



Meta-study on evidence regarding migrants' rights in digital solutions in the field of migration

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Contents

List of Figures.....	4
List of Tables	4
List of Abbreviations	5
About the Authors.....	6
Acknowledgements	7
Executive Summary	8
1. Introduction.....	10
2. Conceptual and Analytical Framework	12
2.1. Digitalisation in migration governance	12
2.2. Analytical dimensions	13
3. Approach and Methodology.....	14
3.1. Inventory of digital solutions	15
3.2. Literature review	17
3.3. Expert interviews.....	18
3.4. Limitations	18
4. Mapping Digital Solutions Across the Migration Cycle (Inventory).....	19
4.1. Overview of identified solutions.....	19
4.2. Distribution	24
4.3. Target groups, human rights, and gender considerations	26
5. How Digital Solutions Work in Practice.....	32
5.1. From design to implementation: The persistent implementation gap	32
5.2. Institutional contexts: Government engagement, capacity, and coordination.....	33
5.3. Fragmented ecosystems and competing logics of digitalisation.....	34
5.4. Structural constraints: Infrastructure, capacity, and the digital divide	35
5.5. Migrant uptake and the centrality of usefulness and trust	35
5.6. Intermediaries, hybrid models, and the persistence of human mediation	37
5.7. Synthesis: What shapes how digital solutions work in practice.....	38
6. Analytical Assessment of Digital Solutions	39
6.1. Technical and implementation conditions.....	39
6.2. Effectiveness.....	41

6.3.	Risks and rights implications.....	43
6.4.	Inclusion and accessibility	45
6.5.	Sustainability, governance, and scalability.....	47
7.	Evidence Gaps	50
8.	Conclusion	54
9.	Strategic Implications and Recommendations	56
9.1.	Development cooperation actors (incl. GIZ)	57
9.2.	Governments.....	59
9.3.	International organisations.....	59
9.4.	Civil society organisations and NGOs.....	60
9.5.	Private technology providers.....	61
9.6.	Multistakeholder cooperation	62
	References.....	63

List of Figures

Figure 1. Overview of digital solutions based on technology type	20
Figure 2. Status of inventoried digital solutions	20
Figure 3. The year the digital tools are launched	21
Figure 4. Primary functional focus of identified digital solutions	22
Figure 5. Implementing organisations	23
Figure 6. Funding or source of financing	24
Figure 7. Geographic scope (where the digital tool is used).....	25
Figure 8. Country/Region where the digital tool is coming from.....	25
Figure 9. Distribution across the migration cycle	26
Figure 10. Primary target group categories (entries may span multiple)	26
Figure 11. Human rights dimension	27
Figure 12. Rights most commonly invoked	27
Figure 13. Concern types in rights-concerning entries	28
Figure 14. Gender dimension	29
Figure 15. Risks and challenges (themes)	30
Figure 16. Evidence strength	32

List of Tables

Table 1: Overview of the main data dimensions in the digital solutions inventory	16
Table 2: Inclusion and exclusion criteria	17
Table 3: Evidence gap matrix	51

List of Abbreviations

AI	Artificial Intelligence
EMN	European Migration Network
EU	European Union
EUROSUR	European Border Surveillance System
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
ICRC	International Committee of the Red Cross
IOM	International Organization for Migration
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Co-operation and Development
RCT	Randomized Controlled Trial
SIS	Schengen Information System
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
WHO	World Health Organization

About the Authors

The study was commissioned by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH's self-initiated measure „Rights-based Digital Solutions for Migration” and conducted by Dr. Katrin Marchand and Dr. Lalaine Siruno.

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Executive Summary

Digital technologies have become a defining feature of how migration is governed. Across countries of origin, transit, and destination, mobile applications, identity and documentation systems, matching algorithms, case-management platforms, and AI-assisted decision tools now shape how states manage borders, how organisations deliver services, and how migrants themselves access information, rights, and support. Although digitalisation in this field is progressing quickly, the evidence required to assess whether it is being done responsibly remains limited.

This report addresses that gap. It provides a systematic, comparative assessment of digital solutions across the full migration cycle, from pre-departure, transit, arrival and integration to return and reintegration. It draws on three complementary sources: a structured inventory of 100 tools deployed worldwide, a targeted review of academic and policy literature, and interviews with experts and practitioners. Each tool is examined through a rights-based, gender-sensitive lens organised around five dimensions: technical and implementation conditions; effectiveness; sustainability, governance, and scalability; risks and rights implications; and inclusion and accessibility.

The inventory points to a field shaped more by the distribution of capacity and funding than by the distribution of need. More than half of these tools were developed in Europe, yet only a small proportion are deployed in low- and middle-income countries, where most displaced people and a substantial share of international migrants live. Half of all tools concentrate on the arrival and integration phase, while return, reintegration, and diaspora engagement receive comparatively little attention. Governments, international organisations, and large NGOs account for the majority of implementers; community- and refugee-led initiatives represent a small share, and migrants are predominantly users or beneficiaries rather than designers. Gender is a notable gap, as the majority of tools incorporate no gender-responsive design. The evidence base is also limited: few tools are supported by rigorous or independent evaluation, and apparent strengths such as sustainability are, on closer examination, concentrated among well-resourced state and UN systems rather than the migrant-centred tools for which durability is most important.

Moving from what exists to how these tools work in practice, the report finds that governance and implementation, not innovation, are the principal challenges. Digital solutions rarely succeed on the strength of their design alone; whether they work depends on the conditions around them, i.e., whether institutions take ownership of the tool, whether reliable infrastructure exists, whether staff have the capacity to operate it, and whether migrants trust it enough to use it. Two factors shape uptake in particular: a tool must meet a real, practical need, and it must be perceived as safe. However, perception alone is insufficient: tools must also be demonstrably safe in design and operation, since failures (e.g., data protection incidents) will eventually expose any gap between perception and reality and undermine trust.

Digitalisation also tends to shift human work rather than remove it, increasing the demands on, for example, the caseworkers and community organisations, often the least resourced to absorb them. And many of the obstacles that matter most, including unreliable connectivity, short-term funding, and limited staffing, stem from the wider environment rather than from any single tool.

These findings converge on a central conclusion: the gap between technological ambition and rights protection is not, at root, a technical problem but a normative one. The field lacks a shared baseline for what constitutes responsible digital engagement in migration governance. The report closes by setting out a set of operational principles and targeted, actor-specific recommendations, namely, development cooperation actors, governments, international organisations, civil society, and private providers. These principles are intended to anchor that baseline and to place migrants' rights and dignity at the centre of how digital solutions are designed, funded, implemented, and governed.

The analysis presented in this report is based on a comprehensive inventory of rights-based digital solutions for migration, compiled by the authors in a structured Excel database. This inventory can be obtained on request by contacting GIZ at digitalsolutions4migration@giz.de.

1.Introduction

Digitalisation is increasingly shaping migration governance across countries of origin, transit, and destination. From digital identity systems and case management platforms to AI-supported decision-making tools, digital and data-based approaches are transforming how migration is managed and how migrants access services and rights. These developments are taking place across all stages of the migration cycle: before, during, and after migration. In addition, they involve a wide range of actors, including governments, international organisations, civil society organisations, and private sector providers.

While digitalisation offers potential benefits in terms of efficiency, coordination, and access to information and services, it also introduces significant risks. Concerns have been raised regarding data protection and privacy, algorithmic bias and discrimination, and the exclusion of individuals who lack access to digital infrastructure or skills (European Migration Network & OECD, 2022). These risks are not incidental and extend beyond individual tools; digital technologies can reshape power relations in migration governance more broadly, reinforcing existing inequalities or creating new forms of surveillance and control (Lebon, 2024; Molnar, 2020). The relationship between technology, control, and migrant agency is, however, more complex than a simple state-versus-migrant binary suggests, with the same tools being repurposed by different actors for different ends (Godin et al., 2025).

Despite the rapid expansion of digital and data-based approaches in migration contexts, the evidence base on their effectiveness and their implications for migrants' rights remains fragmented. Many initiatives are developed and implemented in isolation, with limited assessment of their outcomes, sustainability, or broader governance implications. At the same time, development cooperation actors increasingly recognise the need to engage with digital solutions in migration governance, but often lack a consolidated understanding of what works, under which conditions, and at what cost, particularly from a rights-based and gender-sensitive perspective.

Against this backdrop, this meta-study aims to strengthen the evidence base on digital solutions in migration governance, particularly from a rights-based perspective. It does so by systematically mapping existing initiatives across the migration cycle, analysing their effectiveness, sustainability, technical characteristics, and associated risks, and identifying key gaps in the current evidence base. Building on this analysis, the study formulates actionable recommendations for development cooperation and for other stakeholders seeking to design and implement rights-based, gender-responsive digital solutions.

The following research questions guide the study:

- What types of digital and data-based solutions are currently used across different stages of the migration cycle?
- To what extent are these solutions effective, sustainable, and scalable?

- What risks do they pose to migrants' rights, including data protection, non-discrimination, and equal access?
- What factors enable or hinder the development of rights-based and gender-sensitive digital solutions?
- Where do significant gaps in evidence and knowledge remain?

The scope of the study covers digital and data-based approaches implemented by a wide range of actors, including governments, international organisations, civil society organisations, private sector actors, and development agencies, across all phases of the migration cycle. The analysis adopts a global perspective, while recognising that the availability, quality, and comparability of evidence vary significantly across regions and types of interventions.

At the same time, the study focuses primarily on individual digital solutions and initiatives. It does not aim to provide a systematic analysis of large-scale administrative databases and infrastructure systems, such as identity management and e-visa systems or EU-wide interoperability frameworks (e.g., Eurodac, EUROSUR, and Schengen Information System). While such systems are highly relevant for understanding the broader digitalisation of migration governance, they are included selectively where they provide important contextual insights or illustrate key dynamics related to rights, governance, or implementation.

Box 1. A note on language

The language of *solutions* is prevalent in humanitarian-tech and border management sectors alike because it signals efficiency and manageability. Throughout this report, we use the term *digital solutions* in line with this prevailing usage in the field. It is worth pausing, however, to note that the term *solutions* is not without framing implications; it implies a problem, and in migration contexts, some scholars and practitioners have observed that this framing can inadvertently draw more attention to the system managing flows rather than to the people navigating them.

Alternative terms such as *tools*, *platforms*, or *technologies* may better reflect a migrant-centred perspective, and we use them in this report where the emphasis falls on migrants' own needs, agency, and experiences rather than on the systems managing them.

A similar caution applies to the language of vulnerability. Terms such as *vulnerable populations* or *vulnerable groups* are standard in humanitarian and policy usage, where they serve to direct attention and resources towards those most at risk, and we use them in this report for that reason. The framing nonetheless carries an implication worth noting: it can present vulnerability as a fixed attribute of particular people, rather than as a condition produced by legal status, exclusion, and the design of the systems migrants encounter. Where the emphasis falls on exposure that is produced rather than inherent, we refer to migrants *in vulnerable situations*, or to the conditions that render them vulnerable. The distinction matters here because much of what follows concerns precisely how digital tools generate, deepen, or mitigate that exposure.

We invite readers to hold these distinctions in mind, particularly when considering questions of agency, rights, and inclusion that run through the sections that follow.

The report is structured as follows. Section 2 presents the conceptual and analytical framework guiding the study. Section 3 outlines the methodology, including the approach to the inventory, literature review, and expert consultations. Section 4 provides a structured mapping of digital solutions across the migration cycle. Section 5 examines how digital solutions function in practice, drawing on implementation evidence from the inventory, literature, and interviews. Section 6 provides a comparative analytical assessment across the five dimensions of the framework. Section 7 presents the identified evidence gaps, Section 8 concludes with core principles and reflections, and Section 9 sets out recommendations differentiated by actor, addressing development cooperation actors first, followed by governments, international organisations, civil society, and private technology providers.

2. Conceptual and Analytical Framework

2.1. Digitalisation in migration governance

Digitalisation in migration governance encompasses a wide range of tools and systems that use digital technologies to manage migration processes, deliver services, and generate or process data related to migrants. These include, among others, information platforms, digital identity systems, case management tools, matching platforms, biometric databases, and AI-based decision-support systems (European Migration Network & OECD, 2022; Ozkul, 2023).

These tools operate across different stages of the migration cycle (pre-departure, transit, arrival and integration, and return and reintegration) and serve diverse functions, ranging from information provision and service delivery to monitoring, control, and decision-making. As such, digitalisation is not a uniform process but rather a spectrum. At one end lies the simple digitisation of existing processes such as moving appointment booking or information provision online, or converting paper case files into digital records. At the other end lie more transformative forms that fundamentally reshape governance structures and decision-making processes, such as automated decision-support and algorithmic risk profiling in asylum and border procedures (Ozkul, 2023).

Importantly, digitalisation in migration governance is embedded in broader institutional and political contexts. It can reflect and reinforce existing power relations, governance structures, and policy priorities, including tensions among objectives such as efficiency, security, and the protection of fundamental rights (Lebon, 2024; Molnar, 2020). Notably, the same tool can be deployed for fundamentally different purposes by different actors, such as states, international organisations, civil society, and private companies, all operating within the same governance context (Godin et al., 2025). Understanding these dynamics requires examining not only how digital tools are designed, but how they are embedded in social and institutional contexts, how

their effects shift over time, and what visible and hidden risks and consequences they produce for different groups of actors (Godin et al., 2025; Kinchin & Mougouei, 2022). This relational understanding informs the five analytical dimensions applied throughout this study.

These dynamics raise a prior question that the analysis returns to throughout: what are digital solutions actually *for*? The spectrum from digitisation to transformation noted above is not merely technical. It marks a difference in purpose, between tools that automate or digitise the existing status quo and those that pursue a deliberate, positive contribution to how migration is governed and experienced. This purpose is often left implicit, both in the framing of individual tools and in the stated objectives of the institutions deploying them. Throughout this report, we therefore attend to three connected distinctions: whether a solution is state-centric or user-centred (i.e., migrant-centred) in its orientation; whether it digitises existing processes or seeks genuine transformation; and whether the challenges it raises are specific to the migration context or reflect more general dynamics of digital infrastructure and digital society. Making these distinctions explicit is itself an analytical contribution, given that much of the field's literature and practice leaves do not reflect them.

2.2. Analytical dimensions

Building on the structured inventory developed for this study, the analysis is organised around five key dimensions. A rights-based, gender-sensitive lens is applied across all five rather than constituting a separate dimension: both are coded as distinct variables in the inventory (Table 1) and bear on how each dimension is assessed, with gender most visibly in inclusion and accessibility, but also in the risks tools pose and in the evidence available on their effects (see Section 4.3).

Technical and implementation conditions refer to the infrastructural and organisational requirements for deploying and maintaining digital solutions, including digital infrastructure, human capacity, and local implementation contexts. In practice, limited technical capacity and resources, fragmented systems, and insufficient training can constrain the effectiveness and sustainability of digital initiatives (Lysak & Hodgson, 2024). Infrastructure gaps, including unreliable connectivity and lack of device access, can determine whether tools are usable at all, particularly for the most vulnerable groups (Gebbru & Vrăbiescu, 2026).

Effectiveness refers to the extent to which digital solutions achieve their stated objectives. This includes not only technical functionality and efficiency gains but also outcomes for users, including migrants themselves. Importantly, effectiveness is not a neutral concept: different stakeholders may define it differently, for example, in terms of administrative efficiency, migration control, or user experience and rights protection (Alajak et al., 2026; Godin et al., 2025). This study, therefore, adopts a multidimensional understanding of effectiveness that considers both institutional and user perspectives.

Risks and rights implications focus on potential negative effects, particularly regarding data protection, discrimination, exclusion, and the broader implications of surveillance and data use. Key risks include algorithmic bias, function creep, opacity of decision-making processes, gender-specific harms arising where gender is recorded or acted upon without protective design, and the potential erosion of trust in public institutions (Ozkul, 2023; Kinchin & Mougouei, 2022). These risks are not always visible at the level of individual tools; they can also be embedded in the legislative and governance frameworks within which tools are built and operated (Lebon, 2024).

Inclusion and accessibility assess whether digital solutions are designed and implemented to enable equitable access and use. This includes consideration of digital literacy, language barriers, affordability, and socio-cultural factors, among which gender is central. Access, use, and exposure to risk are systematically gendered, and each tool in the inventory is coded for gender-responsive design (Section 4.3). Digital exclusion operates at multiple levels: access to devices and connectivity, skills to navigate systems, and the ability to convert digital engagement into tangible outcomes (Gebru & Vrăbiescu, 2026). Without complementary offline or assisted service provision, digitalisation may reinforce existing inequalities and create new forms of exclusion (Lebon, 2024; Matlin et al., 2025). This dimension is closely tied to the principle of *user-centred design*: designing tools around the needs, capabilities, and real-world contexts of their intended users, rather than around administrative or technical convenience. In this report, those intended users are first and foremost migrants themselves. We therefore use *user-centred* and *migrant-centred* largely interchangeably, retaining *user-centred* where the relevant users also include practitioners, intermediaries, or other actors who interact with a tool, and preferring *migrant-centred* where the point concerns migrants specifically.

Sustainability, governance and scalability concern the long-term viability of digital solutions, including institutional ownership, funding models, integration into existing systems, and interoperability. This dimension also examines governance arrangements, including the roles of public and private actors, coordination across levels of governance, and the presence or absence of accountability and oversight mechanisms (Pollozek & Amelung, 2026). Where governance is opaque or accountability mechanisms are absent, digitalisation can obscure state failure rather than improve service delivery (Greyling & Johnson, 2026).

Together, these dimensions provide a structured framework for comparing diverse digital solutions and identifying patterns, success factors, and recurring challenges across contexts. They also help identify where evidence is most limited and where it is most urgently needed.

3. Approach and Methodology

This study adopts a mixed-methods approach combining a structured inventory of digital solutions, a targeted literature review, and expert interviews. The objective is to provide a comprehensive and comparative assessment of digital tools used in migration governance, with

a specific focus on their implications for migrants' rights, and to identify patterns, gaps, and key challenges across contexts.

As outlined in the introduction, the study focuses on digital solutions across all stages of the migration cycle (pre-departure, transit, arrival and integration, and return and reintegration) as this allows for a comparative assessment of how tools, risks, and governance arrangements differ across phases.

The scope of the study is intentionally selective. It focuses on discrete digital tools and platforms that directly interact with or affect migrants, practitioners, or that are embedded in governance processes. Large-scale administrative systems and databases (such as visa systems or biometric databases) are not systematically included. However, they are considered where relevant to understanding the broader ecosystem in which digital solutions operate. This choice reflects the study's focus on tools with direct, traceable implications for migrants' rights and experiences, rather than on the broader infrastructure of migration data governance.

The following subsections describe each component of the methodology in turn.

3.1. Inventory of digital solutions

At the core of the study is a structured inventory of digital solutions, developed to systematically map and categorise relevant tools across different contexts and functions. For each solution, information was collected across eleven main dimensions, covering identification and traceability, analytical classification, and the five analytical dimensions applied throughout the study. The following table provides an overview of the main data dimensions and their purpose.

The eleven data dimensions in the inventory operationalise the five analytical dimensions presented in Section 2.2. This mapping is not one-to-one: each analytical dimension overlaps with several data dimensions, and some data dimensions contribute to more than one analytical dimension. Technical and implementation conditions are reflected primarily in dimensions 5 (Technology type), 9 (Sustainability & governance) and 10 (Risks & challenges), which together capture infrastructure, capacity and implementation context. Effectiveness is captured mainly through dimension 8 (Effectiveness & evidence), with additional relevance in dimensions 4 (Functional focus) and 9 (Sustainability & governance). Risks and rights implications are addressed across dimensions 6 (Rights dimension), 7 (Gender dimension) and 10 (Risks & challenges), covering data protection, discrimination, exclusion and other harms. Inclusion and accessibility are not represented by a single row but are integrated across dimensions 3 (Target groups), 6 (Rights dimension), 7 (Gender dimension) and 10 (Risks & challenges), which together consider digital literacy, language, affordability, socio-cultural factors and accessibility for persons with disabilities and other marginalised groups. Sustainability, governance and scalability are primarily reflected in dimension 9 (Sustainability & governance), with links to dimensions 4 (Functional focus) and 10 (Risks & challenges).

Table 1: Overview of the main data dimensions in the digital solutions inventory

Dimension	Key variables	Purpose
1. Identification	Name, short description, implementing organisation(s), developer, donor/financing source, geographic scope	Ensures traceability and accountability of each solution
2. Stage of migration cycle	Pre-departure; transit; arrival & integration; return & reintegration; diaspora engagement	Situates each tool within the migration lifecycle and enables phase-based comparisons
3. Target group(s)	Migrant categories (asylum seekers, labour migrants, refugees, diaspora, etc.); gender and age considerations	Assesses inclusion and relevance for different populations
4. Functional focus	e.g. information provision, skills training, registration and identity, case management, matching, remittances, grievance reporting	Supports typological classification for comparative analysis
5. Technology type	Mobile application, web platform, AI-based tool, digital identity system, blockchain, data and analytics tool, matching algorithm, etc.	Characterises the nature and complexity of each digital solution
6. Rights dimension	Evidence of rights safeguards, due process, data protection, and access to justice	Integrates a rights-based analytical lens
7. Gender dimension	Evidence of gender-responsive design, accessibility for women and marginalised groups, and explicit gender targeting	Integrates a gender-sensitive analytical lens
8. Effectiveness & evidence	Documented outcomes, independent evaluations, user reach, and adoption rates	Assesses evidence strength and knowledge base
9. Sustainability & governance	Ownership model, financial sustainability, institutional linkages, interoperability, accountability mechanisms	Examines long-term viability and governance quality
10. Risks & challenges	Data protection issues, exclusion risks, algorithmic bias, digital divide, surveillance, function creep	Enables systematic risk assessment across solutions
11. Sources	Key references (evaluations, academic studies, project websites)	Ensures transparency and replicability

In total, the inventory comprises 100 digital solutions from across the globe and covering all stages of the migration cycle. A detailed descriptive analysis of the inventory is provided in Section 4.

The inventory was compiled based on explicit inclusion and exclusion criteria, applied consistently across the search and selection process. These criteria reflect the study's focus on tools with direct, traceable implications for migrants' rights and experiences.

Table 2: Inclusion and exclusion criteria

Criterion	Included	Excluded
Tool type	Discrete digital tools and platforms (apps, portals, chatbots, matching systems, toolkits, data analytics tools)	Large-scale administrative infrastructure (e.g. national identity management and visa systems, border surveillance networks, biometric databases) unless directly relevant to a specific tool's ecosystem
Interaction with users	Tools that directly interact with or affect migrants, practitioners, or governance processes	Background systems with no direct interface with end users or governance decisions
Stage of migration cycle	Tools operating at any stage: pre-departure, transit, arrival and integration, return and reintegration, diaspora engagement	Tools with no clear link to any stage of the migration cycle
Function	Information provision, service delivery, case management, identity and documentation, skills training, financial inclusion, matching, data collection, legal support	General-purpose tools not designed for or significantly adapted to migration contexts
Geographic scope	Global, regional, and national tools across diverse contexts	Tools limited to a single highly specific local context with no identifiable broader applicability
Evidence availability	Tools with at least minimal publicly available documentation	Tools for which no reliable information could be identified

The inventory serves both as a descriptive mapping exercise and as the empirical foundation for the comparative analysis. It enables the identification of recurring patterns, common challenges, and differences in design and implementation across solutions.

3.2. Literature review

A targeted literature review was conducted to complement the inventory and situate the analysis within existing academic and policy debates. The review draws on academic and grey literature, with a focus on publications between 2020 and 2026. Search terms focused on digitalisation, migration governance, digital rights, and technology in humanitarian and development contexts.

Rather than aiming for exhaustive coverage, the review focuses on key conceptual contributions and empirical insights relevant to the analytical dimensions of the study. It informed the development of the analytical framework and supports the interpretation of findings from the inventory and interviews.

3.3. Expert interviews

To complement the desk-based research, ten semi-structured interviews were conducted between March and May 2026 with a range of stakeholders working at the intersection of digital technologies and migration governance. Interviewees were selected purposively to capture diverse perspectives, spanning practitioners, researchers, developers, and representatives of international organisations, civil society including people with lived migration experience, and philanthropic foundations.

Interviews followed a semi-structured format, guided by a common interview protocol while allowing flexibility to explore interviewee-specific experiences and insights. They were conducted online and, with the consent of interviewees, transcribed to support systematic analysis.

Interview questions focused on the following themes: the functionality and use of digital tools in practice; implementation challenges and enabling conditions; user uptake, accessibility, and inclusion; governance arrangements and accountability; and perceived risks, rights implications, and future directions. Interviewees also shared broader reflections on trends, evidence gaps, and the role of different actors, including governments, international organisations, civil society, and the private sector, in shaping digitalisation in migration governance. Findings were analysed thematically and coded against the five analytical dimensions of the study.

3.4. Limitations

Several limitations should be acknowledged. First, the inventory is not exhaustive and may not capture all relevant digital solutions, particularly smaller-scale, locally embedded, or recently launched ones. Categorisation is also a means rather than an end, and standardising entries required judgement: many tools are multi-modal, more than a quarter span several or all stages of the migration cycle, operational status is often ambiguous, and coding depends on what implementers publish about their own tools. The categories are a scaffold for comparison rather than properties of the tools themselves. Second, the availability and depth of information vary across solutions, which may affect the level of detail in the analysis. The literature is also unevenly distributed: scholarship on digitalisation in migration governance is concentrated in high-income countries, particularly in European countries and the US, while evidence from low- and middle-income countries is thinner and more often confined to grey literature. The analysis therefore rests on a body of work with a particular vantage point on what counts as a digital solution, which risks are salient, and how effectiveness is defined, and the findings should be read with that in mind.

Third, interview findings reflect the perspectives of a selected group of stakeholders and may not fully represent all viewpoints. The ten interviews did not include representatives of national governments or of private technology providers, which together account for around a third of

the tools mapped and to which Section 9 addresses specific recommendations; the perspectives of those who commission, build, and operate these systems are therefore represented through their own documentation and through secondary literature rather than in their own words. While at least one person with lived migration experience participated, the study did not include migrants directly, meaning that its account of uptake, trust, and accessibility rests on expert and practitioner observation and on secondary literature rather than on users' own accounts. These limitations are compounded by the time and resource constraints of the study, which influenced the scope of the inventory and the number of interviews conducted. As a result, the study prioritises breadth and comparative insights across cases rather than in-depth assessment of individual tools.

Despite these limitations, the combination of inventory mapping, literature review, and expert interviews provides a sufficient basis for comparative analysis and for drawing cross-cutting insights across a diverse, evolving and empirically underexplored field.

4. Mapping Digital Solutions Across the Migration Cycle (Inventory)

As of 05 May 2026, the team has mapped a total of 100 digital solutions.¹ The inventory covers a diverse ecosystem of digital and data-based solutions across the migration cycle.

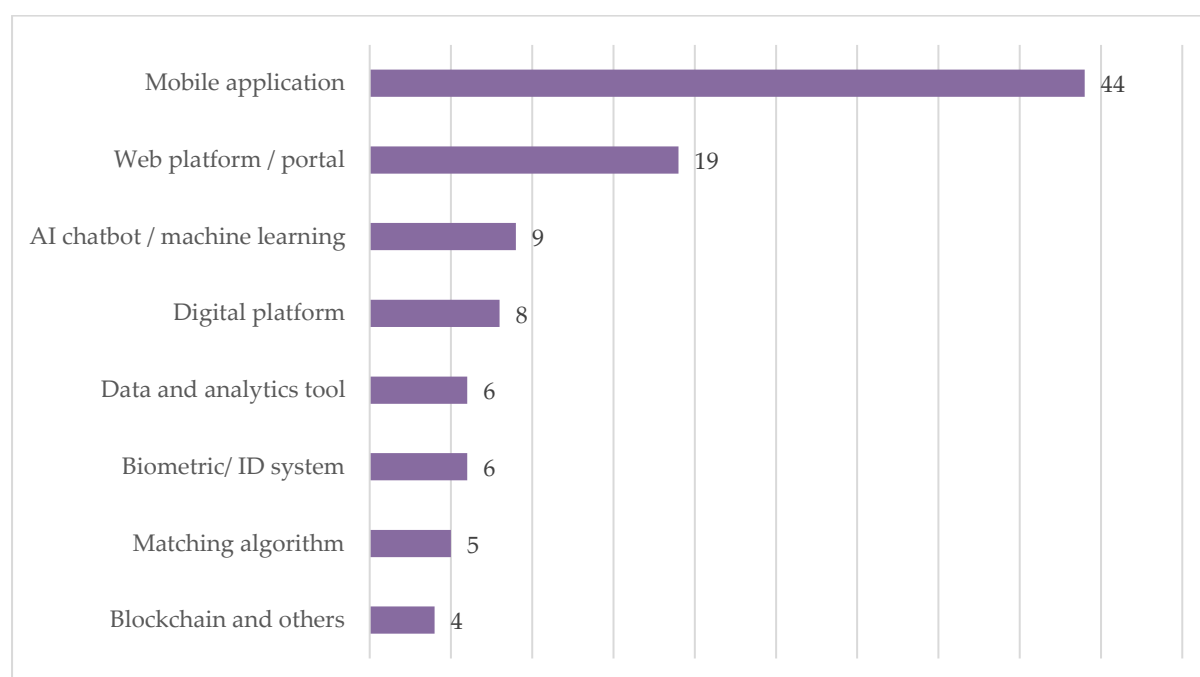
4.1. Overview of identified solutions

Solutions range from simple information platforms to complex, multifunctional systems that combine service navigation, matching, and allocation tools. As indicated in Figure 1, there are various delivery channels (mobile, web), functional architectures (AI chatbot, matching algorithm), and underlying infrastructures (blockchain), some of which overlap, making it difficult to develop a standard taxonomy of technology types. This said, mobile applications dominate the inventory (44 of 100, or 44%), far outpacing all other categories. Web platforms/portals come second (19), followed by AI/machine learning tools (9), general digital platforms² (8), data & analytics tools (6), biometric/digital identity systems and matching algorithms (5 each), and blockchain and other tools (4). The mobile-first landscape reflects pragmatic choices around refugee and migrant access as smartphones are often the primary point of digital contact.

¹ Please note that the following descriptive statistics (i.e., breakdown of the items in the inventory) may not always add up to 100 because of overlapping entries and/or missing information.

² While the distinction is not as clear-cut, in this report, a web platform/portal refers to tools that are primarily *information repositories or service directories* accessed via a browser, while a digital platform is used for tools with a broader, more *interactive or ecosystem-like* function that *facilitate processes* (job matching, investment, training pipelines) rather than just provide information access.

Figure 1. Overview of digital solutions based on technology type



In terms of operational status (Figure 2), 69 solutions (69%) are active, 18 (18%) are in pilot or development stages, and 10 (10%) have been discontinued. The discontinued solutions are predominantly community-led or volunteer-driven tools from 2015–2016, which were never institutionalised. Meanwhile, the pilot category is heavily populated by EU-funded Horizon 2020 research projects and academic prototypes, pointing to a structural challenge with project-based funding in this sector.

Figure 2. Status of inventoried digital solutions

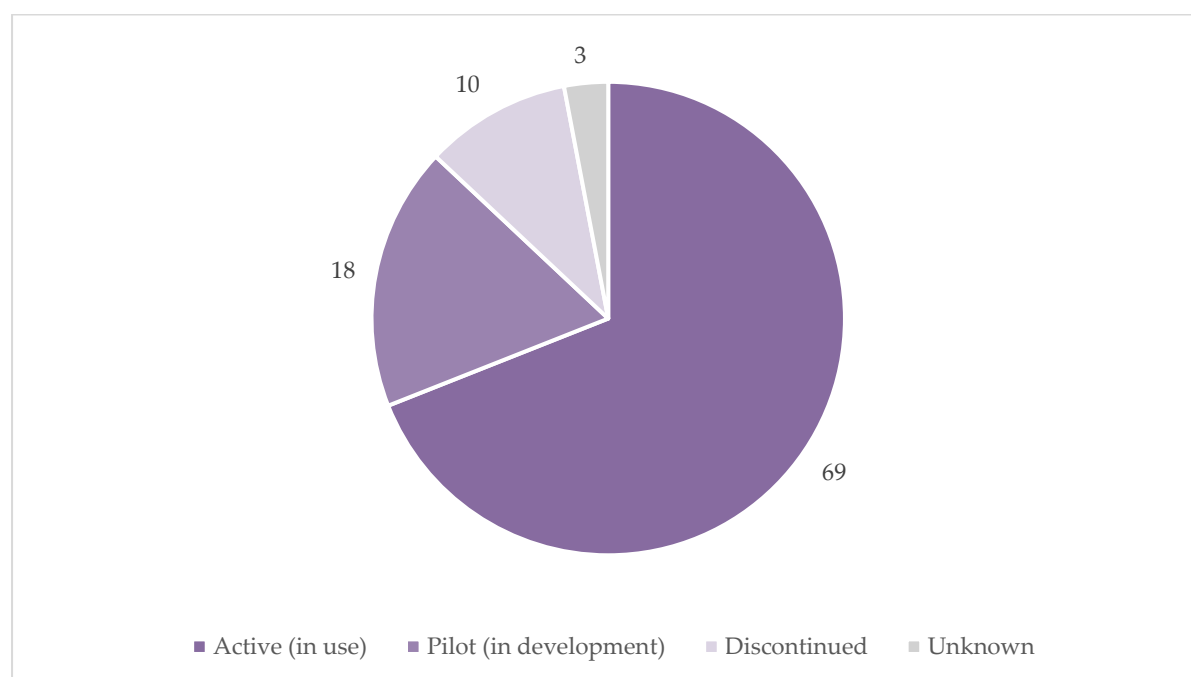


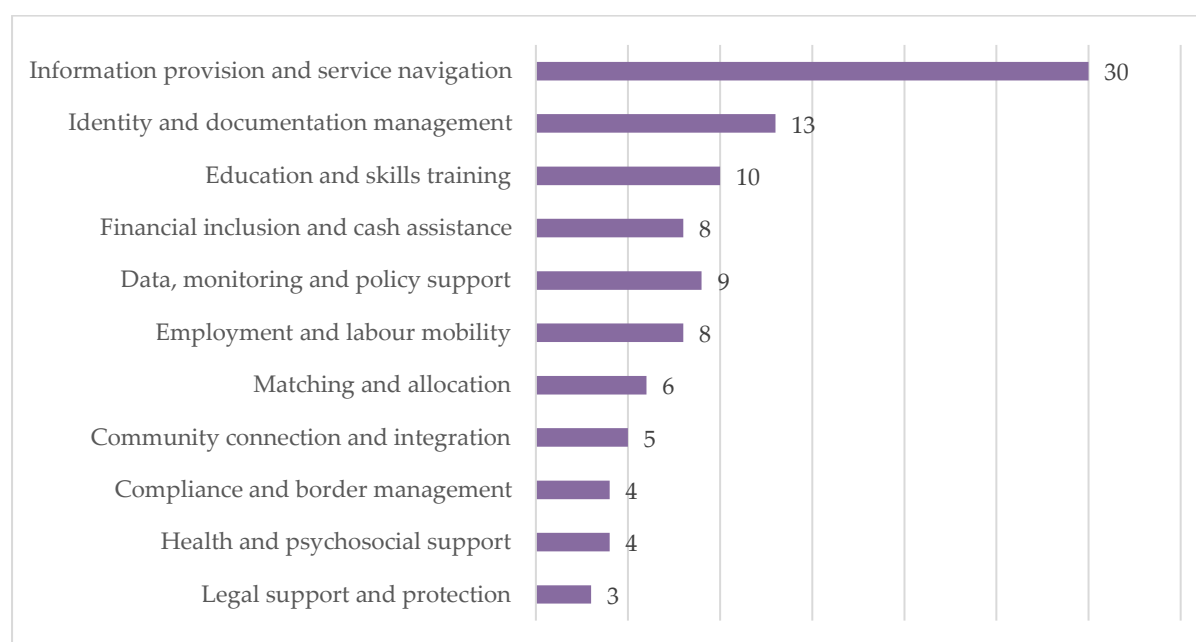
Figure 3. The year the digital tools are launched



Looking into the year the digital solution was introduced or launched (Figure 3), we can identify two peak waves: 2015 (13 tools; the European refugee “crisis”) and 2020–2022 (32 tools). Indeed, many digital solutions were introduced during the 2013–2016 period that saw large migration flows to Europe. Meanwhile, the period 2020–2022, during the COVID-19 pandemic and the Russian invasion of Ukraine, likely accelerated the adoption of digital services and remote access systems. Tools introduced from 2025 onwards (6 tools already) skew toward AI, government systems, and labour mobility platforms, suggesting a third wave is underway. In other words, a clear maturation is visible: first-generation tools were often standalone apps built during crises; newer entries are more institutionally embedded, interoperable, or AI-augmented.

In terms of primary functional focus (Figure 4), information provision and service navigation (30 tools) is the largest single cluster, followed by identity and documentation management (13). The inventory also includes a wide variety of other tools for education and skills training, financial inclusion and cash assistance, data monitoring and policy support, employment and labour mobility, matching and allocation, etc.

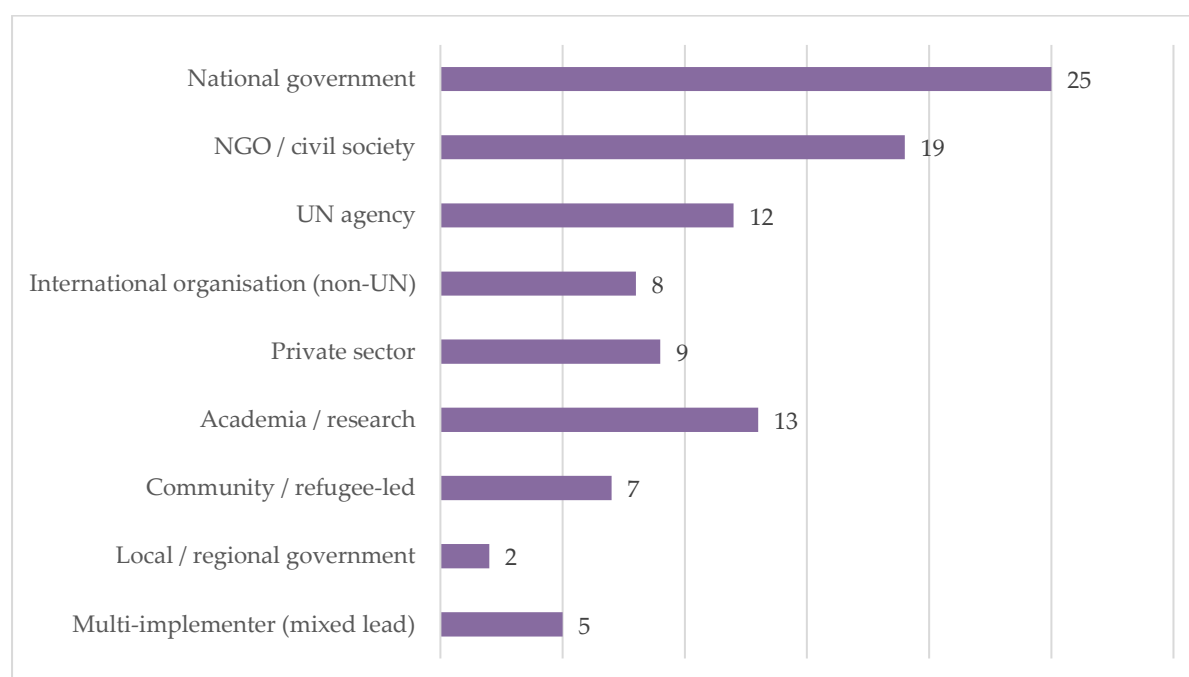
Figure 4. Primary functional focus of identified digital solutions



It is not always easy to identify the developer of a digital solution, and often the developer is the same as the implementing organisation. Only in 12 cases is there a notable split; e.g., GeoMatch (Stanford IPL developed the tool but it is deployed by resettlement agencies), and USD Coin (developed by Stellar and implemented by the IRC and UNHCR).

As shown in Figure 5, among implementing organisations, national governments, civil society, and established international organisations such as the ICRC, IOM, UNHCR, and WHO dominate. Community- and refugee-led solutions represent only 7% of the inventory. Migrants and refugees appear as "users" or "beneficiaries" rather than developers or implementers.

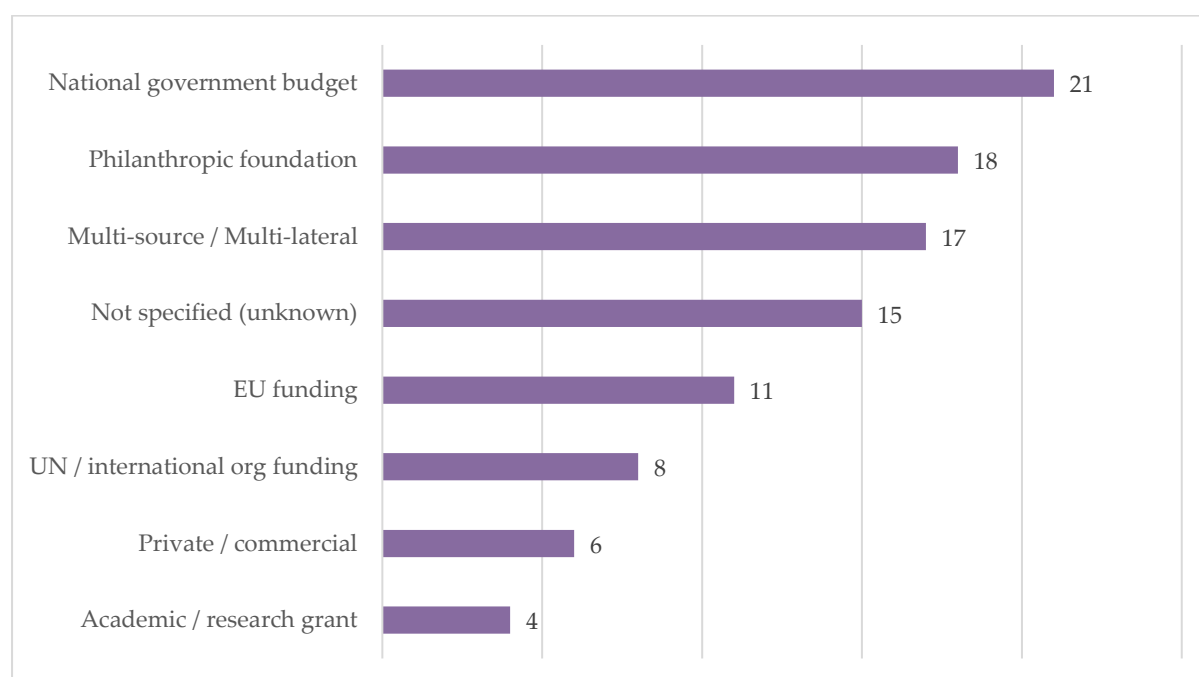
Figure 5. Implementing organisations



Private sector tools are mostly in labour recruitment, fintech, and platform matching. Multi-implementer or partnership ecosystems range from bilateral (tool owner + one donor) to complex multi-stakeholder arrangements involving governments, NGOs, academia, and the private sector. It is worth noting that most tools with robust evidence and high sustainability (e.g., Integreat, GeoMatch, Re:Match) involve cross-sector partnerships.

The funding landscape mirrors these implementation patterns. The donor or source of financing (Figure 6) indicates that national government budgets (21) and philanthropic foundations (18) are the two largest traceable funding sources. The philanthropic cluster is heavily concentrated in North American and European foundations. 15 tools in the inventory have unspecified funding. The EU funding cluster (11) is almost entirely composed of EU Horizon 2020 research projects, many of which are now discontinued.

Figure 6. Funding or source of financing

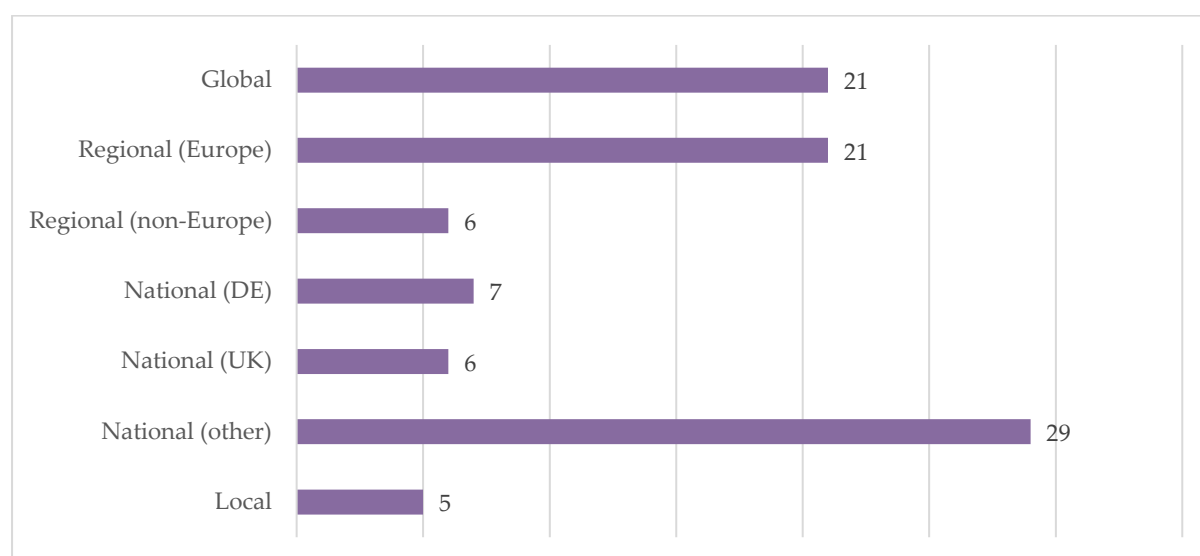


UN and multilateral funding are present in 25 tools (8 + 17), often alongside other funders, which potentially reflect dependence on humanitarian and international development budgets. The number of tools identified from private or commercial entities (6 solutions) is minimal and concentrated in labour mobility platforms, suggesting that viable revenue models for serving migrant populations are still in their infancy.

4.2. Distribution

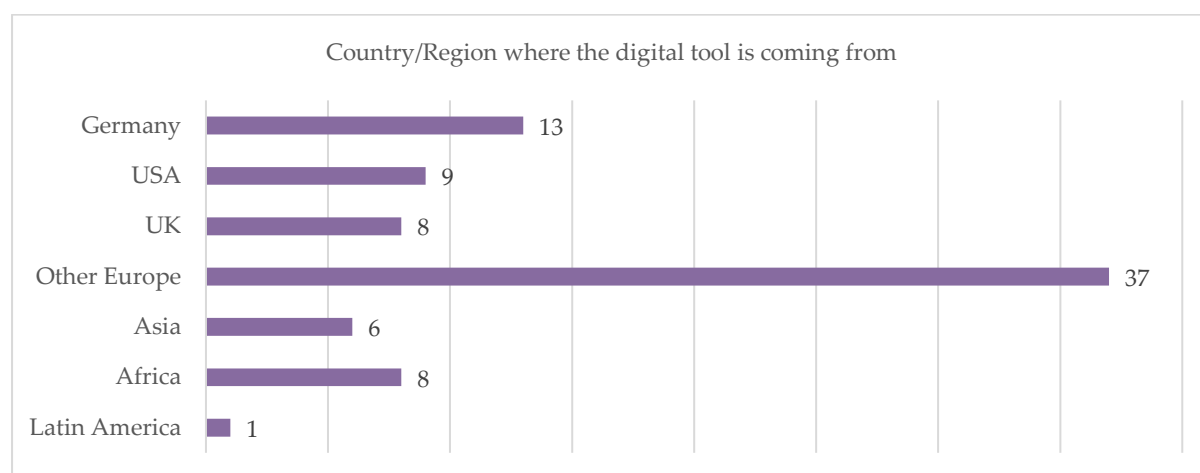
Looking at the geographic scope (Figure 7), the majority of the identified digital tools are deployed for use in specific countries: 7 in Germany, 6 in the UK, and 29 in other countries. Many of the identified tools are deployed at a global or regional level, including those operational in regions outside Europe (e.g., Africa and Latin America). Five tools are used at the local level, including one used specifically by refugees and other migrants in the Kakuma and Kalobeyei camps in Kenya. Overall, however, we see a strong bias, with only 17 out of 100 tools identified as specifically deployed in low- and middle-income countries.

Figure 7. Geographic scope (where the digital tool is used)



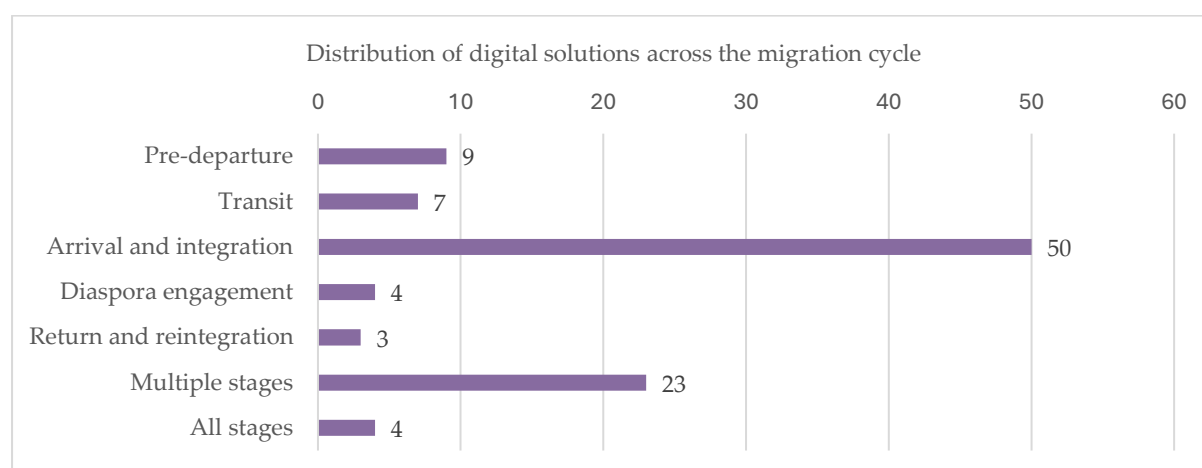
While it is not always easy to determine, this bias is also reflected in where tools are built (Figure 8). More than half (58) of the tools in the inventory were developed in Europe. Africa and Asia are underrepresented relative to their share of the world's migrant and displaced population.

Figure 8. Country/Region where the digital tool is coming from



In terms of distribution across the migration cycle (Figure 9), arrival and integration account for 50 tools, which is 50% of the inventory. Combined with tools covering "multiple" stages (23) and "all" stages (4), the arrival and integration phase is massively overrepresented. Return and reintegration (3) and diaspora engagement (4) are very limited. The transit phase has only 7 dedicated tools. This distribution likely reflects both funding priorities and the greater organisational capacity of destination-country actors to design and deploy digital tools.

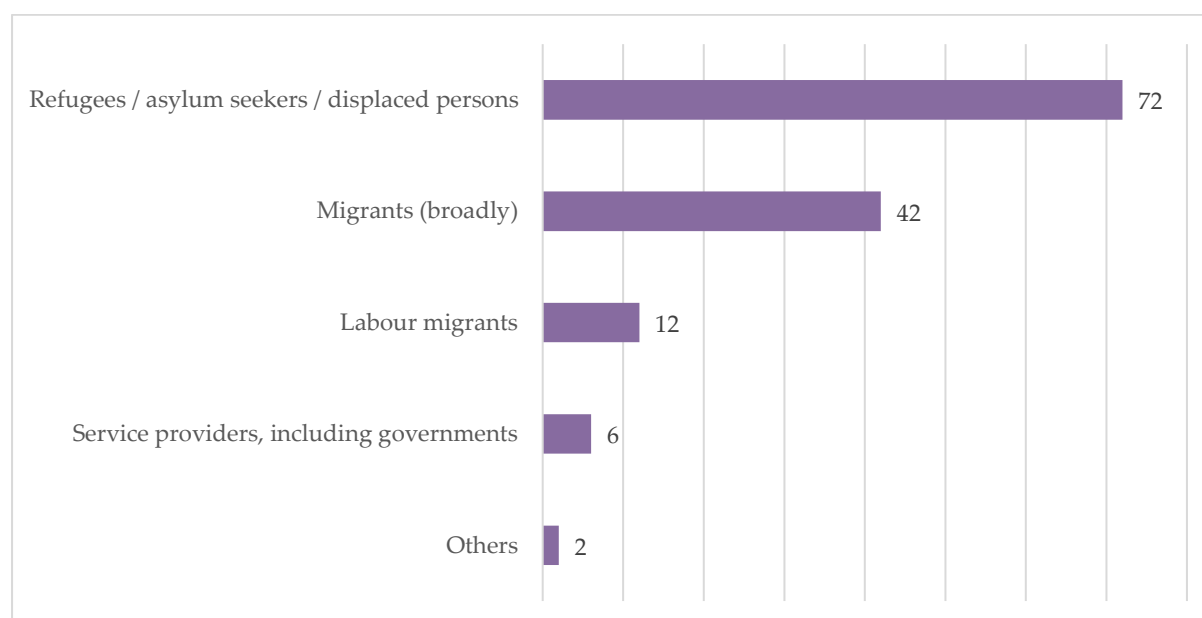
Figure 9. Distribution across the migration cycle



4.3. Target groups, human rights, and gender considerations

In terms of target user groups (Figure 10), the most common entries (93) are “refugees/displaced persons,” “asylum seekers,” and “migrants broadly.” In addition, there are 20 tools targeted at service providers/practitioners, 11 for labour migrants, and 7 for employers.

Figure 10. Primary target group categories (entries may span multiple)



When examining the human rights dimension (Figure 11), the quality of available information varies widely. Just under half (48 entries, 48%) use clearly rights-affirming language, invoking specific rights, humanitarian principles, or an explicit rights-based framing. A further 10 entries (10%) are access-enabling but implicitly rights-related. They focus on improving access to

services or information without anchoring this in rights language. That leaves a substantial share of 24 entries (24%) that are descriptive or ambiguous, and 15 (15%) where the primary signal is a rights concern or risk rather than a rights affirmation.

Figure 11. Human rights dimension

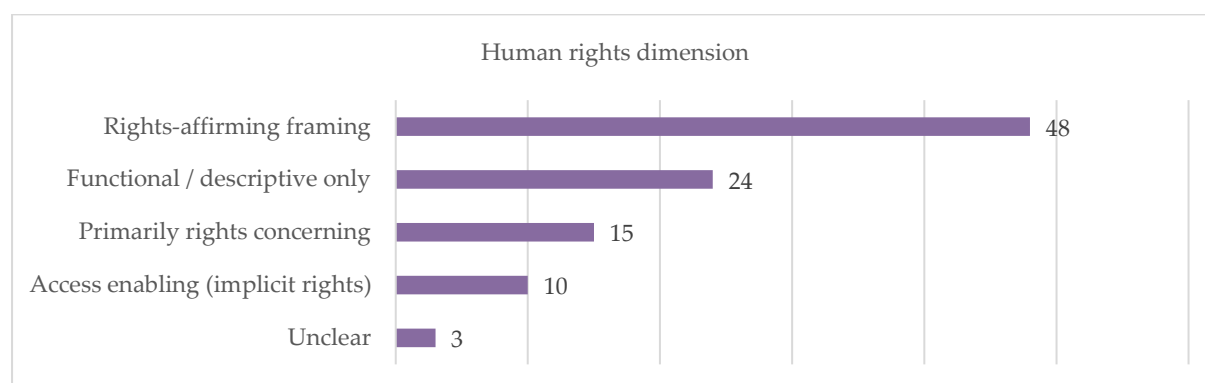
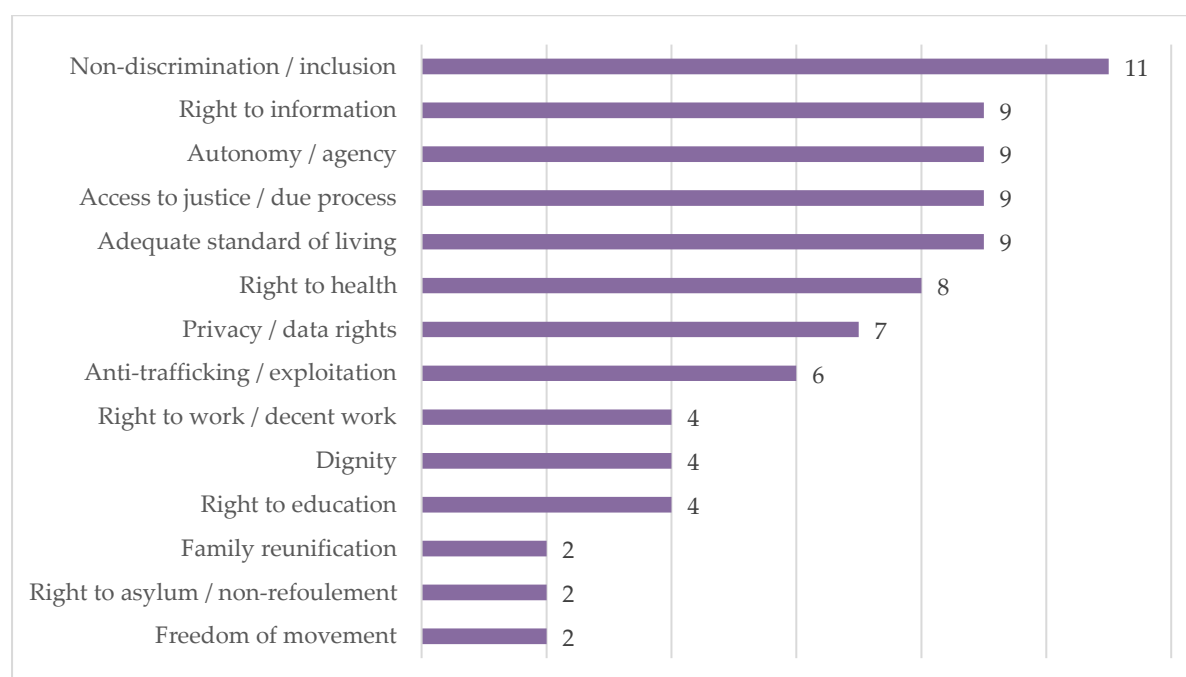
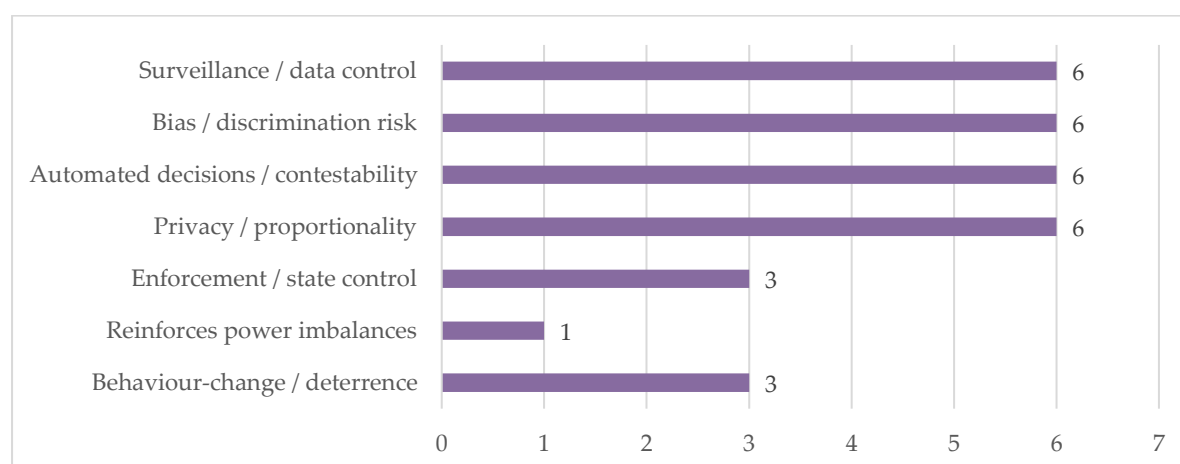


Figure 12. Rights most commonly invoked



In terms of rights most commonly invoked (Figure12), non-discrimination and inclusion lead (11 entries), followed closely by the right to information, autonomy/agency, access to justice, and the right to an adequate standard of living (all at 9). The right to health comes in at 8. Notably, foundational migration-specific rights, such as the right to asylum, non-refoulement, and freedom of movement, appear in only 2 entries each, suggesting the inventory skews toward social and economic rights framing rather than the core protection rights framework.

Figure 13. Concern types in rights-concerning entries



The tools that signal a rights concern or risk rather than a rights affirmation cluster around four interrelated and often overlapping risks (Figure 13): surveillance and data control, algorithmic bias and discrimination, automated decision-making with limited contestability, and privacy/proportionality concerns (all at 6 entries). These tend to be tools for enforcement, border management, or case matching.

The gender dimension (Figure 14) is arguably the “least” informative aspect of the inventory. Of the 100 solutions, 80 generally ignore gender aspects (no gender-responsive feature, variable, or content), 16 are gender-aware (gender is acknowledged or used as one variable, but the tool is not tailored to a gendered barrier), only 4 are gender-targeted (designed for or prioritising women and girls), and none is gender-transformative (actively seeking to change the unequal gender norms or power relations that produce those barriers, rather than only accommodating them).

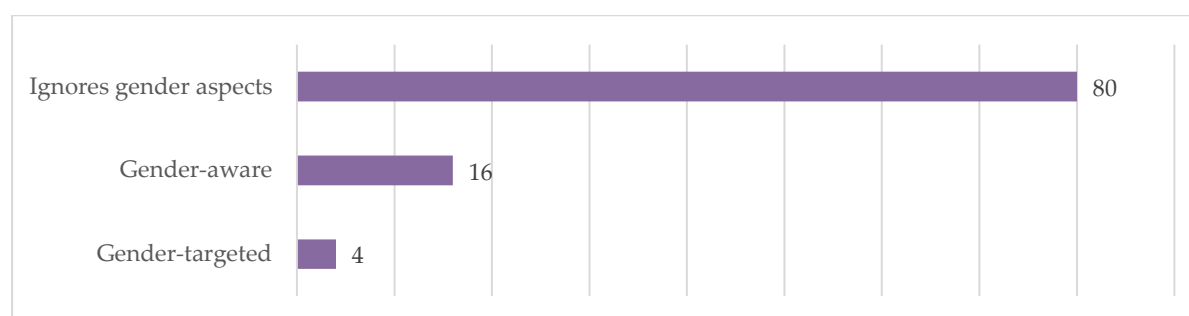
Box 2. When digital tools put rights at risk

The UK Home Office has operated a risk assessment for "sham marriages" since 2015, adding a machine-learning triage tool in 2019. It scores couples in which one partner is subject to immigration control and flags cases for investigation. Officers decide whether to investigate, but the algorithm sets the queue. No comprehensive public evaluation exists, but [concerns](#) about bias, including disproportionate targeting of particular nationalities and about the opacity of the risk factors have surfaced largely through [litigation and civil society research](#).

[GeoMatch](#) sits at the opposite end of intent. A matching algorithm developed by Stanford University's Immigration Policy Lab and offered to governments and resettlement agencies, it recommends where newcomers are most likely to thrive, and is deliberately built as a recommendation tool: placement officers retain final authority. Yet because the model learns from historical administrative data on where refugees previously found work, [peer-reviewed analysis of its use in the Netherlands](#) argues it may reproduce existing labour-market inequalities, raise discrimination risks on the basis of ethnicity, gender and marital status, and leave those affected little scope to contest a recommendation. Gender enters the model as an input variable, not as a protective design choice.

Read together, the two cases caution against locating rights risk in the intentions behind a tool. One was built to enforce, the other to assist; both allocate scrutiny or opportunity through models that are difficult for their subjects to see or challenge. In both, the safeguard on record is the same, namely, a human decides, but that is a description of intended operation offered by those who run the systems, and neither has been independently evaluated. Their subjects are rarely told a model was involved, still less on what basis, and cannot establish whether anyone weighed their case. Rights to non-discrimination and to an effective remedy are not suspended here but instead are made very hard to exercise.

Figure 14. Gender dimension



Where documentation was silent on gender, an entry in the inventory was coded as generally ignoring gender aspects, and cases where the only gender content was an observation that women might benefit were not counted as gender-responsive, since incidental benefit is not design. Read this way, the “thinness” of the dimension is less a gap in the available evidence than a finding about the field itself, namely that the overwhelming majority of digital solutions in migration governance do nothing, by design, on gender.

The small share of tools that register gender at all reveals what attention to gender typically means in practice. Most of the 16 gender-aware tools treat it as a technical input rather than a protective design choice: gender appears as a matching or allocation variable (for example, the MOT system in Norway, Match’In, the Netherlands Case Matcher, and Refugees Welcome) or as a field in a data or profiling system. The four gender-targeted tools are all oriented to women and girls specifically, and cluster narrowly in skills training (Ajira and the Digital Learning-to-Earning programme, with its Skills4Girls component) and women’s health (the Hera app’s maternal and reproductive health focus), with Trust-M prioritising migrant women in the design of public services. That the entire targeted category is women-and-girls-focused, and that nothing reaches the transformative rung, suggests that the field tends to equate gender with women and, even then, engages only rarely and seldom beyond service provision.

Box 3. When digital tools advance rights

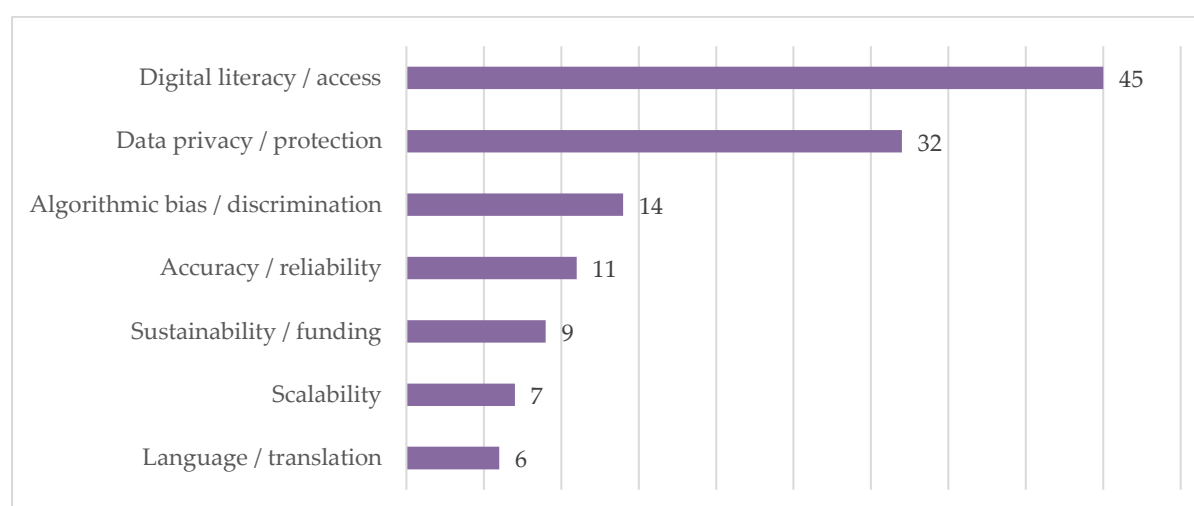
The [Migrant Recruitment Advisor](#) is a web platform launched in 2018 by the International Trade Union Confederation, with support from the ILO’s Fair Recruitment Initiative. It allows

migrant workers to rate and review recruitment agencies along corridors running from Nepal, the Philippines, Indonesia and Kenya to the Gulf and East Asia, in English, Nepali, Tagalog and Indonesian. It does not digitise an existing procedure so much as create one: workers who previously had no way to check an agency's record can now do so, and agencies acquire a reputational stake they did not previously have. Its constraints are instructive. Reliability depends on review volume, workers who post critical reviews risk retaliation, and the platform relies on trade union networks to reach the workers it is meant to serve.

The [HERA app](#), a mobile application developed by HERA Digital Health and piloted with Syrian refugees in Türkiye from 2018, lets users store personal health records, receive reminders, and find healthcare services in the host country. Through its focus on maternal and reproductive health, it is one of only four tools in the inventory designed around a gendered barrier rather than merely recording gender as a data field. Pilot studies report improved access to health information and better adherence to care. It also requires a smartphone, holds sensitive health data, and remains only loosely connected to national health systems.

What the two share is clarity of purpose. Each begins from a barrier migrants actually encounter namely, an unaccountable recruiter, and an unreachable clinic, rather than from an administrative process in need of streamlining. Each is built to widen what its users can do: check a recruiter's record before signing a contract, and carry a health history across a border. Hera further shows what a gender-sensitive lens looks like once it reaches design rather than data collection. The question it answers is not whether gender is recorded, but which gendered barrier the tool sets out to remove, here, access to maternal and reproductive healthcare. That question can be asked of any tool at the design stage, and answering it concretely is what distinguishes a tool that responds to gender from one that merely registers it.

Figure 15. Risks and challenges (themes)



In terms of risks and challenges (Figure 15), digital literacy and access are the most commonly cited challenges, noted in 45 tools. Data privacy and protection follow closely at 32. Algorithmic

bias and discrimination are cited in 14 tools. Sustainability and funding, scalability, and language and translation are the other challenges noted.

As for risk mitigation strategies, while 97 out of 100 entries in the inventory have something in this field, the quality is uneven. The majority of the tools (54 entries) offer only brief, generic mitigation, using phrases like "data minimisation", "data protection protocols", "open source", or "partnerships with trusted NGOs" without any specifics. 5 are moderate (some concrete detail but incomplete), 10 are minimal to the point of being near-empty, and only 7 tools are genuinely substantive with multi-layered, verifiable strategies. Examples are Tarjimly (encryption in transit, session deletion, option for 'no-record' sessions), Refunite (anonymous search functionality, SMS/USSD access does not require a smartphone or data connectivity), and Building Blocks (no biometric storage, permissioned blockchain, data minimisation), which all describe concrete, multi-layered strategies that genuinely correspond to the risks they identify. Overall, there is a systematic gap between risk identification and meaningful mitigation, especially for algorithmic bias, gender-specific risks, and data sovereignty.

In terms of sustainability and governance, the picture looks positive at first glance: 36 tools (36%) are rated as highly sustainable. But scrutiny reveals this is concentrated among government systems (which exist by institutional mandate), UN agency tools (IOM, UNHCR), and large NGO platforms. Among civil society and research-led tools, which are typically the most migrant-centred, sustainability is medium to low: 24 tools (24%) are rated low, and many of the medium-rated tools are project-based. The governance picture is also rather striking: migrants themselves rarely have a governance role in any of these tools. There is a near-total absence of beneficiary governance across the inventory. The refugee and migrant agency in the tools designed for them appears structurally absent at every level: design, funding, governance, and evaluation. The relationship between governance type and sustainability is stark: government-embedded tools almost uniformly score high, academic/research tools mostly score low (tied to project lifecycles), and NGO/civil society tools are highly variable depending on funding security.

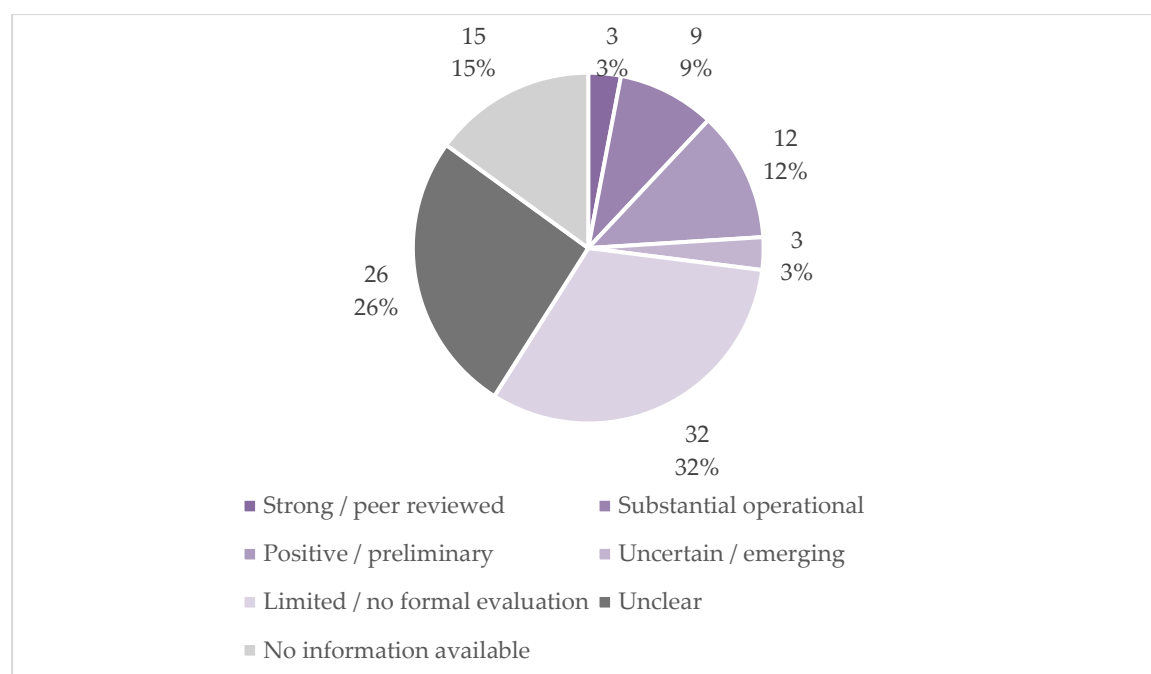
Finally, regarding effectiveness and evidence, only 85 of 100 entries are filled in (15 are missing). The overall picture is weak. Only 3 entries (3%) cite rigorous (GeoMatch, with an RCT underway in Switzerland and the US) or peer-reviewed evidence (Integreat, which has been scientifically evaluated over several years with academic and other partners and full impact reports available from the website³, and Diiia.pl for which a peer-reviewed paper⁴ covering use and effectiveness has been published). Just 9 of the tools in the inventory offer substantial, large-scale operational data. The bulk, meanwhile, sits in the lower tiers: 32 entries with

³ <https://integreat-app.de/en/impact/>

⁴ Matusiak, J. and Narozniak, A. (2025). Diiia.pl: Navigating legal, technological and human rights dimensions of an electronic document for Ukrainian citizens in Poland. *Smart Cities and Regional Development (SCRD) Journal*, 9(2), 15-30. <https://doi.org/10.25019/nq2yrm66>

explicitly limited, descriptive, or completely missing any formal evaluation, and a further 25 for which no clear information is available.

Figure 16. Evidence strength



5. How Digital Solutions Work in Practice

This section examines how digital solutions in migration governance function in practice. Drawing on the mapping, literature review, and interviews, it moves beyond design intentions to identify recurring implementation patterns and structural dynamics that shape outcomes. It highlights how digital solutions are embedded in complex socio-technical systems, where institutional conditions, user behaviour, and governance structures interact to determine effectiveness, sustainability, and rights implications. Throughout, particular attention is paid to how these dynamics shape outcomes for migrants' rights and whether tools are responsive to the needs of women and other marginalised groups.

5.1. From design to implementation: The persistent implementation gap

A central finding across the evidence base is the persistent gap between the conceptual promise of digital solutions and their practical implementation.

Across both interviews and literature, digital tools are frequently discussed as being designed with ambitious objectives, such as improving access to services, enhancing coordination across actors, increasing efficiency in migration management, or enabling anticipatory governance through data and AI. However, in practice, many of these tools remain at the pilot stage or are implemented only partially. Moreover, a recurring ambiguity is whether these objectives

represent a genuine transformation of how migration is governed or simply the digitisation of existing administrative processes. This distinction is rarely made explicit at the design stage, including by the institutions deploying the tools, which makes it difficult to judge a solution against the purpose it was actually intended to serve.

This “implementation gap” reflects several overlapping dynamics. First, many digital solutions are developed within short-term, project-based funding cycles. As a result, they are often designed for demonstration rather than long-term institutional integration, raising persistent questions about sustainability (MIICT et al., 2021). In the interviews, this pattern was also described as the “appification” of the refugee response, a proliferation of tools appearing rapidly during moments of crisis, driven less by assessed need than by funding availability and the visibility of large-scale arrivals, only to collapse within a short period due to a lack of localisation, mismatch with user contexts, or inadequate design for low-connectivity environments.

Second, implementation is highly dependent on context-specific conditions. Differences in infrastructure, administrative capacity, and governance structures significantly shape whether and how tools can be deployed. This reinforces existing research emphasising the importance of technical and implementation conditions for digital systems to function effectively.

Third, there is often a mismatch between technological ambition and institutional readiness. Particularly for more advanced tools, such as AI-based systems or blockchain-enabled identity solutions, implementation challenges are less technical than organisational and regulatory.

It is worth flagging at this point a distinction that recurs throughout this section: some of the challenges described here, limited infrastructure, short-term funding, and institutional resistance, are not specific to migration. They characterise digital implementation broadly. What is specific to the migration context is how these general challenges intersect with legal precarity, mobility, and the high stakes attached to data and decisions affecting migrants' rights.

5.2. Institutional contexts: Government engagement, capacity, and coordination

The role of public institutions is central to how digital solutions function in practice. While governments are key actors in migration governance, their engagement with digital tools is uneven. In many contexts, there is clear recognition of the potential benefits of digitalisation, particularly in improving coordination, efficiency, and service delivery. However, this interest does not consistently translate into sustained uptake.

Institutional barriers include fragmented governance structures, limited technical capacity, constrained financial resources, and resistance to organisational change. These challenges reflect broader implementation difficulties documented across the Prague Process region, where limited resources, staff turnover, and resistance to change consistently constrain the operationalisation of digital systems (Lysak & Hodgson, 2024).

This fragmentation is primarily intra-governmental in character. Migration governance often involves multiple ministries and agencies, which complicates the development of interoperable systems. As a result, digital tools are frequently developed in silos, limiting data sharing and coordination. Even relatively basic forms of integration, such as shared service directories or referral systems, can be difficult to operationalise across institutional boundaries. This leads to duplication of effort and limits the system-wide impact. Section 5.3 examines how this intra-governmental fragmentation extends to the broader ecosystem of tools developed across state and civil society actors.

Where digital solutions are successfully embedded, this is typically linked to clear institutional ownership, dedicated resources, and alignment with existing governance structures. Without such embedding, many tools remain peripheral or short-lived.

5.3. Fragmented ecosystems and competing logics of digitalisation

Where section 5.2 examined fragmentation within government institutions, this section considers fragmentation at the level of the broader ecosystem, across state, civil society, and EU-funded tools that often develop in parallel without coordination. Digital solutions in migration governance operate within a fragmented ecosystem, rather than a coherent system. Different types of tools, ranging from migrant-facing apps to large-scale data infrastructures and predictive systems, serve distinct functions and are often developed independently. The Prague Process experience illustrates this directly: solutions are frequently built in-house within individual ministries, with limited interoperability across government departments and almost no cross-country coordination, resulting in duplicated effort and barriers to scaling what works (Lysak & Hodgson, 2024). At the EU level, the six Horizon 2020 migration projects similarly operated in parallel rather than as a coordinated ecosystem, each piloted tools in different cities with limited mechanisms for cross-project uptake or long-term institutionalisation (MIICT et al., 2021). This leads to limited interoperability, duplication of efforts, and challenges in scaling successful solutions.

A key tension shaping this ecosystem is the divergence between state-centric and user-centred approaches to digitalisation. State-centric systems prioritise efficiency, control, and data aggregation, and are often better resourced and more sustainable. In contrast, user-centred tools focus on access, empowerment, and service provision, but are frequently less institutionalised and structurally dependent on short-term project funding, with limited continuity once EU or grant financing ends (MIICT et al., 2021; ICMPD, 2024). This tension is widely documented in the literature, which highlights the challenge of reconciling efficiency-driven governance objectives with rights-based, user-centred approaches (European Commission, 2026; Godin et al., 2025; Lebon, 2024). In practice, this tension often means that the tools migrants find most useful are precisely those least likely to receive sustained institutional support.

5.4. Structural constraints: Infrastructure, capacity, and the digital divide

While section 5.3 examined the competing logics shaping the digital ecosystem, this section addresses the underlying infrastructure and capacity conditions that determine who can access and meaningfully use the tools within it. Underlying all implementation dynamics are structural constraints that shape who can access and meaningfully use digital solutions. The digital divide operates at multiple, compounding levels: first-level barriers include lack of device ownership and unaffordable or absent internet connectivity; second-level barriers involve insufficient navigation skills and the shock of email-based bureaucratic interaction; third-level barriers concern whether digital engagement translates into tangible outcomes such as securing housing, employment, or legal status (Gebru & Vrăbiescu, 2026; Lysak & Hodgson, 2024). Matlin et al. (2025) reframe digital access not merely as a technical problem but as a social determinant of outcomes, noting that the consequences of exclusion, missed appointments, loss of legal status, and debt are disproportionately concentrated among those already most vulnerable. Language barriers compound these dynamics further: where digital systems lack multilingual design, particularly for non-Latin scripts, they constitute a form of structural exclusion that effectively denies access to information and public services regardless of connectivity (Gebru & Vrăbiescu, 2026).

It is worth underlining that many of these constraints including connectivity, device access, affordability, and basic digital literacy are not specific to migration. They are general features of digital infrastructure and the broader digital divide, which migration-specific tools can neither be blamed for nor be expected to resolve. What is specific to the migration context is how these general constraints interact with precarity, mobility, and legal status to produce sharper consequences for migrants than for the population at large.

These access inequalities are not randomly distributed. Age, gender, educational background, and housing instability all predict digital exclusion, meaning that the groups most in need of support from digital integration services are systematically those least able to use them (Gebru & Vrăbiescu, 2026; Lysak & Hodgson, 2024; Matlin et al., 2025). The implication for design is direct: purely digital delivery models reproduce rather than address existing inequalities, reinforcing the case, documented across multiple sources, for hybrid service models that maintain in-person alternatives (European Migration Network & OECD, 2022; Lysak & Hodgson, 2024).

5.5. Migrant uptake and the centrality of usefulness and trust

Against this backdrop of structural constraints, the question of whether migrants actually engage with digital tools is analytically distinct from the question of whether they can. A critical determinant of how digital solutions function in practice is whether migrants actually use them. Yet, across the evidence, uptake is highly uneven, largely because many tools are still designed

from a state-administration perspective and without meaningful input from migrants themselves.

The primary factor shaping this unevenness is usefulness in relation to concrete needs. Tools that address immediate, practical priorities, such as appointment scheduling, residency applications, financial transactions, or credential management, tend to achieve higher adoption than those offering general information. Evidence from EU Member States and non-EU OECD countries shows that digital systems oriented around specific, task-based functions (such as tracking visa applications or renewing residence permits) have seen broad use where well implemented (e.g., multilingual interfaces, NGO involvement in rollout, and task-specific design), while more diffuse information-sharing platforms have struggled to compete with informal networks and peer advice (European Migration Network & OECD, 2022; Lysak & Hodgson, 2024). The Prague Process experience reinforces this: workshop participants across 16 states consistently identified user-centred design, multilingual interfaces, and time efficiency as the factors distinguishing successful digital tools from underused ones (Lysak & Hodgson, 2024). Interviewees added that this is not merely a design challenge but a structural one: even well-resourced communication tools such as Signal are not meaningfully adopted in many migrant contexts because localisation and low-connectivity access were not design priorities from the outset. If this is true of established platforms, it is acutely true of smaller, often crisis-driven applications.

Structural inequalities further shape who can benefit from digital tools and who is further excluded. Women, older migrants, and those with lower digital literacy face compounding barriers, including limited device access, affordability constraints, poor connectivity, and language gaps, that reduce both their ability and willingness to engage with digital services (Matlin et al., 2025). The gendered digital divide is well documented: migrant women are systematically underrepresented in digital tool pilots and in usage data (Matlin et al., 2025; MIICT et al., 2021). For example, the NADINE pilot encountered persistent difficulty recruiting women participants, resulting in data skewed heavily towards migrant men, a pattern that, if unremarked, reproduces existing inequalities in the systems built from that data (MIICT et al., 2021). These access inequalities are not incidental: design choices made without diverse user input reproduce the exclusion patterns of the very contexts these tools are meant to address. Online services that are not complemented by alternative in-person channels risk deepening exclusion for the most vulnerable.

At the same time, trust plays a central role that is analytically distinct from access. Migrants' willingness to engage with digital tools is shaped by concerns about data protection, surveillance, and the potential misuse of personal information, particularly among those with irregular status or whose asylum claims are pending. Ozkul (2023) documents in detail how state digital systems in Europe have been used in ways that erode trust: the Netherlands' IND stored ethnicity-linked data despite internal warnings; the iBorderCtrl project shielded its algorithmic decision-making from public scrutiny; and GPS-based monitoring was extended to

migrants on immigration bail with a limited evidentiary basis. These examples illustrate how the gap between the intended and actual operation of digital systems produces a justified wariness among migrant populations. Co-creation research confirms this dynamic directly: the MIICT project partners found that migrants were reluctant to engage with digital platforms precisely because of fears of surveillance and the unclear personal benefits (MIICT et al., 2021). Trust is further undermined when the tools themselves encode opaque decision-making that cannot be meaningfully scrutinised or contested. Kinchin and Mougouei (2022) show how AI-driven credibility assessment tools in the refugee status determination process risk replicating institutional biases and producing unreviewable outcomes that further undermine applicants' trust in digital processes.

Across all three dimensions, usefulness, access, and trust, co-design approaches that involve migrants from the outset consistently emerge as an enabling condition for meaningful uptake.

5.6. Intermediaries, hybrid models, and the persistence of human mediation

Rather than diminishing the role of human actors, digitalisation in the migration context has redistributed and in some cases intensified demands on them. Where previous sections have examined ecosystem fragmentation, structural access constraints, and the conditions shaping uptake and trust, this section addresses how intermediaries navigate all of these dynamics in practice. A key finding across the interviews is that digital solutions rarely operate as standalone systems. Instead, they are embedded within hybrid service models that combine digital tools with human support. Civil society organisations, NGOs, and community-based actors play a crucial role in facilitating access to digital tools. They support users in navigating systems, overcoming language barriers, and building trust. This is consistent with evidence from co-creation research, where NGO involvement in rollout emerged as a precondition for both adoption and user trust, particularly in contexts where migrants feared data misuse or lacked confidence in state-administered platforms (MIICT et al., 2021).

In practice, digital solutions often reconfigure rather than replace human interaction. Digital platforms may streamline referral processes but continue to rely on caseworkers for contextual judgement; online resources tend to complement in-person counselling rather than substitute for it; and automated appointment systems still require human follow-up where language barriers or documentation gaps arise. This aligns with broader findings that hybrid models are essential for ensuring inclusion and accessibility, particularly for vulnerable groups (European Migration Network & OECD, 2022; Lysak & Hodgson, 2024).

At the same time, intermediaries themselves face significant constraints, including limited funding and technical capacity. The Prague Process documentation illustrates this concretely: staff trained on new digital systems frequently move departments, creating a near-constant retraining burden that erodes institutional digital capacity over time (Lysak & Hodgson, 2024). Similarly, REBUILD found that NGO partners expressed strong enthusiasm for digitalisation but consistently flagged a lack of both resources and end-user competencies as barriers to

sustainable implementation (MIICT et al., 2021). This creates a structural tension: the actors most critical for making digital solutions work in practice are often those with the least resources to support their implementation. The evidence suggests that addressing this tension requires not only tools designed for NGO capacity constraints, but sustained funding models that treat intermediary support as infrastructure rather than overhead. Interview evidence further supports a related structural argument: community- and refugee-led tools, where design, implementation, and governance are controlled by affected communities, tend to achieve stronger uptake and greater user ownership, precisely because they are not experienced as external interventions. This is a proposition the present study cannot test. None of the community- or refugee-led tools in the inventory has been formally evaluated, several record no usage or outcome data at all, and what evidence exists concerns reach rather than outcomes. The argument is therefore best read as a hypothesis reported consistently by practitioners rather than an established finding.

5.7. Synthesis: What shapes how digital solutions work in practice

Across the evidence, several cross-cutting insights emerge:

- 1) Implementation, not innovation, is the primary bottleneck. The challenge lies less in developing new tools than in integrating them into institutional, linguistic, and social contexts.
- 2) Institutional embedding determines sustainability. Long-term viability requires institutional ownership beyond project cycles, cross-actor coordination, and sustained funding that treats digital infrastructure as a public good rather than a project deliverable.
- 3) Fragmented ecosystems and competing logics limit systemic impact. Without coordination mechanisms and sustained resourcing for user-centred tools, useful solutions remain isolated rather than scaled.
- 4) Structural inequalities determine who can access and benefit. Digital divides, operating at the level of infrastructure, skills, and outcomes, systematically exclude those most in need.
- 5) Usefulness and trust jointly drive uptake. Solutions that address concrete needs and are perceived as safe are more likely to achieve meaningful engagement; either condition alone is insufficient.
- 6) Human mediation remains essential. The actors most critical for making digital solutions work in practice, intermediaries, NGOs, and community organisations, are often those with the least resources to do so, and must be treated as infrastructure, not overhead.

These findings suggest that digital solutions in migration governance are best understood not as standalone technologies, but as components of complex socio-technical systems, where outcomes are shaped by interactions between technology, institutions, and users, and where the conditions enabling meaningful use are as important as the tools themselves.

6. Analytical Assessment of Digital Solutions

This section moves from implementation dynamics to evaluative assessment, identifying where digital solutions in migration governance perform well, where they fall short, and what conditions shape the difference. Drawing on the structured inventory, literature review, and expert interviews, it assesses cross-cutting patterns across five analytical dimensions: technical and implementation conditions; effectiveness; sustainability, governance and scalability; risks and rights implications; and inclusion and accessibility. Together, these dimensions provide a structured basis for the findings and recommendations that follow.

6.1. Technical and implementation conditions

The inventory and interview evidence consistently point to technical and implementation conditions as a critical but underestimated determinant of outcomes. A central constraint is the uneven distribution of digital infrastructure and access. While many tools assume reliable internet connectivity, device access, and stable digital environments, these conditions are not consistently present across contexts. This is particularly evident in regions outside Europe, where limited connectivity, high data costs, and infrastructure gaps can significantly restrict usability. However, even in more advanced contexts, infrastructure alone does not guarantee effective implementation.

Closely related is the issue of institutional and human capacity. Interviews consistently highlight that public institutions and civil society organisations often lack the technical expertise, staffing, and financial resources required to develop, maintain, and effectively use digital tools. In practice, this can lead to underutilisation of existing systems or reliance on basic digital solutions, even where more advanced tools are available. Civil society actors, in particular, were described as being willing to adopt digital solutions but constrained by limited funding and capacity. Many of these constraints stem from the surrounding infrastructure and institutional environment rather than from the tools themselves. For example, weak connectivity, thin staffing, and unstable funding would hamper any digital service in these settings, not just migration tools. This distinction matters analytically, because the two types of constraint call for different responses: a better-designed application can fix a tool-level problem, but it cannot compensate for missing infrastructure or institutional capacity.

Implementation challenges are further compounded by fragmented systems and a lack of coordination. Many digital tools operate as standalone solutions rather than being integrated into existing administrative or service delivery systems. This creates inefficiencies, duplication of effort, and additional burdens for both users and institutions. In addition, digitalisation in migration governance reflects the uneven distribution of legal competence and resources across governance levels, a distribution that digitalisation has so far failed to bridge (Lebon, 2024).

The importance of integration into existing workflows emerges as a critical success factor. Tools that align with institutional processes and are embedded in existing systems are more likely to be used consistently. For example, digital tools that support referral mechanisms or service coordination tend to be effective when they complement existing practices rather than replace them entirely. The Digital Service Provider Directory provides a concrete example of this, as it builds on existing referral systems and enhances their functionality rather than introducing entirely new processes.

In contrast, tools that require users or institutions to adopt entirely new systems or workflows often face resistance and low uptake. Interview evidence suggests that even relatively simple digital innovations can fail if they are not aligned with existing practices or if they increase administrative burden. This highlights that technical feasibility alone is insufficient; usability and institutional fit are equally important.

Another important dimension is adaptation to local contexts. Digital solutions are often developed in one context, frequently in high-income countries, and then applied in different settings without sufficient localisation. This includes issues such as language, legal frameworks, and socio-cultural factors. The inventory itself reflects a strong geographic imbalance in where tools are developed versus where they are used, which can create mismatches between design and implementation environments.

Interview insights further emphasise that user-centred design must go beyond interface considerations and account for real-world conditions of use. For example, tools designed for migrants in transit need to prioritise speed, simplicity, and offline accessibility, whereas more complex platforms may be suitable in more stable contexts. In practice, tools with minimal friction, such as direct-access links, mobile-optimised content, or instant messaging, consistently outperformed more complex platforms in reaching users in dynamic or resource-constrained settings.

Finally, emerging technologies such as AI introduce additional implementation challenges. While they offer potential for automation and efficiency gains, their deployment requires high-quality data, robust infrastructure, and specialised expertise. In high-stakes areas such as asylum decision-making, AI tools pose particular risks: without reliable training data and meaningful human oversight, they may encode institutional biases, shift the burden of proof to the applicant, and produce outcomes that are difficult to contest (Kinchin & Mougouei, 2022). Interview evidence confirms that practitioners remain uncertain about how to implement such tools responsibly at scale.

Overall, the analysis shows that technical and implementation conditions are a critical but often underestimated determinant of success. Digital solutions are most effective when they are adapted to local contexts, supported by adequate infrastructure and capacity, and integrated into existing systems and workflows. Conversely, tools that are developed without consideration of these conditions risk remaining underutilised or failing to translate technical

potential into practical impact. These conditions are therefore not peripheral to the question of effectiveness; they are constitutive of it, a point the following subsection examines directly.

6.2. Effectiveness

Building on these conditions, the effectiveness of digital solutions in migration governance can be understood as highly contingent and context-dependent. Digital solutions in migration governance are primarily designed to address information gaps, improve administrative efficiency, and facilitate access to services. Across the inventory, the largest share of tools focuses on information provision, service navigation, and labour market matching. However, both the mapping and the broader evidence base indicate that effectiveness remains weakly evidenced and highly uneven.

A central finding is the lack of systematic evaluation. More than half of the tools in the inventory do not report any formal assessment, and where evidence exists, it relies predominantly on output indicators such as user numbers or geographic coverage rather than outcome-based measures. This is also reflected in the types of indicators reported across tools, which tend to prioritise easily measurable outputs over more complex outcomes such as employment integration or improved access to rights. This pattern is consistent with broader findings in the literature. The MIICT et al. (2021) whitepaper, for instance, notes that many ICT tools developed for migrant integration are abandoned when project funding ends, before their impact can be adequately assessed.

Where effectiveness is assessed, it is also conceptually ambiguous and actor-dependent. The European Commission (2026) frames effectiveness primarily in terms of system performance and procedural efficiency. In contrast, interviewees and other sources stress user-centred migrant-centred outcomes such as access to rights, autonomy, and trust. This divergence is critical: a tool that improves administrative processing times may not necessarily improve migrants' lived experiences or access to services. This distinction is particularly visible in tools related to migration management and control, where systems may be considered effective in terms of oversight or enforcement, while their implications for migrants remain insufficiently examined. Underlying this divergence is an unstated difference in purpose: tools oriented towards procedural efficiency tend to digitise the administrative status quo, whereas those oriented towards rights and empowerment imply a more transformative goal. This is the same distinction the study flags in its research questions and in Section 2, but here it becomes measurable: a tool cannot be meaningfully assessed for effectiveness until its purpose has been made explicit. Effectiveness against an efficiency goal is not the same as effectiveness against a transformation goal and conflating them produces false conclusions in both directions.

Interview evidence reinforces this tension. For instance, discussions on AI use in asylum systems suggest that while such tools are often introduced to address backlogs and improve efficiency, their actual performance raises concerns about fairness and reliability, leading to increasingly critical assessments over time. For example, AI-based tools piloted in asylum decision-making

contexts were initially seen as a way to streamline procedures, but in practice raised concerns regarding data quality, contextual interpretation, and the risk of biased or unreliable outputs. This highlights that perceived effectiveness at the design stage does not necessarily translate into effective or acceptable outcomes in practice.

As discussed in section 5.6, digital tools alone are rarely sufficient to achieve meaningful outcomes. Hybrid service models combining digital tools with in-person or intermediary support consistently emerge as a key enabler of effectiveness, particularly for vulnerable groups (European Migration Network & OECD, 2022).

At the same time, effectiveness is shaped by how migrants actually access and use information. Interview evidence suggests that many digital tools do not align with real-world information practices. For example, migrants often rely on informal networks or immediate-access formats, while more complex apps or platforms may remain underused despite their functionality. Interviewees specifically highlighted low-threshold tools such as QR codes or direct links as more effective in practice, as they provide immediate access without requiring extensive navigation. This points to a mismatch between design assumptions and user behaviour as a key limitation of effectiveness.

Tools that are closely aligned with user needs and embedded in existing service ecosystems tend to be more effective. For instance, relatively simple solutions that reduce information barriers, such as searchable service directories or direct-access tools, address concrete coordination challenges and can improve service delivery when integrated into referral systems. A concrete example is the Digital Service Provider Directory developed under the Better Migration Management programme (commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) and the EU, implemented by GIZ)⁵⁵, which allows users to identify relevant service providers by location, service type, and target group. By integrating into existing referral mechanisms and being accessible to both practitioners and migrants, such tools demonstrate how relatively simple digital solutions can generate tangible improvements in service delivery. By contrast, more complex tools, particularly those that require significant behavioural change or digital literacy, often experience lower uptake.

Finally, the literature highlights that effectiveness must be understood within broader socio-technical systems. As argued by Godin et al. (2025), digital tools do not operate in isolation but are embedded in governance structures, power relations, and institutional practices. As such, effectiveness depends not only on technical performance but also on how tools interact with existing systems, actors, and incentives.

Overall, the evidence suggests that the effectiveness of digital solutions in migration governance is highly contingent. While certain tools can improve access to information or administrative efficiency, their broader impact remains limited by weak evaluation practices,

⁵⁵ [giz2025-en-bmm-booklet.pdf](#)

divergent understandings of effectiveness, and misalignment with user needs and implementation contexts.

6.3. Risks and rights implications

While the previous sections focus on performance, implementation, and sustainability, digital solutions in migration governance also raise significant normative and legal concerns, particularly regarding fundamental rights, data protection, and accountability. Across the analysis, a central finding is that risks are widely acknowledged but insufficiently addressed in practice. Several of these concerns are genuinely specific to the migration context rather than generic digital risks. This includes the repurposing of service data for immigration enforcement, the use of automated systems in asylum and return decisions, the heightened consequences of error for people with precarious legal status, and the application of weaker data-protection standards to migrants than to other population groups. These are the risks on which a migration-focused analysis adds most value, and they are distinguished throughout from the more general data-protection and surveillance concerns that digital tools raise across all sectors.

A key tension lies between efficiency and rights protection. Many digital tools are introduced to improve administrative efficiency, streamline processes, or enhance coordination. However, these objectives may come at the expense of procedural fairness, transparency, and accountability. The literature highlights that digitalisation can shift decision-making processes in ways that are less visible and less contestable, particularly when automated or data-driven systems are used (Ozkul, 2023).

Concerns are especially pronounced regarding the use of automated decision-making and artificial intelligence. As noted in both the literature and interviews, AI-based tools in migration contexts, such as those supporting asylum decision-making or risk assessment, raise questions about data quality, bias, and explainability. In practice, these systems may rely on incomplete or biased datasets, leading to outcomes that are difficult to scrutinise or challenge (Beduschi, 2021; Ozkul, 2023). Interview evidence suggests that practitioners, specifically in development cooperation, are increasingly cautious about deploying such tools in high-stakes contexts, given the potential consequences for individuals' rights and legal status.

Another central issue is data protection and privacy. Migration governance often involves the collection and processing of highly sensitive personal data, including biometric information, legal status, and personal histories. While many digital tools recognise data protection as a potential risk, the inventory indicates that mitigation measures are frequently limited or insufficiently specified. This creates vulnerabilities in terms of data misuse, unauthorised access, or secondary use of data beyond the original purpose. The literature further emphasises that migrants may be particularly exposed to such risks due to power imbalances and limited ability to contest or control how their data is used (Beduschi, 2021; Lebon, 2024).

Related to this is the broader issue of surveillance and control. Digital tools can enhance the capacity of states to monitor, track, and regulate migration, sometimes in ways that extend beyond their original scope. While such capabilities may be justified in terms of governance or security objectives, they can also lead to the expansion of surveillance practices and the erosion of privacy rights. Importantly, these dynamics are not always transparent to users, contributing to a lack of informed consent and understanding.

A further dimension of rights risk operates at the legislative level, independently of how individual tools are designed or governed. Interview evidence points to a structural asymmetry in which data protection and privacy standards applicable to migrants in EU policy instruments may be weaker than those applying to other population groups, a gap that shapes the baseline conditions under which digital tools are built and governed. Related concerns were raised across the interviews about the extension of digital monitoring technologies, including geolocation tools and electronic monitoring instruments, from criminal law frameworks into migration contexts, often without independent rights-based evaluation prior to deployment. When such practices are legislatively authorised, they are difficult to challenge at the level of individual tools, making legislative scrutiny an essential but currently underused mechanism for rights protection in this field. For example, electronic monitoring of migrants subject to immigration control measures in the UK, included in the inventory, shows the mechanism at work: GPS tagging was imported from criminal justice into immigration control, the mitigation documented for it consists of the legal frameworks governing monitoring and contractual oversight, and it is rated highly sustainable precisely because it is institutionalised within the enforcement framework. Where the legislation is the safeguard, tool-level scrutiny has little to work with.

Related to this, the involvement of multiple actors, including governments, international organisations, private technology providers, and NGOs, can create complex accountability structures. In such contexts, it is often unclear who is responsible for decision-making, data management, or potential harms. The interviews and literature highlight that outsourcing digital infrastructure to private actors can further complicate accountability, particularly when proprietary systems limit transparency and oversight (Beduschi, 2021).

At the same time, risks are not evenly distributed across tools or user groups. Tools associated with migration management, border control, or decision-making tend to carry higher risks due to their direct impact on legal status and rights. By contrast, service-oriented tools, such as information platforms or service directories, generally pose lower direct risks, though they may still raise concerns about data protection and exclusion. This distinction underscores the need for differentiated approaches to risk assessment and governance.

Interview insights further highlight that risks are often understood in practice but not systematically addressed. Stakeholders frequently recognise issues such as data sensitivity, potential misuse, or unintended consequences, but lack clear guidelines, resources, or institutional frameworks to manage these risks effectively. This results in a gap between

awareness and implementation, where risks are acknowledged but not operationalised into concrete safeguards. Furthermore, less often named is the accuracy of the information itself. Where tools convey entitlements in asylum, housing, or fair-trial contexts, error carries direct consequences, for example, a deadline missed, or an entitlement unclaimed, and yet inventory entries record content that may fall out of date in fast-changing legal environments, volunteer-maintained guidance that may be inaccurate, and conversational systems liable to incomplete or generalised responses, typically without any documented mechanism for legal review or correction.

This opacity extends to the political economy of the field itself. The involvement of private sector actors in developing systems deployed under the branding of international organisations is, in the words of one expert, "opaque by design", making it structurally difficult to trace accountability, assess data flows, or evaluate whether rights safeguards were applied prior to deployment. A 2021 partnership between the World Food Programme and Palantir, where no human rights or data protection impact assessment was made publicly available before the arrangement became known, illustrates concretely what this opacity can enable in practice.

Importantly, the analysis suggests that digitalisation in migration governance should not be understood in binary terms as either enabling or constraining rights. Rather, digital tools simultaneously create new opportunities and new risks. For example, they may improve access to information and services for some users while increasing exposure to surveillance or exclusion for others. As such, their impact on rights depends on how they are designed, implemented, and governed.

Overall, the findings indicate that risks and rights implications are central to the assessment of digital solutions in migration governance but remain insufficiently integrated into their design and implementation. Addressing these challenges requires stronger safeguards, clearer accountability mechanisms, and a more systematic integration of rights-based approaches across the lifecycle of digital tools.

6.4. Inclusion and accessibility

Across all dimensions of the analysis, questions of inclusion and accessibility are central to understanding who benefits from digital solutions in migration governance and who remains excluded. While many tools are designed to improve access to information and services, they often rely on assumptions about users' digital access, literacy, and socio-economic conditions that do not hold universally.

A key challenge is the *digital divide*, which manifests across multiple dimensions, including access to devices, connectivity, digital literacy, and language. The literature consistently highlights that digital solutions risk reproducing or reinforcing existing inequalities if these factors are not explicitly addressed (Gebru & Vrăbiescu, 2026; Lysak & Hodgson, 2024; MIICT et al., 2021). In practice, migrants, particularly those in vulnerable situations, may face

compounded barriers, including limited financial resources, unstable access to technology, and restricted digital skills.

Interview evidence reinforces these findings, indicating that accessibility is often treated as a secondary consideration rather than a central design principle. While many tools are technically available, their usability is constrained by factors such as language limitations, complex interfaces, or high data requirements. In particular, tools developed in one context may not be easily transferable to others without substantial localisation, including translation, cultural adaptation, and alignment with local information ecosystems.

A further dimension of inclusion relates to how migrants access and use information in practice. As highlighted in interviews, many digital tools are designed as structured platforms or applications, while migrants often rely on informal networks, social media, or low-threshold access points. In this context, lower-barrier formats, including messaging apps, scannable codes, and offline-compatible content, proved better aligned with actual user behaviour, particularly for people in transit or with limited connectivity. This suggests that accessibility is not only a matter of technical design but also of aligning with real-world user behaviour.

A related concern identified in the interviews is the use of automated translation as the primary or sole channel for communication in legally consequential procedures such as asylum interviews or status determinations. While such tools formally extend language access, they can create a veneer of inclusion that masks substantive exclusion, particularly where the complexity, register, and legal precision of the communication exceed what automated systems can reliably render. This is not a general critique of automated translation; it is a migration-specific one. In legally consequential procedures such as asylum interviews, automated translation raises distinct rights concerns that general digital communication contexts do not, and should be treated as a migration-specific risk rather than a generic digital limitation.

At the same time, inclusion challenges are closely linked to broader structural inequalities, including those based on gender, age, and legal status. The distinction drawn in Section 6.1 applies here. The barriers are structural: differential access to devices and connectivity, gaps in digital skills, and constraints on mobility and safety arise from conditions no single tool creates or can remove. The response to them, however, is a matter of design, and that is where the analysis finds the clearest shortfall. Most tools do nothing on gender by design rather than by oversight, and the minority that register it treat gender as a data field rather than as a barrier to be addressed. The few that design for a gendered constraint, such as the HERA app's focus on maternal and reproductive healthcare, show that the gap reflects a choice rather than a limit of the technology. That the choice is so rarely made points in turn to the institutional level, where gender-responsive design is seldom a condition of funding or procurement. Similar patterns emerge for other groups, including older migrants or individuals with lower levels of education, who may be less able to engage with digital systems (Matlin et al., 2025).

Importantly, digital solutions can also contribute to new forms of exclusion. As services and information are increasingly digitalised, individuals who are unable to access or use digital tools risk being excluded from essential services, administrative processes, or legal procedures. In some cases, this can have significant consequences, including reduced access to protection mechanisms or difficulties in navigating migration processes. This highlights that digital inclusion is not merely an added benefit but a prerequisite for equitable access to rights and services.

At the same time, the analysis suggests that digital tools can enhance inclusion when designed and implemented appropriately. Tools that prioritise simplicity, multilingual access, and low data requirements, or that are combined with offline support and community-based outreach, are more likely to reach diverse user groups. In this regard, hybrid approaches that combine digital tools with human support are particularly important for ensuring accessibility and inclusion.

Finally, inclusion must be understood as an ongoing process rather than a one-time design feature. Effective inclusion requires continuous adaptation, user feedback, and monitoring to ensure that tools remain accessible as contexts and user needs evolve. However, as highlighted in earlier sections, the lack of systematic evaluation and user engagement limits the extent to which such feedback mechanisms are currently in place.

Overall, the findings indicate that inclusion and accessibility remain critical but insufficiently addressed dimensions of digital solutions in migration governance. Without deliberate efforts to account for diverse user needs and structural inequalities, digitalisation risks reinforcing existing disparities. Conversely, when designed with inclusion in mind, digital tools have the potential to improve access to information, services, and rights for a broader range of users.

6.5. Sustainability, governance, and scalability

Beyond effectiveness, a key question is whether digital solutions can be sustained and scaled over time. Digital solutions in migration governance vary significantly in their degree of sustainability, with important differences across types of actors, funding models, and governance arrangements. In the inventory, sustainability is assessed primarily on institutional anchoring and funding basis. This means that tools embedded in a standing institution with core or statutory funding are rated high; those with an organisational home but dependent on renewable grants or donations, medium; and those without an institutional owner, or operating within a pilot cycle, low. While the inventory suggests that a substantial share of tools can be classified as having medium to high sustainability, this is largely driven by government-led systems and platforms operated by international organisations. By contrast, many tools developed by civil society organisations, research institutions, or pilot projects face structural challenges in achieving long-term viability.

A central issue is the dependence on short-term, project-based funding. A considerable number of tools identified in the inventory originate from donor-funded innovation programmes, particularly EU-funded initiatives, many of which have been discontinued after their funding cycles ended. This reflects a broader structural challenge in the digital migration landscape, where innovation is incentivised, but long-term maintenance, ownership, and scaling are not systematically planned. MIICT et al. (2021) similarly highlight the lack of evidence on what happens to digital tools after pilot phases, underscoring a gap in understanding their sustainability and long-term impact. As one expert put it plainly, the pattern is familiar to anyone who has worked in this space for a sustained period: tools emerge, attract attention, and then "within six months fall apart", not because the underlying need disappeared, but because there was never a credible plan for maintenance, localisation, or institutional handover.

This funding model is closely linked to governance structures, which play a decisive role in determining whether digital solutions are sustained or discontinued. Tools that are embedded within institutional frameworks, such as government systems or platforms operated by international organisations, benefit from stable mandates, dedicated resources, and clearer ownership structures. In contrast, tools developed by smaller organisations often lack institutional anchoring, making them vulnerable to funding interruptions and organisational changes.

At the same time, the analysis reveals a "co-creation gap" in governance. While participatory and user-centred design is widely recognised as a key success factor, in practice, migrants are rarely involved in decision-making or governance structures of digital tools (MIICT et al., 2021). This limits responsiveness to user needs and can undermine both uptake and long-term relevance. Interview insights further suggest that meaningful co-creation is difficult to implement, particularly due to resource constraints, language barriers, and challenges in reaching diverse user groups.

Institutional capacity and political buy-in further shape sustainability. Interviews highlight that, even when digital solutions are available, adoption within public institutions can be slow due to bureaucratic resistance, a lack of digital skills, and fragmented organisational structures. In some contexts, digital tools remain underutilised because they are not integrated into existing workflows or because staff lack the capacity to use them effectively. Conversely, strong political support and dedicated digitalisation strategies are identified as critical enablers of sustainability.

The importance of integration and interoperability emerges as a consistent theme across both literature and interviews. Sustainability and scalability are further constrained when digital solutions operate in isolation, as they fail to connect with broader governance systems. The European Commission (2026) emphasises interoperability as a key requirement for effective digital migration governance, particularly in complex multi-level systems. Similarly, a Global Forum on Migration and Development (2025) roundtable on new technologies and

digitalisation discussed the need for common standards and coordination across actors to avoid fragmentation and duplication of efforts.

As raised consistently in interviews, new legislative developments can generate precisely this kind of large-scale, interconnected digital architecture without adequate prior assessment of governance implications. Proposals to digitalise case management in return and reintegration processes, for instance, risk creating new data linkages across systems, raising unresolved questions about purpose limitation, data sovereignty, and cumulative rights impacts, particularly for migrants with irregular status who have the least capacity to contest such arrangements.

Expert evidence reinforces the concern that even the EU AI Act, which classifies border technologies as high-risk, falls short in practice due to its national security carve-outs, which create a broad derogation covering the majority of border management applications. As one legal expert observed, "when you have a carve-out for national security, basically it creates a derogation and lo and behold, the majority of border issues are national security issues." The consequence is not only a gap in protection, but a weakening of the Act's potential to set a global precedent for other jurisdictions.

Concrete examples illustrate these dynamics. Tools such as Integreat or Re:Match (identified in the inventory) demonstrate relatively high sustainability, driven by strong institutional partnerships and integration into local governance systems. By contrast, several EU-funded Horizon 2020 projects, including NADINE, MICADO, WELCOME, and EASYRIGHTS, were discontinued once funding ended. While section 5.3 discusses these cases in terms of ecosystem fragmentation, the sustainability lens reveals a distinct dimension: discontinuation was not only a coordination failure but a governance failure, reflecting the absence of institutional ownership strategies from the outset (MIICT et al., 2021).

Sustainability is also closely linked to trust and legitimacy. The literature highlights a persistent "trust deficit": migrants may be reluctant to engage with digital tools due to concerns about data misuse or surveillance, while institutions may be cautious about adopting new technologies due to legal and ethical risks (MIICT et al., 2021). Without trust from both users and implementing actors, even technically robust solutions may fail to achieve sustained use.

Finally, scalability remains constrained by both structural and contextual factors. While some tools demonstrate potential for replication across contexts, scaling often requires adaptation to local legal frameworks, languages, and institutional environments. Interview evidence suggests that solutions that work well in one context cannot simply be transferred to another without significant modification, particularly in regions with different infrastructure levels or governance capacities.

Overall, the evidence suggests that the sustainability and scalability of digital solutions in migration governance are highly contingent on funding models, governance arrangements, and

institutional integration. Tools that are embedded in existing systems, supported by stable funding, and developed through multi-stakeholder collaboration are more likely to endure.

7.Evidence Gaps

The preceding sections identify a range of findings on the effectiveness, implementation, sustainability, risks, and inclusion dimensions of digital solutions in migration governance. Across all five dimensions, however, the analysis also reveals persistent gaps in the available evidence; gaps that limit the conclusions that can be drawn and that point to priorities for future research and evaluation. Table 3 provides a structured overview of these evidence gaps, organised by analytical dimension and type of gap.

Table 3: Evidence gap matrix

Analytical dimension	Core evidence gap	Where most evident (illustrative)	Nature of the gap	Key implication
Effectiveness	Lack of outcome-based evidence: existing evaluations mostly focus on outputs (e.g. number of users, downloads) rather than actual effects on migrants' access to services, decision-making, or socio-economic outcomes.	Particularly visible in information and service navigation tools, but also across most solution types	Evidence gap (data exists, but does not measure real impact)	Without outcome-level evidence, it is not possible to assess whether digital solutions actually improve migrants' lives or governance systems
Effectiveness	No shared understanding of what "effectiveness" means: state actors prioritise efficiency and control, while migrant-centred approaches emphasise access, usability, and empowerment.	Across all types of digital solutions	Conceptual gap (different actors use different definitions)	Limits comparability across tools and makes it difficult to draw generalisable conclusions or policy lessons
Sustainability & governance	Lack of long-term evidence: most tools are evaluated, if at all, only during pilot or early implementation phases, with little insight into what happens after project funding ends.	Especially donor-funded and pilot-based solutions across categories	Evidence gap (missing longitudinal data)	High risk that tools are discontinued, underused, or fail to scale without this being systematically documented
Sustainability & governance	Limited evidence on institutional embedding: unclear how and under what conditions digital tools become integrated into government systems and sustained over time.	Platforms, referral systems, and coordination tools	Governance gap (insufficient understanding of institutional processes)	Without understanding institutional uptake, successful tools cannot be scaled or replicated effectively
Sustainability & governance	Limited evidence on cross-sector cooperation and financing models: little is known	Particularly relevant for tools with mixed funding	Governance/structural gap (insufficient comparative)	Without understanding which partnership and financing models work, development

	about which institutional arrangements (public-private partnerships, CSO-embedded models, diaspora-led tools) produce more sustainable outcomes and under what conditions.	(philanthropy + government + private sector)	analysis of financing arrangements)	cooperation actors cannot make informed decisions about how to structure and resource digital initiatives.
Technical & implementation	Limited evidence on integration and interoperability: little systematic analysis of how digital tools interact with existing systems, data infrastructures, and workflows	Data platforms, case management systems, referral tools	Implementation gap (focus on tool design rather than system integration)	Tools often remain isolated or duplicative, reducing their overall effectiveness and efficiency
Risks & rights	Limited empirical evidence on rights impacts: while risks (e.g. privacy violations, bias, surveillance) are widely discussed, there is little systematic evidence of how these materialise in practice	Particularly in AI systems, biometric systems, and large-scale data infrastructures	Evaluation gap (risks identified but not empirically tested)	Makes it difficult to assess the severity of risks or prioritise appropriate safeguards
Risks & rights	Weak analysis of legislative embedding: little evidence on how EU migration legislation shapes the data governance baseline for digital tools in practice, including the extension of monitoring technologies from criminal law frameworks into migration contexts without independent rights-based evaluation.	Particularly in EU-funded and government-led tools operating under new Pact-related legislation, also relevant for return and reintegration digital systems	Structural gap (rights risks are set upstream, at the legislative level, before any individual tool is designed or evaluated)	Addressing rights risks at the tool level alone is insufficient if the legislative framework authorises weaker standards for migrants; legislative scrutiny is an essential but currently underused mechanism for rights protection
Risks & rights	Lack of evidence on effectiveness of safeguards: mechanisms such as data protection assessments, monitoring systems, or ethical	Across government-led and data-intensive systems	Governance gap (lack of accountability evidence)	It remains unclear whether existing safeguards meaningfully protect migrants' rights in practice

	guidelines are rarely evaluated in terms of their actual impact				
Inclusion & accessibility	Limited disaggregated evidence: insufficient data on how digital solutions affect different groups (e.g. by gender, age, digital literacy, legal status)	Across most migrant-facing tools	Evidence gap (lack of differentiated data)		Risks of exclusion or unequal access remain poorly understood and may be underestimated
Inclusion & accessibility	Weak understanding of the digital divide: limited evidence on how access to devices, connectivity, language, and digital skills shapes actual use of digital tools	Particularly in low-resource contexts and among vulnerable populations	Structural gap (linked to broader socio-economic inequalities)		Digital solutions may unintentionally exclude those most in need, undermining their intended benefits
Cross-cutting (use & behaviour)	Limited understanding of user behaviour: little evidence on how migrants interact with digital tools in practice, including trust, preferences, and reliance on informal information channels	Especially information tools and service apps	Behavioural gap (lack of user-centred research)		Tools may be poorly aligned with real needs, reducing uptake and effectiveness
Cross-cutting (use & behaviour)	Structural barrier to studying actual migrant app use: because personal data is, in the best cases, appropriately protected, it is structurally difficult to obtain reliable data on how migrants actually use digital tools in practice, as opposed to stated preferences or aggregate download statistics.	Across all migrant-facing tools, particularly those handling sensitive personal data	Methodological gap (data protection constraints limit research access)		Research on real-world digital tool use requires methodologies that can work within data protection constraints, such as ethnographic, participatory, and co-design approaches, rather than relying on administrative data.
Cross-cutting (system-level)	Fragmented evidence across the ecosystem: studies tend to focus on individual tools rather than how different systems interact within broader migration governance structures	Across the entire digital solution landscape	System-level gap (lack of holistic analysis)		Limits understanding of cumulative effects, coordination challenges, and opportunities for system-wide improvements

8. Conclusion

The analysis presented in this report confirms that digital solutions have become a defining feature of migration governance, shaping how states manage borders, how organisations deliver services, and how migrants access information and support. Across the inventory, literature, and expert interviews, a consistent picture emerges: digitalisation in this field is advancing rapidly, but the evidence base needed to assess whether it is advancing responsibly remains thin.

Before turning to the principles and recommendations that follow, it is worth naming a tension that runs beneath the entire analysis but is rarely stated plainly. Development cooperation actors operate simultaneously as implementers of tools designed to help migrants and as advisors to the very governments whose migration control priorities can conflict with those tools' protective goals. Digital solutions funded or promoted by development cooperation actors can end up reinforcing state surveillance and control rather than migrant agency, either through direct use, data-sharing arrangements, or the legitimacy lent by association with trusted international actors. This tension does not disqualify engagement; it makes clarity of purpose a non-negotiable starting condition. Every actor in this field should be able to answer: is this tool designed to improve the lives of migrants, or to improve the management of migration? The answer shapes everything that follows. The findings do not support a binary verdict. Digital tools are neither inherently enabling nor inherently harmful. Their impact depends on how they are designed, by whom, for whose purposes, and within which institutional and legislative frameworks. What the evidence does support is a clear conclusion: the current landscape is characterised by a structural imbalance between technological ambition and rights protection, one that development cooperation actors are both positioned and obligated to help correct.

What the evidence makes clear is that this imbalance is not primarily a technical problem — it is a normative one. The field lacks a shared baseline of what responsible digital engagement in migration governance requires, and the gap between technological ambition and rights protection will not close through better tools alone. The following core principles are proposed to address this deficit, offering a common reference point for all actors involved in the design, funding, implementation, and evaluation of digital solutions in migration governance. They draw on the UN Principles on Personal Data Protection and Privacy (2018), the UN Secretary-General's Roadmap for Digital Cooperation (2020), and the data governance commitments of the Global Compact for Safe, Orderly and Regular Migration (GCM Objective 17), and the [Principles for Digital Development](#), noting that the principles below overlap substantially with those frameworks. Where existing principles apply directly to the migration context, this report adapts rather than reinvents them, in line with the recommendation that practitioners reuse established frameworks where possible.

Principle 1: Do no digital harm

Digital solutions must not be deployed where they risk causing direct harm to migrants' legal status, physical safety, or fundamental rights. This applies especially to automated decision-making systems in high-stakes contexts such as asylum determination, risk profiling, or return decisions. Before deployment, a rights-based impact assessment should be a minimum requirement, not an optional step.

Principle 2: Purpose limitation and data minimisation

Data collected through digital tools must be used only for the purpose for which it was gathered. The collection should be limited to what is strictly necessary. This principle, grounded in the UN data protection framework, is particularly critical in migration contexts, where data collected for service delivery can be repurposed for enforcement, often without migrants' knowledge or meaningful consent.

Principle 3: Transparency and explainability

Migrants and other users must be able to understand how the digital systems that affect them work, what data is collected and processed, and how decisions are made. Where automated systems are used, they must be explainable in plain language. Opaque or proprietary systems that prevent external scrutiny are incompatible with this principle.

Principle 4: Accountability across the full implementation chain

Responsibility for digital tools must be clearly assigned and publicly documented, including where implementation is outsourced to private technology providers or delivered through multi-actor partnerships. Accountability gaps must be treated as governance failures, not as inevitable features of the landscape.

Principle 5: User-centred (migrant-centred) and inclusive by design

Digital solutions must actively account for the diversity of their intended users. This reflects a user-centred, and in this context, a migrant-centred design orientation: tools should be built around the actual needs, behaviours, and constraints of the migrants who use them, not around administrative or technical convenience. Design processes should involve migrants, particularly those from vulnerable or marginalised groups, and should address barriers related to language, digital literacy, connectivity, gender, age, and legal status. Tools that exclude those most in need fail their core purpose regardless of their technical sophistication.

Principle 6: Sustainability and institutional ownership

Development actors should not fund or implement digital tools without credible plans for long-term maintenance, institutional embedding, and user support. Pilot-only models that generate evidence of effectiveness but leave no durable infrastructure are a misuse of resources and a source of mistrust among intended beneficiaries.

Principle 7: Independent evaluation over the full lifecycle

Digital solutions must be subject to independent, outcome-focused evaluation, not only during implementation but after project closure. Evaluations should measure real impact on migrants' lives and rights, not only outputs such as download counts or platform uptake. Evidence generated must be publicly accessible to enable learning across the sector.

These principles are not exhaustive, and they do not replace existing human rights law or data protection frameworks. They are intended as an operational complement, a shared reference point that development cooperation actors, implementing partners, technology providers, and policy makers can use to assess, design, and govern digital solutions in a way that centres the rights and dignity of migrants. The recommendations in the following section translate these principles into concrete actions.

9.Strategic Implications and Recommendations

The following recommendations are addressed to the actors best placed to act on the findings of this study. They are organised by actor rather than theme, reflecting the insight that the field's challenges are primarily institutional. Recommendations are divided into two main groups: first, development cooperation actors (including GIZ), whose specific mandate, funding leverage, and cross-cutting relationships position them to drive sector-wide change; and second, other actors, including governments, international organisations, civil society organisations, NGOs, and private technology providers, each of which has a distinct role and

responsibility in the digital solutions landscape. Multistakeholder recommendations are addressed at the end. Each recommendation is grounded in the analytical findings and evidence gaps identified in the preceding sections, and is framed around the core principles set out in Section 8.

9.1. Development cooperation actors (incl. GIZ)

Condition funding on rights-based impact assessment and outcome-focused evaluation.

Prior to funding any digital tool, development cooperation actors should require a structured assessment of its rights implications, covering data protection, surveillance risks, exclusion dynamics, and potential for discriminatory outcomes. This applies with particular force to tools operating in high-stakes contexts such as asylum, return, and registration. Beyond design, monitoring and evaluation frameworks must shift from output indicators (user numbers, platform uptake) to outcome measures that capture actual effects on migrants' lives and rights. Independent evaluations should be publicly accessible as a standard deliverable, contributing to the shared knowledge base that the sector currently lacks.

Require clarity of purpose before funding.

Development cooperation actors should require all project applications to articulate, at the proposal stage, whether a digital solution is designed to transform migration governance in a rights-protective direction or to digitise existing administrative processes. This distinction, between transformation and digitisation, is rarely made explicit in project proposals, yet it determines the evaluative criteria that should apply. Tools designed to digitise the status quo should be assessed against efficiency and service-quality standards, but must also undergo a basic human rights and data protection assessment. Tools claiming transformative goals must be assessed against both efficiency and enhanced rights and inclusion outcomes. Funding decisions should reflect this distinction. A practical starting point: before any new tool is considered, a problem analysis should be conducted to identify the specific barriers migrants face and whether existing solutions could be adapted or reused rather than being built anew.

Fund for sustainability and invest in intermediary capacity.

The current dominance of short-term, project-based funding cycles is a structural driver of the sustainability gap documented across the inventory. Development cooperation actors should require credible long-term maintenance plans, institutional handover strategies, and transition financing as standard funding conditions, not afterthoughts. Equally, the critical role of civil society and NGO intermediaries in bridging digital tools to the migrants they serve must be recognised and resourced. Intermediary support is not programme overhead; it is core implementation infrastructure. Civil society organisations function as the primary point of contact between digital tools and the migrants those tools are designed to serve and are often the first to document where and how tools cause harm. Treating their capacity as a programme

cost rather than a structural necessity reflects a failure of the funding model that development cooperation actors are particularly well placed to address.

Make gender-responsive design a funding condition, not an optional feature.

The inventory documents that 80% of tools generally ignore gender aspects by design, not through oversight, but because gender-responsive approaches are not required. Development cooperation actors should mandate gender-responsive design as a standard eligibility criterion: funding applicants must demonstrate how the tool accounts for gender differences in access, use, and risk. This includes requiring gender-disaggregated monitoring data, ensuring that those who face gendered barriers such as women and girls, and LGBTQI+ migrants are represented in co-design and pilot processes, and explicitly flagging where tools may reinforce rather than reduce those barriers. The goal is not gender sensitivity as add-on documentation, but as a design condition that shapes the tool from the outset.

Map the institutional landscape before seeking government uptake.

When advising partner governments on digitalisation, development cooperation actors should invest in understanding the institutional landscape before engagement, identifying which ministries or agencies have mandates aligned with rights-based digital tools and are therefore natural allies, and which have competing interests that make resistance likely. The findings of this report show that government uptake of digital tools is shaped less by technical readiness than by institutional interests and internal power dynamics. Treating all government interlocutors as undifferentiated stakeholders, or interpreting resistance as mere technical conservatism, leads to wasted effort and poorly targeted advocacy. A practical starting point is stakeholder mapping at the outset of any advisory engagement: who stands to benefit from this tool's adoption, who loses control or resources, and who has the convening authority to drive institutional change. This mapping should inform not only outreach strategies but also the design of tools themselves; solutions that can be adopted incrementally by a willing sub-unit of government are more likely to gain traction than those requiring system-wide institutional reform from the outset.

Actively rebalance the geographical bias in tool design and evidence generation.

The inventory reveals that more than half of all tools are developed in Europe, with only 17 out of 100 specifically deployed in low- and middle-income countries, a distribution that does not reflect where the world's migrants and displaced populations live. Development cooperation actors should prioritise funding for locally developed solutions, require genuine localisation strategies for tools transferred across contexts, and invest in building digital design and evaluation capacity in underrepresented regions.

9.2. Governments

Establish clear accountability frameworks for digitally assisted decisions and close outsourcing gaps.

Where digital or AI-based tools inform decisions affecting migrants' legal status, including asylum determination, risk profiling, or return decisions, governments must ensure that individuals can access human review, receive a meaningful explanation of the decision basis, and exercise effective appeal rights. Accountability cannot be transferred to private providers through outsourcing arrangements: governments remain responsible for the systems they procure, operate, and use. This requires not only legal clarity but institutional capacity to audit and oversee digital systems throughout their lifecycle.

Invest in interoperability across institutional silos and guarantee hybrid service delivery.

Migration governance typically spans multiple ministries, agencies, and levels of government, yet digital systems are frequently developed in isolation, producing duplication, data inconsistencies, and service gaps. Governments should invest in shared standards and coordination infrastructure that enables interoperability across institutional boundaries. At the same time, purely digital service delivery must not become the default: in-person and assisted service alternatives should be maintained as a legal obligation, not a transitional arrangement, recognising that those most in need are often those least able to navigate digital systems alone.

Address rights risks at the legislative level, not only the tool level.

A structural finding of this study is that significant rights risks are set at the legislative level before individual tools are designed or evaluated, including the extension of digital monitoring technologies from criminal law frameworks into migration contexts, and the application of weaker data protection standards to migrants than to other population groups. Governments, and in particular EU member states, should ensure that these upstream conditions are subject to independent rights-based review. This means assessing the digital implications of new legislative instruments, including provisions on return and reintegration case management, digital monitoring, and system interoperability, before adoption, not retrospectively. Rights-based digital governance must begin at the policy design stage, not only at the point of tool deployment or evaluation.

9.3. International organisations

Develop and promote sector-wide evaluation standards and invest in shared knowledge infrastructure.

The absence of common frameworks for outcome-based evaluation is one of the most persistent structural gaps in this field, and one that no individual actor can close alone. International organisations are best placed to develop shared standards, make adoption a

condition of programmatic partnership, and maintain publicly accessible repositories of evaluation evidence, tool documentation, and lessons learned. This knowledge infrastructure should be designed to be updatable and tied to specific implementation contexts, moving beyond one-off reports toward a living evidence base.

Commission an independent rights-based review of legislative frameworks governing digital tools.

The European Commission and relevant oversight bodies should commission and publish systematic, independent assessments of how EU migration legislation shapes the data governance conditions under which digital tools operate, including Pact-related instruments. This review function must precede deployment, not follow it. International organisations more broadly should use their standard-setting and convening roles to push for equivalent scrutiny in non-EU contexts, where oversight mechanisms are often weaker still.

Strengthen migrant agency in tool governance and co-design.

The near-total absence of migrant involvement in the governance of tools designed for them, documented consistently across the inventory, is inconsistent with Global Compact for Migration commitments on migrant leadership and agency. International organisations should require and resource meaningful, user-centred co-design and participatory governance processes as a condition of programme support, and develop practical guidance for implementing partners on how to operationalise them across different contexts.

Address the power asymmetries in technology transfer.

The geographic imbalance in tool development, more than half of all tools in the inventory are built in Europe, combined with the frequent transfer of these tools to low- and middle-income country contexts without meaningful localisation, raises structural questions of power and ownership that go beyond technical adaptation. International organisations should develop guidance on responsible technology transfer: this includes requiring that tools transferred across geographic contexts undergo genuine co-adaptation with local stakeholders (not post-hoc translation), that intellectual property arrangements allow local actors to modify and maintain tools independently, and that evaluation evidence generated in high-income country contexts is not uncritically applied to determine suitability elsewhere.

9.4. Civil society organisations and NGOs

Document and invest in hybrid models as a distinct solution type.

Across the evidence, hybrid models, combining digital tools with human intermediation, including community organisations, diaspora networks, and NGO caseworkers, outperform purely digital approaches in reaching the most vulnerable migrants. Yet they remain the least systematically funded and documented solution type. Civil society organisations should take the lead in documenting the success factors of hybrid models: which combinations of digital

and human support work in which contexts, at what cost, and with what sustainability implications. Diaspora-led hybrid models deserve particular attention as an underexplored category with demonstrated advantages in uptake. This evidence should be packaged for development cooperation funders to make a concrete case for hybrid infrastructure investment.

Lead on co-design, build disaggregated evidence, and invest in monitoring capacity.

Civil society organisations are best placed to reach the groups most consistently excluded from digital tool design: women, older migrants, those with low digital literacy, and those in irregular legal situations. Co-design with these groups should be embedded as the operational core of user-centred design, with dedicated resources, rather than treated as an optional consultation. At the same time, civil society is often the first to identify where digital tools produce rights harms in practice, but frequently lacks the technical and financial resources for systematic documentation. Investment in this kind of evidence-building, including practitioner-led and advocacy-informed mapping, should be recognised by funders as a core contribution to the sector's knowledge base, complementing institutional research and surfacing risks that formal evaluations may miss.

Advocate explicitly at the legislative level.

Civil society advocacy in this field has largely focused on individual tools and implementation practices. Given the structural finding that the most significant rights risks are often set upstream, in the legislative and regulatory frameworks that authorise digital tools, advocacy must extend to this level. This includes engaging in legislative scrutiny processes, producing rights-based analysis of proposed instruments, and building coalitions across civil society, academia, and oversight bodies to make legislative-level accountability a norm rather than an exception.

9.5. Private technology providers

Ensure auditability and apply purpose limitation and data minimisation by design.

Proprietary systems used in migration governance, particularly those informing decisions about individuals' legal status, must be auditable by independent parties. Opacity is not a legitimate commercial right when systems affect fundamental rights; it is a governance failure. Equally, purpose limitation and data minimisation must be built into the technical architecture from the outset, not managed solely through contractual clauses. Systems should be designed so that secondary use of data is technically constrained, not merely prohibited on paper.

Engage in participatory, migrant-centred design.

Private technology providers should ensure that migrants and other intended end-users are meaningfully involved in the design, testing and iteration of digital tools, particularly where these affect access to services, legal status or rights. This includes co-defining problems,

validating assumptions about user needs and capabilities, and testing interfaces in real-world conditions (e.g., low connectivity, multiple languages, low digital literacy). Such participation is not an optional “good practice” but a core requirement for effectiveness, sustainability and rights-compliant design.

Engage in responsible disclosure and proactive accountability.

Private providers operating in migration governance contexts should establish clear internal mechanisms to identify, report, and respond to data breaches, algorithmic failures, and unintended uses of their systems. Disclosure to implementing organisations, users, and relevant oversight bodies should be mandatory and timely. More broadly, private actors should recognise that operating in contexts involving vulnerable populations and high-stakes decisions carries heightened due diligence obligations and should invest accordingly in ethics review, bias testing, and ongoing monitoring throughout the tool lifecycle. This due diligence should include participatory design and testing with affected communities, not only internal ethics review and bias testing.

9.6. Multistakeholder cooperation

Several of the challenges identified in this study, fragmented ecosystems, weak evaluation culture, and the structural absence of migrant voice, cannot be addressed by any single actor. A coordinated response is needed. Development cooperation actors, given their cross-cutting relationships with governments, implementing partners, and technology providers, are best placed to convene that response and to use funding conditions as a lever for sector-wide change.

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