

Citation: BACEIREDO MACHO, I. , “Shaping EU borders: An analysis of the technological and institutional developments in border management in the European Union”, *Peace & Security – Paix et Sécurité Internationales*, No 13, 2025.

Received: 10 July 2024.

Accepted: 5 December 2024.

SHAPING EU BORDERS: AN ANALYSIS OF THE TECHNOLOGICAL AND INSTITUTIONAL DEVELOPMENTS IN BORDER MANAGEMENT IN THE EUROPEAN UNION

Irene BACEIREDO MACHO¹

I. INTRODUCTION — II. EVOLUTION OF THE EU’S COMPETENCES IN BORDER MANAGEMENT: A HISTORICAL OVERVIEW — III. SHAPING BORDERS: HOW THE 2004 ENLARGEMENT AND THE 2015 “REFUGEE CRISIS” REDEFINED BORDER CONTROL IN THE EU — IV. CONCLUSIONS

ABSTRACT: The evolution of the border management landscape in the European Union (EU) over the past 40 years has been greatly shaped by two significant events: the 2004 EU enlargement and the 2015 “refugee crisis”. The two events led to the transformation of an exclusive competence of the EU Member States into a shared competence between them and the Union. They also catalysed the development of crucial mechanisms to current border control practices: the Schengen Information System (SIS) and other EU large-scale information systems, along with the establishment and transformation of the European Border and Coast Guard Agency (EBCGA or FRONTEX). In recent years, border management has further evolved with the inclusion of new technologies such as algorithmic profiling or the use of artificial intelligence (AI). These innovations, however, also bring forth new ethical and fundamental right challenges.

KEYWORDS: external borders of the EU, SIS, FRONTEX, EU large-scale IT systems.

CONFIGURACIÓN DE LAS FRONTERAS DE LA UE: ANÁLISIS DE LA EVOLUCIÓN TECNOLÓGICA E INSTITUCIONAL DE LA GESTIÓN DE FRONTERAS EN LA UNIÓN EUROPEA

RESUMEN: La evolución de la gestión de las fronteras en la Unión Europea (UE) en los últimos 40 años ha estado marcada en gran medida por dos grandes acontecimientos: de un lado, la ampliación de 2004 y, por otro, la “crisis de los refugiados” de 2015. Esto provocó la transformación de una competencia exclusiva de los Estados Miembros en una competencia compartida entre ellos y la Unión. Asimismo, estos eventos catalizaron el desarrollo de mecanismos cruciales para el control fronterizo actual: el Sistema de Información de Schengen (SIS) y el resto de los sistemas informá-

¹ PhD Candidate, Universidad de Deusto (España).

ticos de gran magnitud de la UE, junto con la creación y transformación de la Guardia Europea de Fronteras y Costas (GEFC o FRONTEX). En los últimos años, la gestión de las fronteras ha seguido evolucionando con la introducción de nuevas tecnologías como la elaboración de perfiles algorítmicos o el uso de la inteligencia artificial (IA). Sin embargo, estas innovaciones plantean nuevos retos éticos y para los derechos fundamentales.

PALABRAS CLAVE: fronteras exteriores de la UE, SIS, FRONTEX, sistemas informáticos de gran magnitud de la UE.

FAÇONNER LES FRONTIÈRES DE L'UE: ANALYSE DES DÉVELOPPEMENTS TECHNOLOGIQUES ET INSTITUTIONNELS DE LA GESTION DES FRONTIÈRES DANS L'UNION EUROPÉENNE

RÉSUMÉ: L'évolution du paysage de la gestion des frontières dans l'Union européenne (UE) au cours des 40 dernières années a été largement marquée par deux événements majeurs: l'élargissement de l'UE en 2004 et la "crise des réfugiés" de 2015. Ces événements ont conduit à la transformation d'une compétence exclusive des États membres en une compétence partagée entre eux et l'Union. Ces événements ont également catalysé le développement de mécanismes essentiels aux pratiques actuelles de contrôle des frontières: le Système d'Information Schengen (SIS) et les autres systèmes informatiques à grande échelle de l'UE, ainsi que la création et la transformation de l'Agence européenne de garde-frontières et de garde-côtes (FRONTEX). Ces dernières années, la gestion des frontières a encore évolué avec l'introduction de nouvelles technologies telles que le profilage algorithmique ou l'utilisation de l'intelligence artificielle (IA). Toutefois, ces innovations soulèvent de nouveaux défis en matière d'éthique et de droits fondamentaux.

MOT CLES: frontières extérieures de l'UE, SIS, FRONTEX, systèmes informatiques à grande échelle de l'UE.

I. INTRODUCTION

The following article aims at analysing how the competences in the management of the borders of the European Union (EU) have shifted over the last 40 years, and to provide for an overview of what the landscape looks like in the present days. It is evident that significant changes have taken place in the management of the borders during this time, and the purpose of this article is to demonstrate the pivotal role of the 2004 EU enlargement and the 2015 "refugee crisis" on these transformations.

Part II studies how the abolition of the internal borders led to the granting of border management competences to the Union, which were previously exclusive for the Member States, and the compensatory measures that were approved in order to strengthen the external borders control. It also tackles the origins of Integrated Border Management and the role of the principle

of solidarity and burden-sharing practices in this context.

Part III focuses on how the 2004 enlargement and the 2015 “refugee crisis” have led to the biggest reforms of border control in the EU in the 21st century. The section also explores the impact that these events had on the creation and enhancement of European Border and Coast Guard Agency (FRONTEX) and on the update and development of the large-scale information systems of the Union. This sections concludes with an analysis of the landscape of border management in the present time as a result of the challenges that the Union has faced, exploring the digital and technological advances that have been implemented in the past few years. Lastly, the article concludes with a summary of the key findings and by highlighting the challenges that the EU will have to confront in the near future.

II. EVOLUTION OF THE EU’S COMPETENCES IN BORDER MANAGEMENT: A HISTORICAL OVERVIEW

1. First stages of border control in the Union

Cooperation in the area of asylum and migration began to gain relevance among the Benelux countries, France and Germany in the framework of the Schengen System. The 1985 Schengen Agreement intended for the abolition of internal borders at the common borders of the countries parties to such Agreement², turning the external borders of the area into a matter of common concern to the Schengen States.

The creation of a common travel area led to the approval of certain compensatory measures including common checks on persons, harmonising the existing conditions of entry into the area, coordinating external border surveillance efforts, and establishing common rules for examining asylum applications³. The 1990 Schengen Convention established the foundation for

² Convention implementing the Schengen Agreement of 14 June 1985 between the Governments of the States of the Benelux Economic Union, the Federal Republic of Germany and the French Republic on the gradual abolition of checks at their common borders [2000] (OJ L 239, 22.9.2000) (CISA).

³ ATGER, A., “The Abolition of Internal Border Checks in an Enlarged Schengen Area: Freedom of Movement or a Web of Scattered Security Checks”, CEPS CHALLENGE Research Paper 8, 2008, p. 7.

several tools designed to track the movement of large groups travelling to, within and from the Schengen Area⁴.

Among these measures, the Schengen Information System (SIS) became operational in 1995 in order to “maintain public policy and public security, including national security, in the territories of the Contracting Parties” and for the application of the provisions of the Convention “relating to the movement of persons in those territories, using information communicated via this system”⁵. Thus, the SIS had the ability to register alerts on certain categories of persons and objects in two given situations: when a third-country national posed a threat to public policy, or public or national security, and when irregular immigrants were subjected to refusal of entry, deportation, or removal⁶. The system comprised national systems (N.SIS) in each State and a central database (C.SIS) located in France. In addition to this, the Supplementary Information Request at the National Entries (SIRENE) was established to provide for an infrastructure to exchange further information than that stored in the SIS⁷. From the very moment of its inception, the SIS was conceived as a system for the storage of alerts on third-country nationals, mainly related to criminal activities or the breach of immigration legislation⁸. Moreover, it stored alerts on wanted or missing people, as well as on missing objects. It included the instructions for police officers on how to act when a certain person or object had been located⁹.

Although historically each State was responsible for the control and management of their own borders, the Maastricht Treaty established for the en-

⁴ BROEDERS, D., “A European ‘Border’ Surveillance System under Construction” in DIJSTELBLOEM, H. and MEIJER, A. (eds.), *Migration and the New Technological Borders of Europe*, Palgrave Macmillan, London, 2011, p. 50.

⁵ CISA, Art. 93.

⁶ VAVOULA, N., “Digitalising the EU Migration and Asylum Policy: A Case Study on Information Systems” in TSOURDI, E. and DE BRUYCKER, P. (eds.), *Research Handbook on EU Migration and Asylum Law*, Edward Elgar Publishing, Cheltenham, 2022, pp. 116-17.

⁷ VAVOULA, N., *Immigration and Privacy in the Law of the European Union. The Case of Information Systems*, Brill Nijhoff, Leiden, 2022, p. 121.

⁸ VAVOULA, N., *Immigration and Privacy in the Law of the European Union. The Case of Information Systems, op. cit.*, p. 122.

⁹ FRA, ECtHR & CoE, *Handbook on European Law Relating to Asylum, Borders and Immigration*, Publication Office of the EU, Luxembourg, 2020, p. 54.

hanced cooperation between Member States in this field¹⁰. The initial Justice and Home Affairs (JHA) policies, which involved aspects like the common visa policy, asylum and immigration policies or border controls, were divided between the first and the third pillar, abetting the competences of the Member States in these fields¹¹.

The establishment of the Area of Freedom, Security and Justice (AFJS), “in which the free movement of persons is assured in conjunction with appropriate measures with respect to the external borders”¹², by the Amsterdam Treaty signalled the start of the communitarization and institutionalization of matters in this area¹³. The incorporation of the Schengen regime into Title IV EC Treaty and Title VI of the Treaty on European Union (TEU) entailed that the Schengen *acquis* became a fundamental element for the protection of the AFSJ¹⁴. Crossing the borders of one Schengen State would grant access to the whole EU territory, consequently resulting in an enhanced focus on the protection of the external borders. The issue of protecting the internal area of security created within the limits of the European Union was crucial: at this point, there was only one border separating the outside from the inside of the EU¹⁵. As explained by MONAR, “the system is only as strong as its weakest link, with one weakness in one part having a potentially serious implication for all other parts”¹⁶. One slip at the border of a Member State would open the door to the EU territory as a whole.

The abolition of the internal borders, together with other circumstances

¹⁰ Treaty on European Union (Maastricht Treaty) [1992] (OJ C 191, 29.7.1992).

¹¹ FERNÁNDEZ ROJO, D., *EU Migration Agencies: The Operation and Cooperation of FRONTEX, EASO and EUROPOL*, Edward Elgar Publishing, Cheltenham, 2021, p. 21.

¹² Treaty of Amsterdam amending the Treaty on European Union, the Treaties establishing the European Communities and certain related acts [1997] (OJ C 340, 10.11.1997).

¹³ FERNÁNDEZ ROJO, D., *op.cit.*, p. 21.

¹⁴ JORRY, H., “Construction of a European Institutional Model for Managing Operational Cooperation at the EU’s External Borders: Is the FRONTEX Agency a Decisive Step Forward?”, CEPS CHALLENGE Research Paper 6, 2007.

¹⁵ HOBGING, P., “Management of External EU Borders: Enlargement and the European Border Guard” in CAPARINI, M. and MARENIN, O. (eds.), *Borders and National Security Governance: Managing Borders in a Globalised World*, DCAF, Geneva, 2006, p. 151.

¹⁶ MONAR, J., “Maintaining the Justice and Home Affairs Acquis in an Enlarged Europe” in APAP, J. (ed.), *Justice and Home Affairs in the EU: Liberty and Security Issues after Enlargement*, Edward Edgar, Cheltenham, 2004, p. 38.

such as the incorporation of new Member States that had less experience in the field of border control and faced organizational, personnel, equipment, or funding problems¹⁷, or the operational difficulties of the Schengen regime highlighted the need for a coordinated approach provided by the EU. It is in this context that the concept of “Integrated Border Management” (IBM) originated¹⁸.

2. Integrated Border Management: A new era of border control in the European Union

Integrated Border Management is aimed at ensuring effective external border control and surveillance based on solidarity among the EU Member States and it is composed of five elements: (1) A common corpus of legislation; (2) A common coordination and operational cooperation mechanism; (3) Common integrated risk analysis; (4) Staff trained in the European dimension and inter-operational equipment; and (5) A financial burden-sharing mechanism between the Member States leading towards the establishment of a European Corps of Border Guards¹⁹.

The intention of establishing a common corpus of legislation was to compile and clarify the legal status of the rules on how border controls should be performed²⁰. In 2004, a Regulation establishing a Code on the rules governing the movements of persons across borders was proposed, based on existing Schengen rules. A year later, the Schengen Borders Code

¹⁷ MONAR, J., “The External Shield of the Area of Freedom, Security and Justice: Progress and Deficits of the Integrated Management of External EU Borders” in ZWAN, J.W. and GOUDAPPEL, F.A.N.J (eds.), *Freedom, Security and Justice in the European Union: Implementation of the Hague Programme*, TMC Asser Press, The Hague, 2006, pp. 73-74.

¹⁸ JORRY, H., *op. cit.*, pp. 5-6.

¹⁹ COMMISSION OF THE EUROPEAN COMMUNITIES, Communication from the Commission to the Council and the European Parliament: Towards Integrated Border Management of the External Borders of the Member States of the European Union (COM/2002/233 final), p. 12.

²⁰ COMMISSION OF THE EUROPEAN COMMUNITIES, *loc. cit.*

was adopted²¹, which contained the principles governing border controls²².

There were two main objectives to be achieved by setting up a mechanism for coordination and operational cooperation: the creation of an external borders practitioners' unit (PCU) and the establishment of a permanent process for the exchange of information. The PCU would be tasked with the coordination of border control activities as well as with the carrying out of risk analyses. The aforementioned process would entail the exchange of data and relevant information between the competent authorities, based on already-existing instruments like the SIS and on new instruments to be developed²³.

Burden-sharing practices in this context became a pivotal matter in the control and surveillance of the external borders of the EU as a means to minimize the risks of the whole system failing²⁴. Solidarity in terms of burden-sharing is crucial for ensuring that the Member States are not left to their own devices in a situation of crisis or pressure²⁵. Given the important imbalances between the Member States in areas such as immigration, asylum, borders control or internal security, the principle of solidarity in the AFSJ is of the utmost significance.

There are two provisions on the Treaty on the Functioning of the EU (TFEU) concerning solidarity in this regard: Article 67(2) and Article 80. On the one hand, Article 67(2) TFEU establishes that the Union shall guarantee the lack of internal border controls for persons, and “frame a common policy on asylum, immigration and external border control, based on *solidarity*

²¹ Regulation (EC) No. 562/2006 of the European Parliament and of the Council of 15 March 2006 establishing a Community Code on the rules governing the movement of persons across borders (OJ L 105, 13.4.2006), repealed by Regulation (EU) 2016/399 of the European Parliament and of the Council of 9 March 2016 on a Union Code on the rules governing the movement of persons across borders (Schengen Borders Code) (codification) (OJ L 77, 23.3.2016).

²² MONAR, J., “The External Shield of the Area of Freedom, Security and Justice: Progress and Deficits of the Integrated Management of External EU Borders”, *op. cit.*, p. 65.

²³ COMMISSION OF THE EUROPEAN COMMUNITIES, COM/2002/233 final, *op. cit.*, pp. 13-16.

²⁴ HOBGING, P., *op. cit.*, p. 166.

²⁵ MONAR, J., “Solidarity as a Challenge for the EU: The Case of Justice and Home Affairs”, *EU Studies in Japan*, Vol. 35, 2015, p. 1.

between Member States”²⁶. On the other hand, Article 80 TFEU is more specific in establishing that the policies in asylum, immigration and border checks, as well as their implementation, are to be governed by “the principle of solidarity and fair sharing of responsibility, including its financial implications, between the Member States”²⁷. From these two legal provisions, it can be inferred that solidarity is linked with burden-sharing, and explicit reference is made to the use of financial instruments to alleviate the disparities in the “burden” to be borne by Member States.

The ultimate goal of burden-sharing in the context of IBM, as established by the Commission, was the establishment of a European Corps of Border Guards. Given the pretentiousness of this aspiration, some mechanisms were set in order to progressively achieve it. In this sense, the 2003 Accession Treaty created a “Schengen Facility” for the purposes of aiding “beneficiary Member States between the date of accession and the end of 2006 to finance actions at the new external borders of the Union for the implementation of the Schengen *acquis* and external borders control”²⁸.

This facility consisted of a temporary solidarity mechanism envisaged to construct or upgrade border equipment, as well as to develop operating equipment among which one can find the second generation of the Schengen Information System (SIS II) for the period between 2004 and 2006²⁹. The

²⁶ Consolidated Version of the Treaty on the Functioning of the European Union (OJ C 326, 26.10.2012) (TFEU) Art. 67(2) (Emphasis added).

²⁷ TFEU Art. 80.

²⁸ Treaty between the Kingdom of Belgium, the Kingdom of Denmark, the Federal Republic of Germany, the Hellenic Republic, the Kingdom of Spain, the French Republic, Ireland, the Italian Republic, the Grand Duchy of Luxembourg, the Kingdom of the Netherlands, the Republic of Austria, the Portuguese Republic, the Republic of Finland, the Kingdom of Sweden, the United Kingdom of Great Britain and Northern Ireland (Member States of the European Union) and the Czech Republic, the Republic of Estonia, the Republic of Cyprus, the Republic of Latvia, the Republic of Lithuania, the Republic of Hungary, the Republic of Malta, the Republic of Poland, the Republic of Slovenia, the Slovak Republic, concerning the accession of the Czech Republic, the Republic of Estonia, the Republic of Cyprus, the Republic of Latvia, the Republic of Lithuania, the Republic of Hungary, the Republic of Malta, the Republic of Poland, the Republic of Slovenia and the Slovak Republic to the European Union [2003] (OJ L 236, 23.09.2003) Art. 35(1).

²⁹ CORRADO, L., “Negotiating the EU External Borders” in BALZAQ, T. and CARRERA, S. (eds.), *Security Versus Freedom? A Challenge for Europe’s Future*, Ashgate, Farnham, 2006, p. 197; INGLIS, K., *Evolving Practices in EU Enlargement with Case Studies in Agri-Food and Environmental Law*,

Schengen Facility played a crucial role on the improvement of technological infrastructure for updating the SIS and also led to the establishment of a European Corps of Border Guards, preconceived as an instrument of solidarity for sharing the responsibility of controlling the external borders of an enlarged European Union, which was progressively set up³⁰.

III. SHAPING BORDERS: HOW THE 2004 ENLARGEMENT AND THE 2015 “REFUGEE CRISIS” REDEFINED BORDER CONTROL IN THE EU

There is no doubt that two events have played a transformative role in the re-shaping of the EU border control in the 21st century. On the one hand, the 2004 enlargement marked the largest-ever expansion of the Union, integrating ten new States and fostering several advances in border control in order to adjust to the incorporation of these countries. On the other hand, the so-called “refugee crisis” of 2015 challenged the capacity of the EU to manage an unprecedented influx of migrants.

The focus of this section is placed on the analysis of two aspects of EU border control that have been largely influenced by the 2004 enlargement and the 2015 “refugee crisis”: the transformation of the EU large-scale information systems, placing a particular focus on the Schengen Information System, and the creation and enhancement of the European Border and Coast Guard Agency (FRONTEX). The section finishes off by providing an overview of the state of play in today’s border control landscape, taking into consideration the incorporation of new technologies, including artificial intelligence (AI).

1. The 2004 enlargement of the European Union

The 2004 enlargement was the largest-ever in the history of the EU: ten new countries joined, which implied that the land and sea borders would be

Martinus Nijhoff, Leiden, 2010, p. 181.

³⁰ MONAR, J., “The Project of a European Border Guard: Origins, Models and Prospects in the Context of EU’s Integrated External Border Management” in CAPARINI, M. and MARENIN, O. (eds.), *Borders and National Security Governance: Managing Borders in a Globalised World*, DCAF, Geneva, 2006, p. 176.

longer and shared with new neighbours³¹. The eastern expansion entailed getting nearer to Russia, Ukraine and Belarus, where economic and political instability was present or recent³². Moreover, the southern expansion shifted the EU external border closer to Mediterranean States such as Libya or Tunisia, and to the Middle East, where instability was also present. The new Member States were less experienced in the field of border control and the implementation of EU and Schengen border regimes would represent major costs, not only monetarily, but also by disrupting political and economic relations, amongst others³³. Additionally, many of the new EU States faced organizational, personnel, equipment, or funding problems, making it hard to implement the border control regimes³⁴.

A. The transformation of SIS into SIS II

Although the SIS has been operational since 1995, some changes had to be performed to the system in order to accommodate the new Member States entering the Union³⁵. The introduction of SIS marks the transformation of the borders of the EU into digital borders that enable mass surveillance³⁶. The need to reform the SIS arose as early as 2001: the system needed to

³¹ MONAR, J., “The External Shield of the Area of Freedom, Security and Justice: Progress and Deficits of the Integrated Management of External EU Borders”, *op. cit.*, p. 73.

³² CARRAPIÇO, H., *op. cit.*, p. 2; CVCE, “Address given by Günter Verheugen on the enlargement of the EU and the European Neighbourhood Policy”, https://www.cvce.eu/obj/address_given_by_gunter_verheugen_on_the_enlargement_of_the_eu_and_the_european_neighbourhood_policy_moscow_27_october_2003-en-be19f178-524b-4b69-902c-eb-902079f45c.html.

³³ HOBGING, P., *op. cit.*, p. 151; MONAR, J., “Maintaining the Justice and Home Affairs Acquis in an Enlarged Europe”, *op. cit.*, p. 34.

³⁴ MONAR, J., “The External Shield of the Area of Freedom, Security and Justice: Progress and Deficits of the Integrated Management of External EU Borders”, *op. cit.*, pp. 73-74.

³⁵ BROUWER, E., “Data Surveillance and Border Control in the EU: Balancing Efficiency and Legal Protection” in BALZAQ, T. and CARRERA, S. (eds.), *Security Versus Freedom? A Challenge for Europe's Future*, Ashgate, Farnham, 2006, p. 144; KARAMANIDOU, L. and KASPAREK, B., “Border Management and Migration Control in the European Union”, Respond Working Papers No. 14, 2018, p. 25.

³⁶ BESTERS, M. and BROM, F., “Greedy’ Information Technology: The Digitalization of the European Migration Policy”, *European Journal of Migration and Law*, Vol. 12, 2010, pp. 455-456.

be technically adjusted so that the candidate States would be connected to it. However, there had already been previous modifications to SIS: in 2001, SIS1+ was set up with the main objective of accommodating the Nordic States, nonetheless, this adjustment was not sufficient for the massive 2004 EU enlargement³⁷.

In 2006, the Commission proposed a legal package containing three different instruments that aimed at regulating the SIS II. On the one hand, it proposed a Regulation and a Directive on the establishment, functioning and use of the system; and, on the other hand, a Regulation granting access to data to vehicle registration authorities³⁸. Originally, SIS II was supposed to be functioning by April 2007, so that internal borders could be lifted in that same year³⁹, notwithstanding, already in 2006 it was announced that due to technical and legal hurdles the date would be postponed, delaying the lifting of the borders as well⁴⁰. For these reasons, the Portuguese delegation proposed a solution: SISone4all, a replica of the Portuguese national SIS capable of integrating the new Schengen Member States that aimed at minimising the delay of the removal of the borders. This alternative gained the support of the new Member States, as it was seen as the makeshift solution for integrating them into the system at the same time as gaining time to correctly develop SIS II⁴¹. For this purpose, the Commission increased the co-financing of the External Borders Fund (EBF) on a 75%⁴².

³⁷ ATGER, A., “The Abolition of Internal Border Checks in an Enlarged Schengen Area: Freedom of Movement or a Web of Scattered Security Checks”, *op. cit.*, p. 8.

³⁸ Regulation (EC) No. 1986/2006 of the European Parliament and of the Council of 20 December 2006 regarding access to the Second Generation Schengen Information System (SIS II) by the services in Member States responsible for issuing vehicle registration certificates (OJ L 381, 28.12.2006); Regulation (EC) No. 1987/2006 of the European Parliament and of the Council of 20 December 2006 on the establishment, operation and use of the second generation Schengen Information System (SIS II) (OJ L 381, 28.12.2006); Council Decision 2007/533/JHA of 12 June 2007 on the establishment, operation and use of the second generation Schengen Information System (SIS II) (OJ L 2005, 07.08.2007).

³⁹ BERTOZZI, S., “Schengen: Achievements and Challenges in Managing an Area Encompassing 3.6 Million km²”, CEPS Working Document No. 284, 2008, p. 18.

⁴⁰ ATGER, A., *op. cit.*, p. 8.

⁴¹ ATGER, A., *op. cit.*, p. 20.

⁴² Decision No. 574/2007/EC of the European Parliament and of the Council of 23 May 2007 Establishing the External Borders Fund for the Period of 2007 to 2013 as a Part of the

A new date for the operational launch of SIS II was set on December 2008, however, a series of complications in the test phase between July and December 2007 led the JHA Council of February 2008 to reschedule the launch to September 2009. More technical complications arose during this period, so a group of several EU Member States decided to explore other avenues. The result of this was SIS1+RE: a solution based on the same structure as the SIS but including new functionalities. It was decided by the Council and the Member States that a two-milestone test for SIS II would be imposed on the Commission and if they failed, the project would be dismissed and the SIS1+RE would be developed⁴³. In the end, the first and second milestone tests were passed in March 2010, and May 2012, respectively, resulting in the launch of the system in April 2013⁴⁴.

The SIS II evolved from purely being a reporting system to being a comprehensive investigation tool: it now allowed for the interlinking of alerts as well as for the introduction of biometric identifiers to conduct searches on the system⁴⁵.

Even though the SIS is considered the cornerstone of the Schengen System, there are several other large-scale information systems that were created during the early 2000s so as to support the EU asylum and border control regimes. On the one hand, the terrorist attacks of 9/11 led the Union to adopt a series of measures regarding the EU common visa policy, including a Visa Information System (VIS) capable of storing a wide variety of data such as biographic and biometric data on individuals applying for short-stay Schengen visas⁴⁶. The legal basis for this system was finally adopted in 2008,

General Programme ‘Solidarity and Management of Migration Flows’ (OJ L 144, 6.6.2007).

⁴³ PARKIN, J., “The Difficult Road to the Schengen Information System II: The Legacy of ‘Laboratories’ and the Cost for Fundamental Rights and the Rule of Law”, CEPS Paper in Liberty and Security in Europe, 2006.

⁴⁴ EUROPEAN COURT OF AUDITORS, Special Report: Lessons from the European Commission’s Development of the Second Generation Schengen Information System (SIS II), Publications Office of the European Union, Luxembourg, 2014, p. 43.

⁴⁵ VAVOULA, N., “The ‘Puzzle’ of EU Large-Scale Information Systems for Third-Country Nationals: Surveillance of Movement and Its Challenges for Privacy and Personal Data Protection”, *European Law Review*, No. 3, 2020, p. 356.

⁴⁶ GLOUFTSIOS, G., *Engineering Digitalised Borders – Designing and Managing the Visa Information System*, Palgrave Macmillan, London, 2021, p. 60.

however, the system only became operational in 2011⁴⁷. On the other hand, the European Dactyloscopic System (Eurodac) was created by Council Regulation 2725/2000 and became operational in 2003⁴⁸. This system was designed for taking and comparing fingerprints of asylum seekers with the main purpose of facilitating the application of the Dublin System to the Member States.

In order to deal with the legal, financial, operational and organisational implications of the newly adopted systems, the EU Agency for the Operational Management of Large-Scale Information Systems (eu-LISA) was created in 2011⁴⁹. Considered the “digital engine of the Schengen Area”, eu-LISA manages the EU large-scale information systems of the AFSJ in order “to support the implementation of asylum, border management and migration policies’ in the EU”⁵⁰. This Agency can likewise be regarded as a solidarity mechanism due to the coordination and technical support it provides to the Member States, allowing national authorities to use data included in the systems that is related to migration and/or internal security made available by other Member States⁵¹.

B. The creation and establishment of FRONTEX

Another advance produced by the 2004 enlargement, amongst other circumstances, was the creation an EU Agency for the Management of Operational Cooperation at the External Borders (FRONTEX). The Regulation establishing the Agency was approved on 26 October 2004, and the Agency was officially launched on the 1st May 2005, in Warsaw, Poland, but its operations did not start until the 3rd October of the same year. Basing the seat

⁴⁷ Regulation (EC) 767/2008 of the European Parliament and of the Council of 9 July 2008 concerning the Visa Information System (VIS) and the Exchange of Data between Member States on Short-Stay Visas, (OJ L 218, 13.8.2008).

⁴⁸ Council Regulation (EC) No. 2725/2000 of 11 December 2000 concerning the Establishment of ‘Eurodac’ for the Comparison of Fingerprints for the Effective Application of the Dublin Convention (OJ L 316, 15.12.2000).

⁴⁹ GLOUFISIOS, G., *op. cit.*, p. 110.

⁵⁰ EU-LISA, “Discover eu-LISA: Our Core Activities and IT Systems for a Safer Europe”, <https://www.eulisa.europa.eu/SiteAssets/Discover/default.aspx/home>.

⁵¹ MONAR, J., “Solidarity as a Challenge for the EU: The Case of Justice and Home Affairs”, *op. cit.*

of the Agency in Warsaw confirms the importance of the responsibilities allocated to the new Member States with regard to the control of the external borders of the EU⁵².

In 2003, the Commission proposed a regulation establishing an EU Agency for the Management of Operational Cooperation at the External Borders with the main purpose of better coordinating this cooperation among the Member States of the EU⁵³. This type of arrangement illustrated the compromise between the EU institutions, which advocated for a European Corps of Border Guards, and the Member States, that were reluctant to lose sovereignty and decision power⁵⁴.

The swift negotiations towards the adoption of the Regulation can be attributed to two deadlines. On the one hand, the EU enlargement on 1st May 2004, which was causing fear among the EU Member States, for the acceding countries would be in charge of a quite large portion of the eastern borders of the EU⁵⁵. On the other hand, the transitional period of five years ending on the 1st January 2005. This marked the end of an era after which the matters relating to the external borders should be adopted following the co-decision procedure (Art. 68(2) Treaty of the European Communities), meaning that the European Parliament would be actively involved in the legislative process⁵⁶. Subsequently, Regulation (EC) No 2007/2004 establishing a European Agency for the Management of Operational Cooperation at the External Borders of the Member States of the European Union was adopted on 26 October 2004⁵⁷.

Regulation 2007/2004 clearly established that the responsibility for the

⁵² MONAR, J., “The External Shield of the Area of Freedom, Security and Justice: Progress and Deficits of the Integrated Management of External EU Borders”, *op. cit.*, p. 63.

⁵³ LEONARD, S., “The Creation of FRONTEX and the Politics of Institutionalisation in the EU External Borders Policy”, *Journal of Contemporary European Research*, Vol. 5, No. 3, 2009, p. 379.

⁵⁴ SARANTAKI, A. M., *Frontex and the Rising of a New Border Control Culture in Europe*, Routledge, London, 2023, p. 25.

⁵⁵ FERNÁNDEZ ROJO, D., *op. cit.*, p. 35; LEONARD, S., *op. cit.*, p. 380.

⁵⁶ FERNÁNDEZ ROJO, D., *loc. cit.*; LEONARD, S., *loc. cit.*

⁵⁷ Council Regulation (EC) No. 2007/2004 of 26 October 2004 establishing a European Agency for the Management of Operational Cooperation at the External Borders of the Member States of the European Union (OJ L 349, 25.11.2004).

control and surveillance of the external borders would lie with the Member States, and that the Agency would be in charge of assisting them with the implementation of the operational aspects of external border management, as well as with the application of existing and future Community legislation⁵⁸.

Already in 2007, the founding regulation of FRONTEX was amended by Regulation (EC) No 837/2007, which created the Rapid Border Intervention Teams (RABITs) as a method for dealing with the critical situations that many Member States faced due to the high influx of migrants. This mechanism would help national border guards in those situations by making use of the expertise and manpower of other Member States' border guards in the short-term⁵⁹. A few years later, Regulation (EU) 1168/2011 strengthened the Agency's operational capacity and autonomy, extended its scope of action, and increased its tasks to face new challenges⁶⁰. It also rebranded the RABITs as the European Border Guard Teams (EBGT)⁶¹. Furthermore, this Regulation introduced several fundamental rights obligations to be respected by the Agency and the EBGT, as well as by the Member States⁶².

2013 marks the start of an era where FRONTEX began to take control over the technological advances used in the surveillance of the external borders. After two years of testing the pilot project of the European Border Surveillance System (EUROSUR), the Regulation governing the system was finally adopted on 22 October 2013. According to Article 1, EUROSUR was established as “a common framework for the exchange of information and for cooperation between the Member States and the Agency [...] for

⁵⁸ Regulation 2007/2004, Art. 1(2).

⁵⁹ EUROPEAN COMMISSION, Proposal for a Regulation of the European Parliament and of the Council Establishing a Mechanism for the Creation of Rapid Border Intervention Teams and Amending Council Regulation (EC) No. 2007/2004 as Regards that Mechanism (COM/2006/401 Final).

⁶⁰ FERNANDEZ-ROJO, D., *op. cit.*, p. 38; MEISSNER, V., “The European Border and Coast Guard Agency FRONTEX after the Migration Crisis: Towards a ‘Superagency?’” in POLLACK, J. and SLOMINSKI, P. (eds.), *The Role of EU Agencies in the Eurozone and Migration Crisis – Impact and Future Challenges*, Palgrave Macmillan, London, 2021, pp. 157-158.

⁶¹ Regulation (EU) 1168/2011 of the European Parliament and of the Council of 25 October 2011 amending Council Regulation (EC) No. 2007/2004 establishing a European Agency for the Management of Operational Cooperation at the External Borders of the Member States of the European Union (OJ L 304, 22.11.2011) Art. 1a.

⁶² Regulation 1168/2011, Art. 1(2), Art. 3(b)(4).

the purpose of detecting, preventing, and combating illegal immigration and cross-border crime and contributing to ensuring the protection and saving the lives of migrants”⁶³.

EUROSUR applied to the surveillance of both the land and sea borders of the EU for the monitoring, detection, identification, tracking, prevention, and interception of unauthorized border crossings⁶⁴. Following Regulation No. 1052/2013, FRONTEX was to coordinate the common application of surveillance tools in order to gather surveillance information on the external borders of the Union. These tools comprised sensors in vehicles, aircraft or vessels, drones, thermal cameras, satellite imagery, and ship reporting systems, amongst other surveillance technologies.

2. The “Refugee Crisis” of 2015

The evolution of new technologies used for border control between the years 2015 and 2018 can be associated to two major events. To begin with, the so-called “refugee crisis” of 2015 led to the extension of the border management mandate of FRONTEX by adopting a new Regulation governing the Agency’s tasks and strengthening its powers. Conversely, the Paris attacks of 2015 and the Brussels attacks of 2016 led to the adoption of a Communication on how to strengthen the borders of the EU. These events demonstrated that the existing structures within the Union and its Member States were inadequate and insufficient to address the challenges posed by the large influx of migrants arriving and the security threats to the EU.

A. EU large-scale information systems

During this period of substantially increased influx of migrants into the EU, the Commission adopted a Communication on “Stronger and Smarter Information Systems for Borders and Security” in order to address certain challenges in the interconnected areas of border management, law enforcement and migration control, such as the gaps in the EU’s data management architecture, or the weaknesses in the existing systems’ functionalities. The

⁶³ Regulation (EU) No. 1052/2013 of the European Parliament and of the Council of 22 October 2013 establishing the European Border Surveillance System (EUROSUR) (OJ L 295, 6.11.2013) Art. 1.

⁶⁴ Regulation No. 1052/2013, Art. 2(1).

proposals contained therein involved the enhanced use of biometrics, the development of additional information systems, and the interoperability of the systems by identifying four dimensions: a single search interface, the interconnectivity of the information systems, a shared biometric matching service, and a common repository of data⁶⁵.

In the aftermath of the crisis, most of the EU large-scale IT systems experienced updates, and some new systems were created. Likewise, the Regulation governing eu-LISA was amended in 2018 in order to expand the mandate of the Agency and entrust it with the preparation, development and operational management of two new information systems: the Entry/Exist System (EES) and the European Travel Information and Authorisation System (ETIAS)⁶⁶. The EES electronically registers when a third-country national has entered and exited the Schengen area, calculating the duration of their stay⁶⁷. As conveyed by VAVOULA, the system “would thus render the Schengen area like a hotel where visitors check in when they arrive and check out when they leave”⁶⁸. ETIAS requires a travel authorisation for visa-free travellers, obtained by providing personal data in an online application form. This enables a pre-travel assessment consisting of a background check against the other information systems⁶⁹.

However, a third new system, the European Criminal Records Information System with regards to third country nationals (ECRIS-TCN), was created for the purposes of sharing information on previous convictions of third-country nationals, including dual nationals, to identify what Member

⁶⁵ EUROPEAN COMMISSION, Communication from the Commission to the European Parliament and the Council on Stronger and Smarter Information Systems for Borders and Security (COM/2016/205 Final).

⁶⁶ Regulation (EU) 2018/1726 of the European Parliament and of the Council of 14 November 2018 on the European Union Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice (eu-LISA), and amending Regulation (EC) No. 1987/2006 and Council Decision 2007/533/JHA and repealing Regulation (EU) No. 1077/2011 (OJ L 295, 21.11.2018).

⁶⁷ EU-LISA, “EES”, <https://www.eulisa.europa.eu/Activities/Large-Scale-It-Systems/EES>.

⁶⁸ VAVOULA, N., *Immigration and Privacy in the Law of the European Union – The Case of Information Systems*, Brill Nijhoff, Leiden, 2022, p. 412.

⁶⁹ VAVOULA, N., *Immigration and Privacy in the Law of the European Union – The Case of Information Systems*, *op. cit.*, p. 468; EU-LISA, “ETIAS”, <https://www.eulisa.europa.eu/Activities/Large-Scale-It-Systems/Etias>.

States hold criminal records of those individuals⁷⁰, prompting another revision of the eu-LISA Regulation to entrust it with the management of this newly created system⁷¹.

In 2018, the three SIS II Regulations were updated. This set of rules allowed for the expansion on the use of biometrics, including DNA profiles and palm and fingerprints. It also introduced new categories of alerts covering, for instance, alerts on vulnerable persons and children at risk of abduction⁷². However, the upgrade of the system did not take place until last year⁷³.

B. From FRONTEX to the European Border and Coast Guard Agency

In December 2015 the European Commission presented a proposal for a Regulation creating the European Border Coast Guard that would repeal the previous FRONTEX Regulations⁷⁴. This proposal stressed how the control of the EU's borders was a common interest that had to be carried out “in accordance with high and uniform Union standards” and reiterated “the need to move to a shared management of the external borders” that was identified by the European Agenda on Migration⁷⁵.

This proposal for a Regulation provided for a “more integrated manage-

⁷⁰ EU-LISA, “ECRIS-TCN”, <https://www.eulisa.europa.eu/Activities/Large-Scale-It-Systems/Ecris-Tcn>.

⁷¹ Regulation (EU) 2019/816 of the European Parliament and of the Council of 17 April 2019 establishing a centralised system for the identification of Member States holding conviction information on third-country nationals and stateless persons (ECRIS-TCN) to supplement the European Criminal Records Information System and amending Regulation (EU) 2018/1726 (OJ L 135, 22.5.2019).

⁷² Regulation (EU) 2018/1862 of the European Parliament and of the Council of 28 November 2018 on the establishment, operation and use of the Schengen Information System (SIS) in the field of police cooperation and judicial cooperation in criminal matters, amending and repealing Council Decision 2007/533/JHA, and repealing Regulation (EC) No. 1986/2006 of the European Parliament and of the Council and Commission Decision 2010/261/EU (OJ L 312, 07/12/2018).

⁷³ EUROPEAN COMMISSION, “Security Union: the Renewed Schengen Information System enters into operation”, 7 March 2023, https://ec.europa.eu/commission/presscorner/detail/sl/ip_23_1505.

⁷⁴ EUROPEAN COMMISSION, Proposal for a Regulation of the Parliament and of the Council on the European Border and Coast Guard and repealing Regulation (EC) No. 2007/2004, Regulation (EC) No. 863/2007 and Council Decision 2005/267/EC (COM/2015/671 final), p. 2.

⁷⁵ EUROPEAN COMMISSION, COM/2015/671 final, *op. cit.*, p. 1.

ment of the EU's external borders, *inter alia*, by providing FRONTEX with more competences in the fields of external border management and return⁷⁶. Given the urgency posed by the crisis, the new Regulation was put into place in a record time: the European Parliament and the Council adopted it on 14 September 2016. The adoption of Regulation 2016/1624 was a major development for the Agency as it granted it greater power and influence in the border control policy and renamed it as the “European Border and Coast Guard Agency (EBCGA)”⁷⁷, revealing a shift in the responsibilities for the external borders. For the first time, the Regulation established that “European Integrated Border Management should be implemented as a *shared responsibility* of the Agency and the national authorities responsible for border management”⁷⁸.

One of the main tasks to be performed by the EBCGA was the production of vulnerability assessments (Article 8(b)) with the aim of assessing whether the Member States had the capacity and are ready to face threats and challenges at the external borders. Furthermore, the Regulation enhanced the Agency's monitoring role, allowing it to deploy its own liaison officers in Member States (Article 8(c)).

On the other hand the EBCGA's operational tasks were also updated: for the first time, the technical and operational capacity of the Agency in the hotspots was regulated⁷⁹. In addition to this, Article 38 established that FRONTEX might acquire its own technical equipment in order to deploy it over joint operations, rapid border interventions, pilot projects and return operations. The Regulation established a rapid reaction pool of technical equipment with the purpose of strengthening the coordinating activities of

⁷⁶ EUROPEAN COMMISSION, COM/2015/671 final, *op. cit.*, p. 3.

⁷⁷ MEISSNER, V., “The European Border and Coast Guard Agency FRONTEX after the Migration Crisis: Towards a ‘Superagency’?”, *op. cit.*, pp. 163-165; RAIMONDO, G., *The European Integrated Border Management: FRONTEX, Human Rights, and International Responsibility*, Hart Publishing, Oxford, 2024, p. 36.

⁷⁸ Regulation (EU) 2016/1624 of the European Parliament and of the Council of 14 September 2016 on the European Border and Coast Guard and amending Regulation 2016/399 of the European Parliament and of the Council and Repealing Regulation (EC) No. 863/2007 of the European Parliament and of the Council, Council Regulation (EC) No 2007/2004 and Council Decision 2005/267/EC [2016] OJ L-251/1, Recital (6). (emphasis added).

⁷⁹ FERNÁNDEZ ROJO, D., *op. cit.*, p. 93.

FRONTEX to which the Agency should contribute with the equipment at its disposal mentioned above⁸⁰. Another cornerstone of this Regulation was the establishment of a rapid reaction pool of European Border and Coast Guard Teams consisting of “a standing corps placed at the immediate disposal of the Agency and which can be deployed from each Member State” in joint operations and border interventions, and that should consist of border guards made available to FRONTEX by the Member States, which in total should amount to a minimum of 1,500 border guards or other staff⁸¹.

Although the enhanced mandate of the Agency can be seen as a step forward in the sense that it contributes to better coordinate the actions of the Member States and allows for a swifter response to challenges, it nevertheless contributes to blurring the lines of accountability between the different actors involved in the implementation of IBM. This interplay allows the numerous actors to shift blame for the harmful consequences of their activities⁸².

3. Present-day EU border control: a legacy of enlargement and migration challenges

The two major events discussed above have clearly played a significant role in shaping the framework of today’s border control policies and practices. However, the evolution of new technologies in the past years have also had an impact on the evolution of border management.

The existing information systems, safe for ETIAS, have been updated so as to allow for the processing of biometric data, this is, data that allows or confirms the unique identification of a natural person⁸³. In this regard, the databases now allow for the processing of fingerprints, facial images and DNA profiles under certain circumstances. The VIS was amended in 2021 for the purposes of consolidating the Council Decision establishing the system, the VIS Regulation and the VIS Decision, and was expanded so as to in-

⁸⁰ Regulation 2016/1624, Article 39(7).

⁸¹ Regulation 2016/1624, Article 20(5); Meissner (n 30), p. 165.

⁸² RAIMONDO, G., *op. cit.*, p. 36.

⁸³ Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation, GDPR), (OJ L 119, 4.5.2016) Article 4(14).

clude long visas and residence permits⁸⁴. Among the most significant updates one can find the replacement of photographs with facial images so as to process them through facial recognition technology, or the automated processing of visa and residence permit applications, whose data will be cross-checked against data in other information systems⁸⁵. Additionally and as a result of the New Pact on Migration and Asylum, the Eurodac recast regulation was adopted in May 2024⁸⁶. The recast regulation now allows for the registration of individual asylum seekers instead of asylum applications as it did before. It furthermore provides for the collection of additional biometric data such as facial images and reduces the age for the collection of biometrics from 14 to 6 years of age⁸⁷.

Following the aforementioned Communication on “Stronger and Smarter Information Systems for Borders and Security”, two Regulations on the interoperability of the EU large-scale information systems were adopted in 2019: one regarding borders and visa⁸⁸, and the other concerning police and

⁸⁴ Regulation (EU) 2021/1134 of the European Parliament and of the Council of 7 July 2021 amending Regulations (EC) No. 767/2008, (EC) No. 810/2009, (EU) 2016/399, (EU) 2017/2226, (EU) 2018/1240, (EU) 2018/1860, (EU) 2018/1861, (EU) 2019/817 and (EU) 2019/1896 of the European Parliament and of the Council and repealing Council Decisions 2004/512/EC and 2008/633/JHA, for the purpose of reforming the Visa Information System (OJ L248/11, 13.07.2021).

⁸⁵ Regulation 2021/1134, Article 9a(3).

⁸⁶ Regulation (EU) 2024/1358 of the European Parliament and of the Council of 14 May 2024 on the establishment of “Eurodac” for the comparison of biometric data in order to effectively apply Regulations (EU) 2024/1351 and (EU) 2024/1350 of the European Parliament and of the Council and Council Directive 2001/55/EC and to identify illegally staying third-country nationals and stateless persons and on requests for the comparison with Eurodac data by Member States’ law enforcement authorities and Europol for law enforcement purposes, amending Regulations (EU) 2018/1240 and (EU) 2019/818 of the European Parliament and of the Council and repealing Regulation (EU) No 603/2013 of the European Parliament and of the Council (OJ L, 2024/1358, 22.5.2024).

⁸⁷ EUROPEAN COUNCIL AND COUNCIL OF THE EUROPEAN UNION, “Update of EU Fingerprint Database”, 31 July 2024, <https://www.consilium.europa.eu/en/policies/eu-migration-policy/eu-migration-asylum-reform-pact/fingerprinting-database/>.

⁸⁸ Regulation (EU) 2019/817 of the European Parliament and of the Council of 20 May 2019 on establishing a framework for interoperability between EU information systems in the field of borders and visa and amending Regulations (EC) No. 767/2008, (EU) 2016/399, (EU) 2017/2226, (EU) 2018/1240, (EU) 2018/1726 and (EU) 2018/1861 of the European

judicial cooperation, asylum and migration⁸⁹. Interoperability entails the possibility of exchanging information so that the competent authorities “have the information they need, when and where they need it”⁹⁰. In this regard, four interoperability tools were established. Firstly, a European Search Portal allowing for the search of data in multiple systems at the same time was created. Secondly, a shared biometric matching service for the cross-checking of biometric data and the establishment of links regarding the same person across the different systems was set up. Thirdly, the regulations established a common identity repository for the purposes of containing biographical and biometric data on non-EU citizens. Lastly, a multiple-identity detector was designed, consisting of an automatic alert system that detects multiple and/or fraudulent identities⁹¹.

2019 was also the year when the new FRONTEX Regulation was adopted⁹², providing for the restructuration of the Agency in order to face its persistent limitations, and for the inclusion of EUROSUR within FRONTEX’s mandate for the purposes of improving the functioning of the system and expanding its scope so as to cover the majority of the aspects of European IBM⁹³. The adoption of Regulation 2019/1896 introduced a series of novel-

Parliament and of the Council and Council Decisions 2004/512/EC and 2008/633/JHA (OJ L 135, 22.5.2019).

⁸⁹ Regulation (EU) 2019/818 of the European Parliament and of the Council of 20 May 2019 on establishing a framework for interoperability between EU information systems in the field of police and judicial cooperation, asylum and migration and amending Regulations (EU) 2018/1726, (EU) 2018/1862 and (EU) 2019/816 (OJ L 135, 22.5.2019).

⁹⁰ EUROPEAN COMMISSION, “Proposal for a Regulation of the European Parliament and of the Council on establishing a framework for interoperability between EU information systems (police and judicial cooperation, asylum and migration)” (COM/2017/352 Final), p. 1.

⁹¹ EUROPEAN COMMISSION, “Security Union: the Renewed Schengen Information System enters into operation”, *op. cit.*

⁹² Regulation (EU) 2019/1896 of the European Parliament and of the Council of 13 November 2019 on the European Border and Coast Guard and Repealing Regulations (EU) No. 2013/1052 and (EU) 2016/1624 (OJ L 295, 14.11.2019) Recital (5).

⁹³ EUROPEAN COMMISSION, “Proposal for a Regulation of the Parliament and of the Council on the European Border and Coast Guard and repealing Council Joint Action No. 98/700/JHA, Regulation (EU) No. 1052/2013 of the European Parliament and of the Council and Regulation (EU) No. 2016/1624 of the European Parliament and of the Council” (COM/2018/631 final), p. 3.

ties and new operational powers conferred upon FRONTEX, reinforcing the significant role that the Agency plays in the control of the external borders of the Union. The main innovation introduced by this Regulation was the commitment to establish a standing corps of 10,000 operational staff holding executive powers “gradually but swiftly” by 2027⁹⁴. According to Article 54, these operational staff would be divided into four different categories: (1) statutory staff deployed as members of the teams in operational areas (Article 55); (2) operational staff seconded from Member States to the Agency for a long-term deployment (Article 56); (3) operational staff seconded from Member States to the Agency for a short-term deployment (Article 57); and (4) reserve for the rapid reaction, that consists of Member States’ staff to be deployed in rapid border interventions (Articles 58 and 39)⁹⁵. Furthermore, Article 54(3) bestowed the EBCG operational staff executive powers, including the ability to verify the identity and nationality of persons intercepted, authorise or reject entry upon border checks, stamp travel documents, issue or refuse visas at the borders, or patrol borders and intercept and apprehend migrants, amongst other competences⁹⁶. However, the performance of such powers was to be subjected to the authorisation of the host Member State and to the applicable national, EU, or international law, following Article 82(2) of the Regulation. Additionally, Regulation 2019/1896 introduced several modifications in regards the supervisory responsibilities to be undertaken by the Agency, such as the attribution of impact levels to external border sections (Article 34), which should be performed by FRONTEX in agreement with the Member State concerned.

The 2019 Regulation not only granted the Agency with greater autonomy and enhanced capabilities, but it also transformed it into what some refer to as a “data and surveillance hub”⁹⁷ as it has granted FRONTEX with more powers to access data stored in the AFSJ information systems. According to Article 82(10) of the Regulation, host Member States must authorise mem-

⁹⁴ Regulation 2019/1896, Recital (5).

⁹⁵ Regulation 2019/1896, Article 54.

⁹⁶ Regulation 2019/1896, Article 55(7).

⁹⁷ VAVOULA, N., *Immigration and Privacy in the Law of the European Union – The Case of Information Systems*, *op. cit.*, p. 668; RAIMONDO, G., *op. cit.*, p. 38; GHANDI, S., “FRONTEX as a Hub for Surveillance and Data Sharing: Challenges for Data Protection and Privacy Rights”, *Computer Law & Security Review*, Vol. 53, 2024, p. 4.

bers of the EBCG teams to consult the databases insofar as it is necessary for the fulfilment of “operational aims specified in the operational plan on border checks, border surveillance, and return”⁹⁸.

As regards the information systems currently in operation, the EBCG teams have the power to collect and transmit biometric and other data upon request and on behalf of Member States, according to Article 15(3) of the 2024 Eurodac Recast Regulation.⁹⁹ Additionally, the teams have the right to access and search data in SIS and VIS as long as it is provided for in the corresponding operational plan on border checks, border surveillance and returns, as well as it is necessary for the performance of their tasks and exercise of their powers¹⁰⁰.

Notwithstanding the fact that this can be considered quite a big step, the tasks entrusted to the agency with regard to ETIAS mark the first time that the Agency has had such a significant role in the AFSJ information systems¹⁰¹. According to Article 10(1)(af) Regulation 2019/1896, FRONTEX is to ensure the setting up and functioning of the ETIAS Central Unit in accordance with Article 7 of Regulation (EU) 2018/1240¹⁰². Following that Regulation, the Agency is tasked with the establishment of a watchlist to be curated and

⁹⁸ Regulation 2019/1896, Article 82(10).

⁹⁹ Regulation (EU) 2024/1358 of the European Parliament and of the Council of 14 May 2024 on the establishment of ‘Eurodac’ for the comparison of biometric data in order to effectively apply Regulations (EU) 2024/1351 and (EU) 2024/1350 of the European Parliament and of the Council and Council Directive 2001/55/EC and to identify illegally staying third-country nationals and stateless persons and on requests for the comparison with Eurodac data by Member States’ law enforcement authorities and Europol for law enforcement purposes, amending Regulations (EU) 2018/1240 and (EU) 2019/818 of the European Parliament and of the Council and repealing Regulation (EU) No. 603/2013 of the European Parliament and of the Council (OJ L, 22.5.2024).

¹⁰⁰ Regulation 2018/1862, Article 50(1); Regulation (EU) 2021/1134 of the European Parliament and of the Council of 7 July 2021 amending Regulations (EC) No. 767/2008, (EC) No. 810/2009, (EU) 2016/399, (EU) 2017/2226, (EU) 2018/1240, (EU) 2018/1860, (EU) 2018/1861, (EU) 2019/817 and (EU) 2019/1896 of the European Parliament and of the Council and repealing Council Decisions 2004/512/EC and 2008/633/JHA, for the purpose of reforming the Visa Information System (OJ L 248/11, 13.07.2021) Articles 45e and 45f.

¹⁰¹ VAVOULA, N., *Immigration and Privacy in the Law of the European Union – The Case of Information Systems*, *op. cit.*, p. 477.

¹⁰² Regulation 2019/1896, Article 10(1)(af).

managed by FRONTEX, consisting of data of persons who are suspected of or persons regarding whom there are reasonable grounds to believe that they will or have “committed or taken part in a terrorist offence or other serious criminal offence”¹⁰³. Moreover, the ETIAS Central Unit is tasked with the establishment of screening rules that shall consist of an algorithm enabling profiling¹⁰⁴, this is, FRONTEX will formulate a list of risk indicators based on certain risks such as security or high epidemics that will then be incorporated to an algorithm that will examine the applicant’s personal data against the determined risk indicators¹⁰⁵. These screening rules will also be applicable in the framework of the VIS given that Schengen visas will be cross-checked against the risk indicators defined by the Agency which will enable profiling¹⁰⁶. It has been pointed out that the fact that the Agency is involved in the establishment of the screening rules may evidence a turn to a more active capacity in the future redesign of the large-scale information systems through the use of artificial intelligence (AI)¹⁰⁷. One must take into consideration the requirements laid out in the AI Act, which establish with regard to the large-scale IT systems that have already been put into service before August 2027 that they must be brought into compliance with the AI Regulation by the end of 2030. Additionally, those requirements must be considered when re-evaluating the information systems¹⁰⁸. In this sense, it is to be highlighted that many of the AI systems to be used in the framework of the AFSJ lar-

¹⁰³ Regulation (EU) 2018/1240 of the European Parliament and of the Council of 12 September 2018 establishing a European Travel Information and Authorisation System (ETIAS) and amending Regulations (EU) No. 1077/2011, (EU) No. 515/2014, (EU) 2016/399, (EU) 2016/1624 and (EU) 2017/2226, Article 34.

¹⁰⁴ Regulation 2018/1240, Article 33.

¹⁰⁵ GHANDI, S., *op. cit.*, p. 4.

¹⁰⁶ VAVOULA, N., *Immigration and Privacy in the Law of the European Union – The Case of Information Systems*, *op. cit.*, pp. 255-256.

¹⁰⁷ VAVOULA, N., *Immigration and Privacy in the Law of the European Union – The Case of Information Systems*, *op. cit.*, p. 669.

¹⁰⁸ Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence and amending (EC) No. 300/2008, (EU) No. 167/2013, (EU) No. 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act) (OJ L, 12.07.2024) Article 111(1).

ge-scale IT systems are considered to be high-risk¹⁰⁹.

Moreover, the interoperability Regulations granted the duly authorised staff of FRONTEX access to the information contained in the European Search Portal, the Common Identity Repository, and the multiple-identity detector¹¹⁰. This access enables the Agency to carry out risk analyses and vulnerability assessments, thereby building on the stronger links between FRONTEX and the EU large-scale information systems.

Taking into consideration what has been detailed above, one must consider the challenges that it all entails as regards data protection, particularly in the light of the possibilities of FRONTEX further transferring the data contained in the systems and the access that it has to certain systems through a specific technical interface to third countries¹¹¹.

IV. CONCLUSIONS

As has been shown throughout the paper, the border control landscape has experienced a considerable number of transformations since the conclusion of the Schengen Agreement almost forty years ago. The 2004 EU enlargement and the so-called “2015 refugee crisis” were crucial turning points for the shift of the competence over the external borders being exclusive to the Member States to becoming a shared competence between the Union and its Members States.

These milestones were further pivotal in shaping today’s border management landscape. While the 2004 enlargement prompted the transformation of SIS from a plain reporting system into an extensive investigative tool with interlinked alerts and searches through biometric identifiers, the 2015 refugee crisis caused the expansion of the AFSJ large-scale IT systems and its governing agency eu-LISA.

Moreover, said events have undoubtedly marked the evolution of the European Border and Coast Guard Agency. It’s very inception was triggered by

¹⁰⁹ Regulation 2024/1689, Annex III.

¹¹⁰ Regulation 2019/817, Art. 66.

¹¹¹ VAVOULA, N., *Immigration and Privacy in the Law of the European Union – The Case of Information Systems*, *op. cit.*, p. 669.

the 2004 enlargement and the Member States' fear of the newcomers' lack of experience in the management of their borders, and FRONTEX's biggest transformation and expansion of competences and autonomy were a result of the 2015 refugee crisis.

It can be concluded that challenges like these are the powerhouse behind the most relevant changes in border control practices. These “crises” have transformed the landscape, leading to the current state of play where automated decision-making through the use of algorithms and artificial intelligence is gaining relevance in the field of border control, migration and asylum. However, much remains to be done. It is crucial for the EU to continue its work on the development and enhancement of the large-scale IT systems, working towards the operationalisation of all the systems in the near future, as well as achieving full interoperability among them, while ensuring that none of this is detrimental for the fundamental rights of migrants, refugees and asylum seekers.

While these advancements constitute a big asset for the better monitoring and control of the external borders, new technologies, algorithms and artificial intelligence pose serious ethical and fundamental rights challenges. In an already complex landscape for the attribution of responsibility involving numerous actors, the incorporation of automated decision-making processes and unmanned technologies makes it even more difficult for those whose rights have been abused to seek redress.

BIBLIOGRAPHICAL REFERENCES

ATGER, A., “The Abolition of Internal Border Checks in an Enlarged Schengen Area: Freedom of Movement or a Web of Scattered Security Checks”, CEPS CHALLENGE Research Paper No. 8, 2008.

BERTOZZI, S., “Schengen: Achievements and Challenges in Managing an Area Encompassing 3.6 Million km²”, CEPS Working Document, No. 284, 2008.

BESTERS, M. and BROM, F., “Greedy’ Information Technology: The Digitalization of the European Migration Policy”, *European Journal of Migration and Law*, Vol. 12, 2010.

BROEDERS, D., “A European ‘Border’ Surveillance System under Construction” in DIJSTELBLOEM, H. and MEIJER, A. (eds.), *Migration and the New Technological Borders of Europe*, Palgrave Macmillan, London, 2011.

BROUWER, E., “Data Surveillance and Border Control in the EU: Balancing Efficiency and Legal Protection” in BALZAQ, T. and CARRERA, S. (eds.), *Security Versus Freedom? A Challenge for Europe’s Future*, Ashgate, Farnham, 2006.

CORRADO, L., “Negotiating the EU External Borders” in BALZAQ, T. and CARRERA, S. (eds.), *Security Versus Freedom? A Challenge for Europe’s Future*, Ashgate, Farnham, 2006.

CVCE, “Address given by Günter Verheugen on the enlargement of the EU and the European Neighbourhood Policy”, https://www.cvce.eu/obj/address_given_by_gunter_verheugen_on_the_enlargement_of_the_eu_and_the_european_neighbourhood_policy_moscow_27_october_2003-en-be19f178-524b-4b69-902c-eb902079f45c.html.

EU-LISA, “Discover eu-LISA: Our Core Activities and IT Systems for a Safer Europe”, <https://www.eulisa.europa.eu/SiteAssets/Discover/default.aspx/home>.

EU-LISA, “ECRIS-TCN”, <https://www.eulisa.europa.eu/Activities/Large-Scale-It-Systems/Ecris-Tcn>.

EU-LISA, “EES”, <https://www.eulisa.europa.eu/Activities/Large-Scale-It-Systems/EES>.

EU-LISA, “ETIAS”, <https://www.eulisa.europa.eu/Activities/Large-Scale-It-Systems/Etias>.

EUROPEAN COMMISSION, “Security Union: the Renewed Schengen Information System enters into operation”, 7 March 2023, https://ec.europa.eu/commission/presscorner/detail/sl/ip_23_1505.

EUROPEAN COURT OF AUDITORS, “Special Report: Lessons from the European Commission’s Development of the Second Generation Schengen Information System (SIS II)”, Publications Office of the European Union, Luxembourg, 2014.

FERNÁNDEZ ROJO, D., *EU Migration Agencies: The Operation and Co-operation of FRONTEX, EASO and EUROPOL*, Edward Elgar Publishing, Cheltenham, 2021.

FRA, ECtHR and CoE, *Handbook on European Law Relating to Asylum, Borders and Immigration*, Publication Office of the EU, Luxembourg, 2020.

GHANDI, S., “FRONTEX as a Hub for Surveillance and Data Sharing: Challenges for Data Protection and Privacy Rights”, *Computer Law & Security Review*, Vol. 53, 2024.

GLOUFTSIOS, G., *Engineering Digitalised Borders – Designing and Managing the Visa Information System*, Palgrave Macmillan, London, 2021.

HOBGING, P., “Management of External EU Borders: Enlargement and the European Border Guard” in CAPARINI, M. and MARENIN, O. (eds.), *Borders and National Security Governance: Managing Borders in a Globalised World*, DCAF, Geneva, 2006.

INGLIS, K., *Evolving Practices in EU Enlargement with Case Studies in Agri-Food and Environmental Law*, Martinus Nijhoff, Leiden, 2010.

JORRY, H., “Construction of a European Institutional Model for Managing Operational Cooperation at the EU’s External Borders: Is the FRONTEX Agency a Decisive Step Forward?”, CEPS CHALLENGE Research Paper No. 6, 2007.

KARAMANIDOU, L. and KASPAREK, B., “Border Management and Migration Control in the European Union”, Respond Working Papers No. 14, 2018.

LEONARD, S., “The Creation of FRONTEX and the Politics of Institutionalisation in the EU External Borders Policy”, *Journal of Contemporary European Research*, Vol. 5, No. 3, 2009.

MEISSNER, V., “The European Border and Coast Guard Agency FRONTEX after the Migration Crisis: Towards a ‘Superagency?’” in POLLACK, J. and SLOMINSKI, P. (eds.), *The Role of EU Agencies in the Eurozone and Migration Crisis – Impact and Future Challenges*, Palgrave Macmillan, London, 2021.

MONAR, J., “Maintaining the Justice and Home Affairs Acquis in an Enlarged Europe” in APAP, J. (ed.), *Justice and Home Affairs in the EU: Liberty and Security Issues after Enlargement*, Edward Edgar, Cheltenham, 2004.

MONAR, J., “The External Shield of the Area of Freedom, Security and Justice: Progress and Deficits of the Integrated Management of External EU Borders” in ZWAN, J.W. and GOUDAPPEL, F.A.N.J. (eds.), *Freedom, Security and Justice in the European Union: Implementation of the Hague Programme*, TMC Asser Press, The Hague, 2006.

MONAR, J., “The Project of a European Border Guard: Origins, Models and Prospects in the Context of EU’s Integrated External Border Management” in CAPARINI, M. and MARENIN, O. (eds.), *Borders and National*

Security Governance: Managing Borders in a Globalised World, DCAF, Geneva, 2006.

PARKIN, J., “The Difficult Road to the Schengen Information System II: The Legacy of ‘Laboratories’ and the Cost for Fundamental Rights and the Rule of Law”, CEPS Paper in Liberty and Security in Europe, 2006.

RAIMONDO, G., *The European Integrated Border Management: FRONTEX, Human Rights, and International Responsibility*, Hart Publishing, Oxford, 2024.

SARANTAKI, A.M., *Frontex and the Rising of a New Border Control Culture in Europe*, Routledge, London, 2023.

VAVOULA, N., “Digitalising the EU Migration and Asylum Policy: A Case Study on Information Systems” in TSOURDI, E. and DE BRUYCKER, P. (eds.), *Research Handbook on EU Migration and Asylum Law*, Edward Elgar Publishing, Cheltenham, 2022.

VAVOULA, N., *Immigration and Privacy in the Law of the European Union. The Case of Information Systems*, Brill Nijhoff, Leiden, 2022.

VAVOULA, N., “The “Puzzle” of EU Large-Scale Information Systems for Third-Country Nationals: Surveillance of Movement and Its Challenges for Privacy and Personal Data Protection”, *European Law Review*, No. 3, 2020.