	Shares owned
The Vanguard Group, Inc.	8.69	55,179,593
Massachusetts Financial Services Co.	4.52	28,676,323
SSgA Funds Management, Inc.	4.19	26,586,655
Capital Research & Management Co. (Global Investors)	2.50	15,899,364
BlackRock Fund Advisors	2.50	15,894,399
Wellington Management Co. LLP	1.90	12,063,872
Geode Capital Management LLC	1.63	10,374,886
Northern Trust Investments, Inc.(Investment Management)	1.55	9,860,994
Fidelity Management & Research Co.	1.29	8,204,834
Morgan Stanley Investment Management Ltd.	1.19	7,534,013

Table 10 - Shareholders, Accenture, December 4, 2019.

Atos	% of shares	Shares owned
Siemens Aktiengesellschaft	11.4	12,483,153
Fidelity Management & Research Co.	3.06	3,342,208
The Vanguard Group, Inc.	2.44	2,663,836
DWS Investments (UK) Ltd.	2.20	2,406,198
Norges Bank Investment Management	2.16	2,354,685
Invesco Advisers, Inc.	1.92	2,101,567
Janus Capital Management LLC	1.87	2,044,332
JPMorgan Asset Management (UK) Ltd.	1.84	2,013,338
BNP Paribas Asset Management France SAS	1.59	1,740,422
DWS Investment GmbH	1.57	1,710,780

Table 11 - Shareholders, Atos, December 4,2019.

3M	% of shares	Shares owned
The Vanguard Group, Inc.	8.58	49,381,311
State Street Global Advisors (SSgA)	7.36	42,360,021
BlackRock Fund Advisors	4.77	27,439,143
State Farm Investment Management Corporation	1.94	11,131,700
MFS Investment Management	1.69	9,746,650
Geode Capital Management, LLC	1.53	8,807,242
Capital Research Global Investors (U.S.)	1.15	6,601,003
Northern Trust Investments, Inc.	1.15	6,592,131
BlackRock Investment Management, LTD	1.11	6,374,003
Franklin Advisers, Inc.	0.95	5,469,698

Table 12 - Shareholders, 3M, December 4, 2019.

IBM	% of shares	Shares owned
The Vanguard Group, Inc.	8.01	70,940,240
SSgA Funds Management, Inc.	6.08	53,860,075
BlackRock Fund Advisors	4.93	43,631,205
Geode Capital Management LLC	1.41	12,446,460
Northern Trust Investments, Inc.	1.33	11,762,581
Norges Bank Investment Management	0.99	8,723,741
Morgan Stanley Smith Barney LLC	0.93	8,199,607
Charles Schwab Investment Management	0.85	7,482,761
BlackRock Investment Management	0.79	6,970,122
Mellon Investments Corp.	0.79	6,957,882

Table 13 - Shareholders, IBM, December 4, 2019.

HP	% of shares	Shares owned
The Vanguard Group, Inc.	8.54	126,502,896
Dodge & Cox	8.03	118,961,571
Capital Research & Management Co.	5.26	78,005,000
SSgA Funds Management, Inc.	4.86	72,072,025
Icahn Associates Holding LLC	4.24	62,902,970
Putnam LLC	3.41	50,475,354
PRIMECAP Management Co.	3.15	46,702,056
Nomura Securities Co., Ltd. (Private Banking)	2.93	43,357,950
BlackRock Fund Advisors	2.68	39,648,817
Wellington Management Co. LLP	2.45	36,348,706

Table 14 - Shareholders, HP, December 4, 2019.

The markets for military and border control procurement are characterized by massively capital-intensive investments and contracts, the operations and strategic visions of many of the PMSCs involved in EU border control would not be possible without the involvement of these financial actors, providing both public and private equity. Through the owning of shares or bonds, the distribution of grants, the underwriting of loans or credit facilities these infusions of capital are pivotal for the border and defence industrial actors. As such, the financial sector also partakes in the multileveled processes shaping EU border politics, and at a foundational level.

Observing the share ownership across the ten companies represented in Tables 5-14, certain patterns stand out; namely the involvement of certain actors across multiple companies and sectors of border control. Notably, a company like GMV is not publicly listed, but wholly owned by private capital. Representing free-floating private equity, the Vanguard Group is the top shareholder of 3M, HP, IBM and Accenture, while also owning smaller portions of shares in Airbus, Leonardo, Thales, Safran and Atos. Through its ownership, the Vanguard Group thus dominate a number of companies, which have been central for the construction of the EU databases controlling entry governance, whilst also exercising lesser influence on the companies involved in EUROSUR. Similarly, different BlackRock funds own large numbers of shares in 3M, HP, IBM, Accenture, Safran, Indra, Thales. Also, different Capital Research (9) and Fidelity Management &

Research (5) funds owns many shares among the companies highlighted here. BNP Paribas also owns shares in Safran.

Through government-controlled funds and companies, EU Member States are also strategically involved in the ownership of certain companies. Thus, on the 4-5 of December 2019, Norges Bank Investment Management, the asset management unit of the Norwegian central bank, owned shares in both Indra, IBM and Atos, and was in fact the third largest owner of Leonardo, after the states of Italy and Libya. The Italian Ministry of Economy and Finance, however, remains the largest shareholder, owning 30,2% of the company. Similarly, the vast majority of the controlling interests behind Airbus were held by, respectively, Societé de Gestion de Participations Aéronautiques (SOGEPA), a French holding company owned by the French government (11%), Gesellschaft zur Beteiligungsverwaltung (GZBV) (11%), which is a subsidiary of the development bank, KfW Bankengruppe, owned by Germany, and the Government of Spain (416%). Moreover, the Spanish government is the majority owner of Indra Sistemas with 18.7%, while its French counterpart is also the biggest shareholder of both Thales with 25,.7% and Safran with 11,7%. EU Member States' complete or shared ownership of these companies, alongside free-floating private capital, represents a strategic choice on the part of states. It allows states to pursue national political and economic interests through the companies, and conversely, to pursue company interests through state policies (see also Kumar, 2017, pp. 102-107).

This is an important financial backdrop for understanding the complex processes and conflicts constantly evolving at the level of technological development, recommendations of national experts and spiralling contracts observable in both the databases and EUROSUR policy drives. Moreover, state-ownership also represents an additional level of strategy, when it comes to distributing research and development funds through FP7 and Horizon 2020 calls, since governments, MEPs, Commission representatives or national experts may intervene on behalf of companies from their national industries. Below is visualized the influence of major shareholders on the companies involved in, respectively, the contracts for Eurodac, SIS II, VIS and EES databases awarded by EU-Lisa (Figure 28), the contracts for EUROSUR infrastructure awarded by Frontex (Figure 29), as well as the contracts for the Copernicus programme linked to EUROSUR, awarded by the ESA (Figure 30).

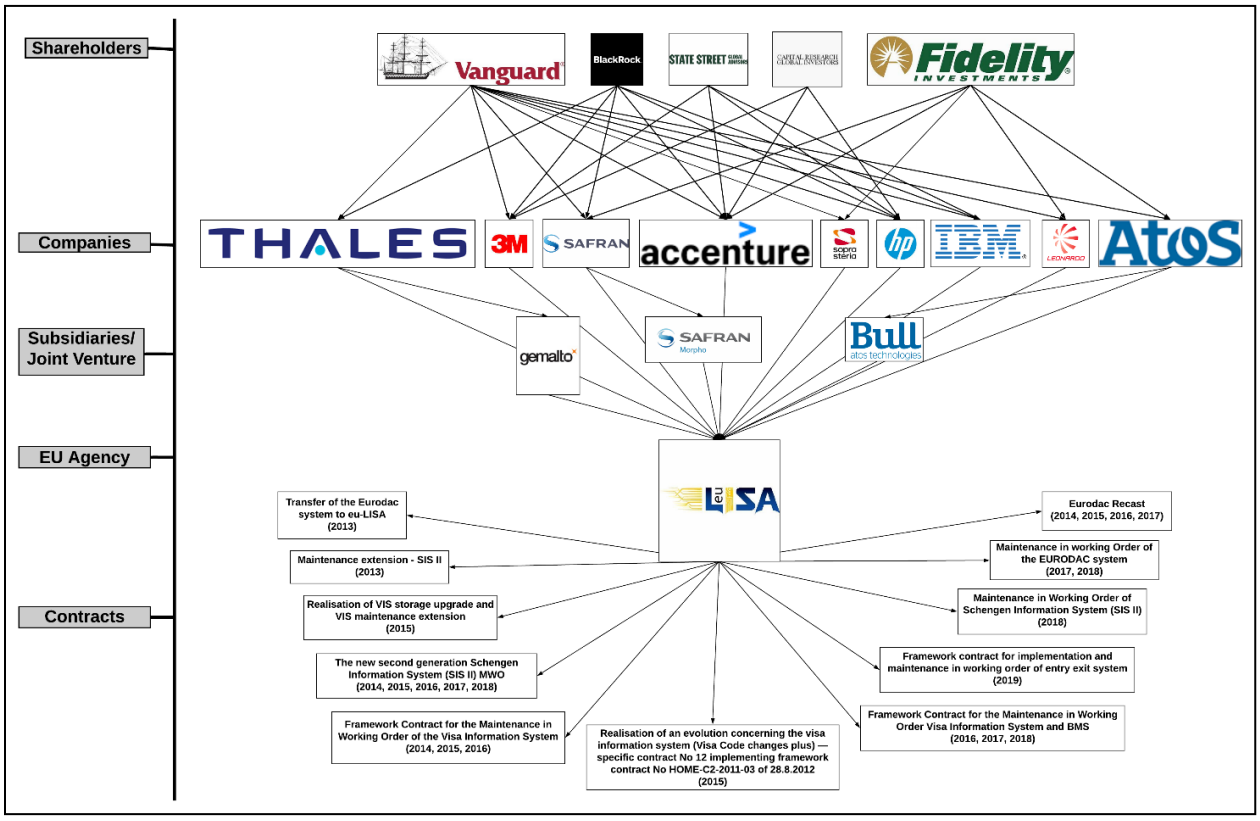


Figure 28 - Shareholders, companies, EU agencies and programmes involved in Eurodac, SIS II, VIS and EES contracts

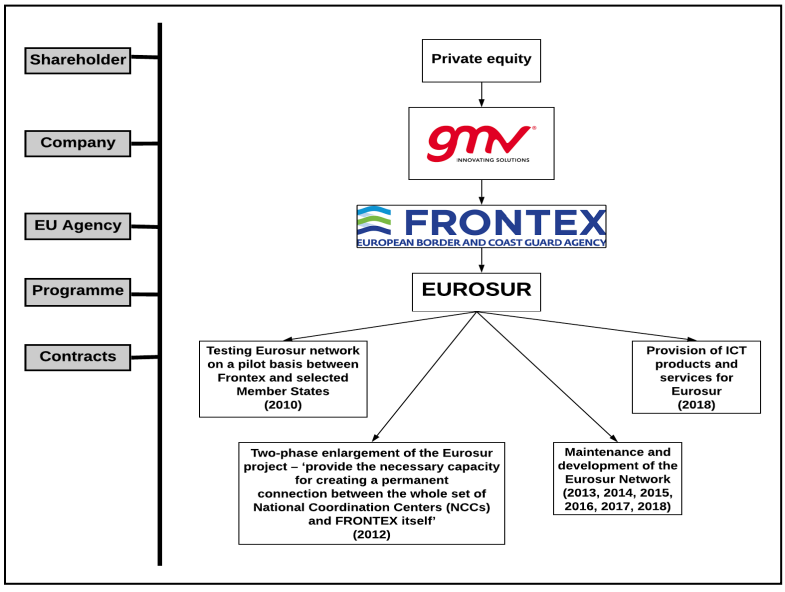


Figure 29 - Shareholders, companies, EU agencies and programmes involved in EUROSUR

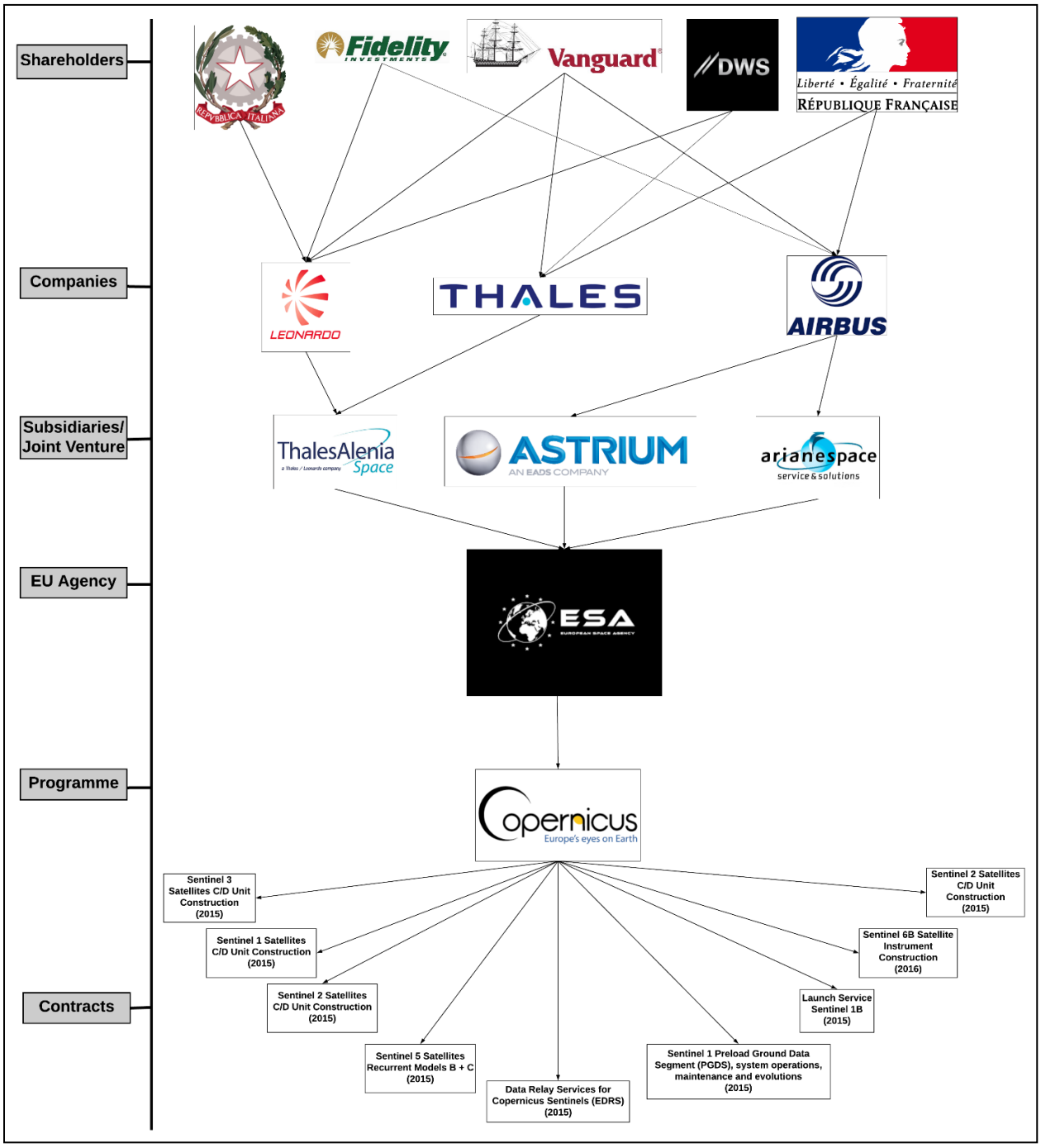


Figure 30 - Shareholders, companies, EU agencies and programmes involved in Copernicus

6.1 Border control on credit

The R&D funds channelled through FP7 and Horizon 2020 pale in comparison with those provided by the global financial sector. At the level of Member States, the export of control infrastructure to European or non-European countries, can be supported by private investment funds, but also

providers of export credit. These include actors like the British Export Credits Guarantee Department, German Hermes, Italian SACE, and French Coface (Lemberg-Pedersen, 2013). These actors are often situated in a grey area as neither fully public nor private entities, but their main task is to support national industries. While bound by legislation and arms embargos, the market for border control illustrate the increasingly blurred divide between civil and military markets which has been actively pursued by the defence sector. Technological infrastructures such as IT systems, identification and authentication through biometrics, patrolling and monitoring or space-based surveillance are then some of the ways through which exports have bypassed restrictions, and continued the militarization of EU borders.

The subsidizing of national actors active on the markets for border control is replicated at the common-European level, through loans and grants from instruments like Horizon 2020, the European Investment Bank (EiB), European Investment Finance (EIF) and InnovFin Space Equity Pilot. For instance, the EiB has repeatedly stepped in as guarantor with a series of loans worth billions of euro to the largest companies on the European defence and border markets by raising funds on capital markets and then loaning them on favourable terms to these actors. As shown in Table 15, some of these have been granted to the Finmeccanica-subsidiary Alenia Aeronautica, and later Leonardo, EADS, and later Airbus, Safran, as well as Indra and Ariane, the joint venture between Airbus and Safran.

Agency	Year	Value of contract (€)	Sector
Finmeccanica	2009	500.000.000	Aviation R&D
Safran	2009	300.000.000	Aircraft R&D
EADS	2011	500.000.000	Aviation R&D
Airbus	2015	500.000.000	Aerospace R&D
Indra	2016	80.000.000	RadarR&D
Leonardo	2018	299.999.991	Cybersecurity R&D
Ariane	2020	200.000.000	Aerospace R&D

Table 15 - Selected European Investment Bank (EiB)-loans to European PMSCs, 2009-2019. Source: EiB website

The EiB loans are driven forward by the discourses of fighting “market fragmentation” and the desire to foster a Single Market through interoperability and standardization. While industrial actors and interest organizations frame investments in such infrastructures as cheapest in the long run, this assumption has, however, been challenged by research into the projected costs of both border databases and the EUROSUR project, not least when it comes to spin-off contracts required at national level. At any rate, the spiralling costs associated with both infrastructures illustrates the capital-intensive character of this policy drive and the crucial strategic role of the financial sector for these commercial actors.

Moving from EU instruments to the commercial financial sector, more actors are involved in the financing of the operations, R&D and contracts of the largest border industrial actors in Europe. Most of the companies involved in EU border control infrastructures operate with revolving credit lines, or facilities, which means that they borrow money from financial institutions, against certain fees, and can then use that money to finance running operation costs.

These financial flows are therefore also crucial political economic underpinnings in the development of EU border control. Examples abound, but to mention a few, Finmeccanica in 2010, signed a revolving credit line of €2,4 billion provided by a conglomerate of 24 European credit institutions, headed by BNP Paribas and including Bank of Scotland, Unicredit, Barclays, JP Morgan and Goldman Sachs. Following the name change to Leonardo, the company replaced it in 2014 by another credit worth €2,2 billion, and involving many of the same banks. Yet another credit deal was signed in 2018 worth 3,6 billion, and involving 26 banks, including the lead arrangers Natixis S.A, The Royal Bank of Scotland and Deutsche Bank (Leonardo, 2014; Leonardo Press Release, 2018). In a similar manner, Airbus has a €3 billion revolving credit facility coordinated by Tokyo-Mitsubishi UFJ**,** Credit Agricole CIB, the Royal Bank of Scotland and UniCredit (Airbus website) and Thales operates with €1.5 billion in a revolving credit, coordinated by BNP, Credit Agricole and HSBC. In 2010, Safran signed a €1.6 billion revolving credit facility, overseen by Credit Agricole and HSBC and involving 10 more banks.

Furthermore, Atos operates with €1.8 billion in revolving credit through banks including Tokyo-Mitsubishi, Barclays, BNP and Credit Agricole. In 2016, 3M signed a $3.75 billion in revolving credit administrated by Citibank, which was replaced in 2019 by one worth $3 billion, against with Citibank as lead arranger. IBM holds a gigantic $15 billion in revolving credit, co-ordinated by J.P Morgan, while HP recently renewed their revolving credit of $4.75 billion, co-ordinated by J.P. Morgan and Citibank.

6.2 Silences and criticism

Examining the financial dimension of the political economy underpinning EU entry governance provides important insights into the multileveled processes shaping the material infrastructure of Union border control. This is an under-examined and –prioritized aspect of research into the militarization of European border control. The stock ownership, grants, loans and credit facilities provided by national or global actors on the financial scene are without a doubt absolutely crucial for the operations and strategic visions pursued by the main actors on the market for EU border control.

Examining the financial dimension of the market for border control also accentuates the important point that as border infrastructures are being expanded along the lines of surveillance and defence, the notoriously opaque relations between banks, investment firms and the suppliers of military technology, are increasingly also being transferred to the political economy of EU borders.

Not only are the conglomerate actors incredibly volatile through mergers, subsidiaries, joint ventures and take-overs, the financial flows underpinning them are also difficult to follow. And yet, through large and successive framework contracts, these actors are nonetheless actively reshaping the technological outlook of EU borders, leading to associated political lock-in effects.

This has ramifications for both the general European public, who have little opportunity to realize how, and by who, the formation of EU border control is being influenced, as well as for EU policy-makers who are situated at the locus of intersecting and extremely powerful interests. While these span institutional and private, national and global financial and strategic interests, they may not be most conducive for long-term political outlooks compatible with concerns for democratic stability and fundamental human rights.

7. Conclusion

Through a methodology involving the construction of several databases, and multi-sourced desk research into the actors, networks and instruments underpinning EU border control, this deliverable has discussed the conjunction between EU institutions and private actors from the European security and defence sector. The cases of interoperable EU databases, like Eurodac, VIS, SIS and EES, and the space-based, networked surveillance pursued under the EURUSOUR project, represent the intensification and proliferation of public-private interactions concerning the infrastructures of Union entry governance.

Although the market for EU border control is multisectoral, it is dominated by conglomerates from security, defence, aerospace and biometrics. Accordingly, their capture and co-shaping of the priorities for EU's border infrastructures has served to accelerate the securitization and militarization of the associated European border control. The result is that the entry governance of the EU is increasingly evolving into a market for border control along premises set by the largest market actors themselves. They both position themselves, and are being positioned, as unrivalled experts. But this connects entry governance and border control to industrial ambitions of widening and standardized future markets, of fighting market fragmentation, and of fusing civil and military purposes.

The processes through which this continues to happen remain opaque to civil society and democratic EU organs as well as to those migrants and refugees which experience the systems of border control and surveillance from the outside. This has implications for the increasing involvement of European universities and academic institutions in the resarch and development of border control and surveillance.

The framing of technological border infrastructures as a politically neutral growth area for European industrial competitiveness vis a vis Asia and America appear abstracted from and omitting the violent and politically contested character that has surrounded EU border control in the last decades. The coinciding roll-out of border control interventions and their associated technological infrastructure with the tragic, periluous and life-threatening migration routes for third country nationals into the EU is worrying and rarely if ever addressed in the myriads of reports, meeting minutes, contracts, topics, consortium objectives or company profiles and webpages examined for this deliverable.

Various lobbying strategies and forums are deployed by actors on the market for EU border control, from direct meetings with Commission representatives, over intergroups, extraparliamentary forums and interest organizations. Yet others are blurred forums where the actors on the market for border control are invited into strategic or decision-making processes. The Group of Personalities, European Security Research Advisory Board, the European Security Research Innovation Forum, the FP7 and Horizon 2020 Advisory Groups and European Technology Platforms are but some examples. Policies also evolve through a plethora of lucheons, talks, meetings, workshops, seminars and conferences, all events where norms and knowledges are

continuously recalibrated. These are settings which, for the most part, are not accessible to the general public.

Accordingly, through the construction of databases, the deliverable identifies multiple R&D projects and framework contracts pertaining to interoperable border databases and the EUROSUR project, which have been consistently awarded to a select few big security and defence companies and consortiums in Europe. These actors are involved in EU border infrastructures on the levels of strategy, planning, advisory input and technical expertise, but also as product suppliers for the « end users », that is the EU or national agencies and bodies tasked with border control. The different levels on which vested interests affect policy-making on EU entry is further illustrated when considering the financial dynamics underpinning the conglomerate actors involved in border control, through shareholding, grants, loans and credits. It argues that the strategic and operational influence on border-making yielded by global finance is an understudied aspect of the militarization of EU borders, and suggests paths to remedy this.

From within a framework of forward-looking and sustainable policy based on the respect of fundamental rights and democratic transparency, the deliverable details how this development leads to technological and political lock-in effects. These make it diffulcult for policy-makers to question or reverse the functionality of the EU borders as well as the norms embedded within infrastructures such as the VIS, SIS, EES or EUROSUR systems. These dynamics pose serious challenges not just to the democratic legitimacy and transparency of the EU's multileved entry governance, but also to the balance struck between short-sighted, vested interests, and the forward-looking, long-term ambitions in European Union migration politics.

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