

Latest Digitalisation Initiatives and Challenges in Cross-Border Labour Mobility in the European Union – “Fit for the Future”? *

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* Presented at the 46th IBIMA International Conference, 26-27 November 2025, Ronda, Spain

Abstract

This study examines recent European Union initiatives aimed at digitalising the governance of cross-border labour mobility, focusing in particular on the Entry/Exit System (EES), the Electronic Exchange of Social Security Information (EESSI), and the emerging European Social Security Pass (ESSPASS). The motive behind the study lies in the EU's growing reliance on digital tools to enhance administrative efficiency, transparency, and legal certainty in an increasingly mobile labour market. Despite these ambitions, the literature has not yet sufficiently addressed how these digital systems interact, what challenges they face in practice, and how uneven digital capacities across Member States may hinder the realisation of a seamless mobility framework. This gap is especially relevant as the EU transitions from paper-based procedures to interoperable, cross-sectoral digital infrastructures.

Methodologically, the study employs legal and institutional analysis of the systems' regulatory foundations, operational designs, and implementation trajectories. It draws on EU legislation, Commission communications, and practical evaluations of ongoing pilot projects to assess the coherence and feasibility of these instruments.

The findings show that while initiatives such as the EES and EESSI offer significant potential to streamline border management and social security coordination, their success depends on overcoming barriers related to interoperability, data protection, institutional fragmentation, and differential digital readiness. The analysis concludes that digitalisation in this domain constitutes not merely a technical reform but a broader governance challenge whose success requires sustained political commitment and inclusive implementation across the Union.

Keywords: *digitalisation, European Union, labour mobility, Entry/Exit System (EES), EESSI, ESSPASS*

Introduction

Digitalisation has recently become a kind of ‘a buzzword’, used in all contexts, both nationally and internationally. Indeed, digitalisation has emerged as one of the defining transformations of the twenty-first century, reshaping economic structures, social interactions, and governance mechanisms. Within the European Union, digital technologies have become central to the pursuit of competitiveness, resilience, and inclusiveness, especially in the wake of rapid globalisation and recurring crises that challenge the integration project. Policymakers increasingly view digitalisation not merely as a technological process but as a strategic tool to enhance efficiency, transparency, and accessibility across sectors, including labour markets.

Cite this Article as: Marcin KIEŁBASA, Vol. 2025 (29) “Latest Digitalisation Initiatives and Challenges in Cross-Border Labour Mobility in the European Union – “Fit for the Future”? ” Communications of International Proceedings, Vol. 2025 (29), Article ID 4638025, <https://doi.org/10.5171/2025.4638025>

Within the scope of cross-border labour mobility, digitalisation holds particular promise. The EU has long sought to facilitate the free movement as a cornerstone of its internal market¹. However, the practical realisation of this principle remains complex. Administrative fragmentation, divergent national practices, and persistent barriers to the recognition of qualifications, rights, and entitlements continue to constrain mobility. Digital tools and platforms—ranging from interoperable databases and online portals to advanced e-governance solutions—are expected to streamline procedures, reduce bureaucratic burdens, and improve the protection of mobile workers. Yet, the transition is far from straightforward.

Indeed, digitalisation of labour mobility governance raises a series of challenges that extend beyond technical implementation. These include legal and institutional questions of data protection and interoperability, political concerns over sovereignty and uneven digital capacities between respective Member States of the Union. Indeed, sometimes, the digital transformation unfolds in a context marked by uneven progress among Member States² (and sometimes the opposite is true – when the electronic systems of a given Member State are more advanced³), as well as of social issues related to accessibility, digital literacy, and trust in technology. Moreover, variable institutional resources, and diverse labour market conditions may come into being. Consequently, while digital initiatives may accelerate integration, they may also risk reinforcing inequalities if not designed and implemented inclusively.

This article explores the digitalisation initiatives and challenges shaping cross-border labour mobility in the European Union. Herein, I however do not describe how digitalization contributes to transforming the EU labour market by automating tasks, reshaping industries, and increasing demand for new skills. Rather, I explore the instruments which may make the EU's mobility framework “*fit for the futur-e*,” while highlighting the structural, political, and social obstacles that may hinder progress in this regard. By analysing current initiatives, and practical implications for workers and institutions – the article aims to contribute to a deeper understanding of how digitalisation can enable one of the EU's fundamental freedoms.

From borders to bytes? Digitalising labour mobility – most pertinent recent initiatives

*If you do digitalisation right, a caterpillar becomes a butterfly. If you don't do it right, at best you have a faster caterpillar*⁴. Moira Kettner, who cited Professor George Westermann (Massachusetts Institute of Technology, MIT) in this regard, rightly states that an important criterion for a “well-done” digitalisation is therefore that it does not simply convert existing analogue processes into digital formats (“*turning a paper form into a PDF document*”). Quite the opposite, good digitalisation begins by scrutinising the existing processes and identifying possible synergy effects through cross-sectoral approaches⁵. The EU Commission seems to be grasping this idea in a right manner in its comments on prospects for the digitalisation of social security in its recent communication on digitalisation of social security coordination⁶: “*To support a seamless experience for cross-border labour*

¹ Under Art. 26(2) of the Treaty on the Functioning of the European Union (TFUE, consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union - Consolidated version of the Treaty on the Functioning of the European Union - Protocols - Annexes - Declarations annexed to the Final Act of the Intergovernmental Conference which adopted the Treaty of Lisbon, Official Journal C 326 , 26/10/2012 P. 0001 – 0390) *the internal market shall comprise an area without internal frontiers in which the free movement of goods, persons, services and capital is ensured in accordance with the provisions of the Treaties*.

² See (some of them - surprising) remarks connected with Germany by W. Münchau, *Kaputt. The end of the German Miracle*, Swift Press 2024.

³ Por. M. Kielbasa, *Jednolity portal e-deklaracji cyfrowych dotyczących delegowania pracowników – krok ku digitalizacji rynku wewnętrznego UE?*, forthcoming in: „*Innowacje i nowe technologie w prawie. Zagadnienia wybrane*”, edited by M. Szaraniec, 2025.

⁴ Por. G. Westermann, D. Bonnet, A. McAfee, *Leading Digital: Turning Technology into Business Transformation*, Harvard Business Press 2014, p. 108 et seq., cited by: M. Kettner, *Digitalisation as a challenge for the Administrative Commission for the Coordination of Social Security Systems* [in:] *Liber Amicorum Bernhard Spiegel. Reflections on EU coordination of social security systems: bridging academia and public administration*, Belgian Journal of Social Security Special Edition, Brussels : Federal Public Service Social Security, 2024, p. 80.

⁵ M. Kettner, *Ibidem*, p. 80.

⁶ Cf. **Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on digitalisation in social security coordination: facilitating free movement in the Single Market**, COM(2023) 501 final (hereinafter ‘**EC Communication on**

mobility - both physical and 'virtual' mobility - for people, businesses and national authorities, it is important to act beyond the social security domain and foster cross-sectoral interoperability. This would require examining the various processes governing not only social security coordination but also posting of workers, cross-border healthcare and the interaction between social security coordination and labour law, taxation and company law. The aim is to bring greater clarity, simplify administrative procedures, and explore synergies between digital solutions developed in the different sectors. To that end, the Commission shall examine the opportunity for further simplification and streamlining in the procedures governing free movement of people and workers in the EU, with a view to achieving a seamless digital experience⁷.

The European Union has, in this respect, largely followed the trend. The European Commission, in particular, has progressively implemented a series of digitalisation policies under the framework of its Digital Strategy. As the Commission itself acknowledges, digital technologies are transforming the way people live and work. Accordingly, the EU's Digital Strategy seeks to ensure that this transformation benefits both individuals and businesses.

What has gradually become a particularly important part of digitalisation in the recent years were digitalisation initiatives concerning cross-border activities in the internal market of the European Union⁸. Practical importance of this area can be seen by merely looking at the (very telling) figures: as of 1 January 2023 there were about 13.9 million long-term EU movers in the EU according to Eurostat population statistics (of whom 19.1 million were working-age movers) and an equivalent of 3.5 million of posted workers⁹.

Given such numbers, it is no wonder that the EU has come up for a *plethora* of instruments to provide for effective digitalisation in this regard. At this point, they do not form a unified system and perhaps this is one of the major challenges in this area. Another pertinent issue is the willingness of individual Member States to join respective initiatives.

The most important of them are the following ones:

- Entry/Exit System (EES)¹⁰
- Electronic Exchange of Social Security Information (EESSI¹¹);
- European Social Security Pass (ESSPASS¹²), along with the EU Digital Identity (EUDI) wallets

digitalisation in social security coordination). See also: *Towards a more digital social security coordination: Commission proposes steps to make it easier for Europeans to live*, retrievable at: https://employment-social-affairs.ec.europa.eu/news/towards-more-digital-social-security-coordination-commission-proposes-steps-make-it-easier-europeans-2023-09-07_en

⁷ Cf. *EC Communication on digitalisation in social security coordination*, op. cit. p. 15.

⁸ It goes without saying that digitalisation also directly enables increased labour market participation by offering flexible and remote work options. Workers who may have been excluded from traditional office-based employment. Remote work reduces the need for physical mobility, allowing individuals to participate in the labour market without relocating, thus broadening the geographic labour supply. However, given the space constraints, I'm leaving aside the issues concerning cross-border remote work (telework in the EU's parlance); for more on this topic, see e.g.: M. Kiełbasa, *Transgraniczne aspekty zdalnego świadczenia pracy* published [in:] *Praca zdalna w polskim systemie prawnym*, ed. by M. Mędrala, Warszawa 2021; p. 212 et seq.; K. Moras-Olaś, *Okazjonalna praca zdalna — problemy z liczeniem okresu okazjonalnej pracy zdalnej pracowników zatrudnionych w niepełnym wymiarze i w trakcie roku kalendarzowego na tle projektu nowelizacji kodeksu pracy*, *Praca i Zabezpieczenie Społeczne* 2022, no. 8.

⁹ Cf. M. Gasperini, D. Cinova, C. Petracco, M. Geraci, M. Truc and G. Carletti, *Annual report on intra-EU labour mobility. 2024 Edition*, Luxembourg: Publications Office of the European Union, 2025p. 13.

¹⁰ Entry/Exit System (EES) – official website of the European Union, retrievable at <https://travel-europe.europa.eu/en/ees>

¹¹ The EESSI is a decentralised IT system that helps social security institutions across the EU exchange information related to different branches mentioned above more rapidly and securely, as required by the EU rules on social security coordination. The system interconnects, around 3.400 institutions in 32 participating countries: the 27 EU Member States, Iceland, Liechtenstein, Norway, Switzerland, and the United Kingdom - see *Electronic Exchange of Social Security Information (EESSI)*, retrievable at: https://employment-social-affairs.ec.europa.eu/policies-and-activities/moving-working-europe/eu-social-security-coordination/digitalisation-social-security-coordination/electronic-exchange-social-security-information-eesi_en. Cf. also: E-J. Mulder, *Europeanization the Digital Way: Trans-European IT Systems – The Case of EESSI* [in:] D. R. Troitiño, *E-Governance in the European Union. Strategies, Tools, and Implementation*, Springer Cham 2024, p. 235 et seq.

¹² See e.g. J. Hajdú, M. Chen, R. A. Rahman, *Framework of the European Union Social Security Coordination and Its Digitalisation*, Balkans Legal, Economic and Social Studies (BLESS), Szeged

- European Travel Information and Authorization System (ETIAS)¹³
- eDeclaration¹⁴

In this article I would like to focus especially on the Entry and Exit System (EES) – since it will be the first to be fully rolled out, as well as the EESSI – as that very feature is crucial for the successful movement (including especially labour mobility) within the internal market of the Union¹⁵.

‘Goodbye to passport stamping, hello to digital checks’¹⁶?

Entry/Exit System (EES) is actually the first of the above-mentioned initiatives that came to fruition – although it has been postponed and gradual¹⁷. As of 12 October 2025, the European Union has begun the progressive implementation of the EES, a core instrument of the EU’s “Smart Borders” initiative intended to digitalise the registration of third-country nationals crossing the external Schengen border.

The EES is established under Regulation (EU) 2017/2226¹⁸, which mandates the systematic registration of entry and exit data — including biometric identifiers — of third-country nationals subject to short stays in the Schengen area. In July 2025, the EU adopted Regulation 2025/1534¹⁹, introducing temporary derogations to allow a progressive start of operations rather than a simultaneous, full roll-out. 12 October 2025 had been fixed as the date from which operations shall begin, with the transitional period lasting up to 180 days, pursuant to Commission Implementing Decision 2025/1544²⁰. The System’s full deployment has been scheduled by 10 April 2026. EES applies to third-country nationals²¹ who enter the Schengen area for short stays (e.g. visa-exempt stays or short-stay visas). Exemptions include non-Schengen EU Member States (e.g. Ireland), and categories such as long-stay visa holders or residence permit holders²².

¹³ Cf. e.g. E. Csatlós, *Blending digitalization and enhanced security: Exploring the role of ETIAS in migration control and its administrative structure*, Hungarian Journal of Legal Studies Volume 65: Issue 3

¹⁴ M. Kiełbasa, *Jednolity portal e-deklaracji cyfrowych dotyczących delegowania pracowników...*, op. cit.

¹⁵ When it comes to other initiatives, I provide herein references to latest available scientific descriptions thereof.

¹⁶ Quote taken from the speech of the former EU Home Affairs Commissioner Ylva Johansson at eu-LISA, Tallinn, Estonia, 16 August 2024 – cited in T. Van Isacker, *The European Union’s Entry/Exit System (EES): infrastructural journeys of a sociodigital future in-the-making*, Draft manuscript submitted to Geopolitics for review on 12 February 2025, , p. 2.

¹⁷ In October 2023, the Justice and Home Affairs Council endorsed plans to launch the EES at the end of 2024. As this deadline could not be met – and because of concerns that a full start of the system could constitute a risk factor for the resilience of the IT system – the Commission proposed a gradual start - <https://www.consilium.europa.eu/en/press/press-releases/2025/05/19/border-management-council-and-european-parliament-strike-agreement-about-progressive-launch-of-entryexit-system/>

¹⁸ Regulation (EU) 2017/2226 of the European Parliament and of the Council of 30 November 2017 establishing an Entry/Exit System (EES) to register entry and exit data and refusal of entry data of third-country nationals crossing the external borders of the Member States and determining the conditions for access to the EES for law enforcement purposes, and amending the Convention implementing the Schengen Agreement and Regulations (EC) No 767/2008 and (EU) No 1077/2011, OJ L 327, 9.12.2017, (hereinafter ‘ **EES Regulation** ’ / ‘ Regulation 2017/2226 ’), pp. 20–82

¹⁹ Regulation (EU) 2025/1534 of the European Parliament and of the Council of 18 July 2025 on temporary derogations from certain provisions of Regulations (EU) 2017/2226 and (EU) 2016/399 as regards the progressive start of operations of the Entry/Exit System, PE/17/2025/REV/1, OJ L, 2025/1534, 23.7.2025, ELI: <http://data.europa.eu/eli/reg/2025/1534/oj>

²⁰ **Commission Implementing Decision (EU) 2025/1544 of 30 July 2025 determining the date from which the Entry/Exit System is to start operations pursuant to Regulation (EU) 2017/2226 of the European Parliament and of the Council**, C/2025/5031, OJ L, 2025/1544, 31.7.2025, ELI: http://data.europa.eu/eli/dec_impl/2025/1544/oj

²¹ Under Art. 3(1)(6) of the ‘ EES Regulation ’, ‘ third-country national ’ means any person who is not a citizen of the Union within the meaning of Article 20(1) TFEU, with the exception of persons who enjoy the right of free movement equivalent to that of Union citizens under agreements between the Union and its Member States, on the one hand, and third countries, on the other.

²² Cf. Faegre Drinker, *EU Entry/Exit System (EES): Implications for Non-EU Travellers*, 12 September 2025, retrievable at: <https://www.faegredrinker.com/en/insights/publications/2025/9/eu-entry-exit-system-ees-implications-for-non-eu-travellers>

On first entry after 12 October 2025, a traveller will submit biometric data (fingerprints and facial image) and travel document data at dedicated registration points; for those who already submitted biometrics at visa issuance, only a facial image may suffice. Children under twelve are exempt from fingerprinting but will have facial images taken. The central EES database is operated by eu-LISA.[10]

One of EES's core objectives is to automate detection of over-stays and to reduce identity and document fraud, through reliable linkage of entry and exit events and biometric matching.

What is hugely important is that the Entry/ Exit System is not an authorisation system. It does not grant either entry or refusal of entry decisions. Its crucial aims have been listed in Art 6 of the EES Regulation.

They are divided into two groups: objectives to be achieved by (i) storing data in the EES and (ii) granting access to these data to national law enforcement agencies (LEAs). The first objectives are focused around improving border management – enhancing and speeding up border checks, calculating the duration of authorised stay in the EU or discovering the so-called over-stayers. One of the central elements of the EES is the Automated Calculator which will replace passport stamps which currently carry the date of entry/exit at the EU external borders.

These technical improvement intends to speed up border checks as there will be no need for a border guard to handle and examine each passport. However, the EES will be only able to provide an alert on over-staying person's files, but not locate them. Without help from the local LEAs the first chance to locate an over-stayer would be at the border itself when the individual decides to leave the EU – which would be discovered also without the EES – just with the help of traditional passport stamps²³.

One of the main reasons behind the creation of the System was the fact that the Schengen Borders Code had no provisions on the recording of travellers' cross border movements into and out of the Schengen area. Before adopting Entry/Exit System, the stamping of the travel document indicating the dates of entry and exit was the only method available to border guards and immigration authorities to calculate the duration of stay of third-country nationals and to verify if someone is overstaying. However, those stamps could be difficult to interpret: they may be unreadable or the result of counterfeiting²⁴.

Regulation (EU) 2017/2226 was introduced by the European legislator with the objective of enhancing the management of the Union's external borders, preventing irregular migration—particularly by identifying “overstayers”—and facilitating the overall administration of migration flows. To achieve these aims, the European Entry/Exit System (EES) establishes a framework for recording and storing the date, time, and place of entry and exit of third-country nationals crossing the external borders of the Schengen Area. It further enables the calculation of the duration of authorised stays, the automatic generation of alerts to Member States upon the expiry of such stays, and the recording of data concerning refusals of entry, including the authority responsible and the grounds for refusal²⁵. The Regulation's Art. 1(2) aims, in addition to its border management function, for the EES to support the prevention, detection, and investigation of terrorist and other serious criminal offences. It thereby serves not only as an identification mechanism but also as an intelligence tool within the broader EU security architecture. The system thus pursues a dual purpose: on the one hand, to strengthen the management and control of external borders²⁶; on the other, to provide law enforcement authorities with access to EES data for the prevention, detection, and investigation of terrorism and serious crime.

The EES is the only system that collects the entry/exit data of all third-country nationals entering the Schengen Area for a short stay, whether via a land, sea or air border checkpoint. The EES can provide data to confirm or not the presence of specific third-country nationals in the Schengen Area. The EES also uses the identification data to link entries and exits and can act as the database of last resort for identifying persons when more focused databases have failed to yield a result²⁷.

Furthermore, by facilitating more accurate identification of third-country nationals and detecting individuals who use multiple identities, the EES enhances the reliability and integrity of border management processes. Consequently, it may be used to identify unknown suspects, perpetrators, or victims and to provide law enforcement authorities with access to the travel histories of identified individuals.

²³ See F. Drinker, *EU Entry/Exit System (EES)*, *op. cit.*

²⁴ See J. Wojnowska-Radzińska, *REGULATION (EU) 2017/2226 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 30 NOVEMBER 2017 ESTABLISHING AN ENTRY/EXIT SYSTEM (EES) VERSUS DATA PROTECTION – IS IT DONE IN THE RIGHT WAY?*, *Review of European and Comparative Law*, Vol. XXXVII, Year 2019, p. 124-125.

²⁵ Cf. Art. 1(2) of the EES Regulation.

²⁶ Cf. e.g. Art. 4 of the EES Regulation.

²⁷ Cf. J. Wojnowska-Radzińska, *Regulation (EU) 2017/2226*, *op. cit.*, p. 125.

EESSI (and ESSPASS): Making Bureaucracy Go Digital — One Form at a Time?

The Electronic Exchange of Social Security Information (EESSI) system has been built to ensure rapid and secure exchanges of information between social security institutions across Europe, replacing paper-based communication. The very project started in 2008 and since its launch in 2019²⁸, EESSI has been enabling a faster, more efficient and more accurate handling of cases in the social security areas and branches covered by EU coordination rules (such as e.g. determination of the applicable legislation, sickness, accidents at work etc.). The aim thereof is to facilitate the protection of social security rights across borders by allowing quicker handling of cases, calculation and payment of benefits (e.g. pension rights for people who have worked in several countries; family and unemployment benefits and other)²⁹. The very system was built to standardise the information exchange and improve the efficiency of social security processes and administrative cooperation between countries and their social security institutions. The completion of the full roll-out of the EESSI system has been declared ‘*a priority*’, it is now operational in all 32 participating countries³⁰ and already streamlining the handling of cases. Since its rollout, the system has processed millions of cross-border social security cases (people travelling, living, working or retiring in another country)³¹.

However, the Commission emphasized that while improving the electronic exchange of social security information between institutions is of paramount importance, it is only the first step. Digitalisation should benefit everyone, in particular citizens and businesses, to further facilitate the exercise of their rights in the single market of the EU by streamlining procedures and reducing administrative burden. To that end, the European Pillar of Social Rights Action Plan³² announced the launch of the European Social Security Pass (ESSPASS) pilot project, to explore a digital solution for verifying people’s social security entitlement documents in other EU countries (i.e. portable documents). This should make it easier for people to exercise their social security rights when travelling, moving, and working in another Member State, while reducing the risk of fraud and error. It should also simplify procedures for companies, for instance, when posting their workers³³ or in situations of business trips.

The principal distinction between the two initiatives lies in their respective scopes and purposes. Whereas the EESSI facilitates communication exclusively among social security institutions, the ESSPASS is conceived as a more comprehensive tool. Its purpose is to assist individuals travelling or relocating within the European Union, as well as companies engaging in cross-border operations, in their digital interactions not only with social security bodies but also with other public authorities, including labour inspectorates and healthcare institutions.

ESSPASS is designed to build upon several existing EU digital frameworks, notably the *Your Europe* portal—potentially serving as a single entry point for citizens and businesses seeking access to digitised social security coordination documents pursuant to the Single Digital Gateway Regulation—as well as the European Digital Identity framework and the standardised EU Digital Wallets. Once fully operational, these systems are expected to facilitate the digital identification of mobile citizens and the storage and exchange of portable documents, such as the European Health Insurance Card (EHIC). ESSPASS would complement these instruments by enabling social security institutions, labour inspectorates, and healthcare providers to verify, in real time, the validity of digital documents and detect any subsequent modifications.

At first glance, one might assume that ESSPASS, given its objectives and alignment with the Commission’s broader digitalisation agenda, would be among the first of these initiatives to reach completion. This, however, is only partially accurate. The ESSPASS Pilot Project was launched in 2021, beginning with initial testing by the Italian social security institution *Istituto Nazionale della Previdenza Sociale* (INPS), focusing on the digitalisation

²⁸ Although, one has to observe, that the EESSI had been envisaged to be fully operational until July 2019. For concerns regarding the EESSI’s implementation, see e.g. DEUTSCHE SOZIALVERSICHERUNG EUROPAVERTRETUNG, *Is RINA chaos looming?* This is the social-security-related question currently being asked in Europe <https://dsv-europa.de/en/news/2021/01/rina.html>.

²⁹ *Communication on digitalisation in social security coordination*, p. 5-6.

³⁰ As of 6 September 2023 – it is said to have been fully implemented in 13 countries – Bulgaria, Cyprus, Denmark, Estonia, France, Hungary, Iceland Latvia, Malta, Norway, Portugal, Sweden, and the United Kingdom (although Poland claims full operability of the EESSI system, too).

³¹ Cf. M. Kielbasa, *Digitalisation and reliefs to the rescue (of entrepreneurs)? On recent EC’s proposals which could boost competitiveness and resilience of SMEs in the EU* [in:] PRÁVO – OBCHOD – EKONOMIKA XII. Zborník Vedeckých Prac, Kosice 2023, p. 178.

³² Cf. the source retrieved at:

<https://ec.europa.eu/social/main.jsp?catId=1607&langId=en#:~:text=The%20European%20Pillar%20of%20Social%20Rights%20sets%20out%20%20key,concrete%20actions%20to%20benefit%20citizens.>

³³ Cf. *Communication on digitalisation in social security coordination*, p. 7 et seq.

of procedures for the Portable Document A1 (PD A1). Subsequently, thirteen Member States joined the initiative, predominantly in an observer capacity. The pilot's findings demonstrated the potential of ESSPASS to simplify the administrative lives of mobile citizens and enterprises—particularly small and medium-sized enterprises—by streamlining procedures and reducing bureaucratic burdens³⁴.

This initial stage represented merely the first phase of ESSPASS development. At present, two consortia of Member State institutions continue to advance the project under the *Digital Europe Programme*, concentrating on the digital issuance and verification of the PD A1 and the EHIC. Nevertheless, the pilot phase did conclude before 2025 and full operational deployment of the system will likely take several additional years.

Conclusion

The ongoing digital transformation of cross-border labour mobility within the European Union reveals both the Union's ambition and the complexity of its implementation. Initiatives such as the Entry/Exit System (EES), the Electronic Exchange of Social Security Information (EESSI), and the European Social Security Pass (ESSPASS) exemplify the EU's effort to render mobility governance more transparent, interoperable, and citizen-centred. Yet, while technological innovation promises greater efficiency and legal certainty, it simultaneously exposes structural disparities among Member States and persistent challenges related to interoperability, data protection, and administrative coordination.

Ultimately, the digitalisation of labour mobility governance should not be perceived merely as a technical upgrade but as a legal and institutional reform with far-reaching social implications. Its success will depend on sustained political commitment, adequate funding, and inclusive implementation ensuring that all actors—institutions, businesses, and citizens—can participate effectively. If realised coherently, these initiatives could transform the management of mobility in the EU from a fragmented, paper-based framework into a digitally integrated system that will genuinely support the seamless cross-border labour mobility in a modern, resilient Union.

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³⁴ Cf. Cf. M. Kiełbasa, *Digitalisation and reliefs to the rescue (of entrepreneurs)?*, op. cit., p. 178-179.

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