Technology at the Borders: Surveillance, Control and Resistance in EU Migration Governance

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The use of technology in migration and asylum processes is becoming increasingly common in European countries. European Union states apply and test new technologies to control their borders and identify people entering their lands. With recent increases in migration to the European Union, many states are introducing technological applications in areas such as border security, decision making and data analysis to make "migration management" more "effective." These applications range from Big Data analyses used to predict population movements in the Mediterranean, to automatic decision-making systems in migration applications, to lie detectors supported by artificial intelligence (AI), to risk-assessment tools.

Introduction

The use of technology in migration and asylum processes is becoming increasingly common in European countries. European Union states apply and test new technologies to control their borders and identify people entering their lands.[1] With recent increases in migration to the European Union, many states are introducing technological applications in areas such as border security, decision making and data analysis to make "migration management"[2] more "effective."[3] These applications range from Big Data analyses used to predict population movements in the Mediterranean, to automatic decision-making systems in migration applications, to lie detectors supported by artificial intelligence (AI), to risk-assessment tools.[4]

The increasing impact of technology on migration governance is a growing concern in the realm of migration studies.[5] On the one hand, the adoption of information technology by countries has become a response to growing technological and cybersecurity threats.[6] On the other, the securitization of migration by states has led to the use of technology as a tool for migration management, which ultimately aims to filter and prevent border crossing by migrants[7] deemed undesirable. Scholars have criticized border surveillance technology for its impact on migrants on the move, given its ability to cause physical,

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[1] Derya Ozkul, "Automating Immigration and Asylum: The Uses of New Technologies in Migration and Asylum Governance in Europe," report from the Refugee Studies Centre, University of Oxford, January 23, 2023.

[2] Although the concept of migration management is used in the paper, this paper approaches this term from a critical distance. What should be focused on here are questions such as: Who manages migration, why and for whose benefit? Is migration management desirable for migrants rather than for states? Migration management can be considered a desirable structure for migrants if it means a system that involves less violence and is based on human rights. For this reason, how this management is carried out is as important as migration management. The question of why migration should be managed can be addressed in the context of people moving in response to injustice, global inequalities and in an effort to escape from phenomena such as war. The need for states to manage migration is closely related to the fact that more and more people are turning to mobility to cope with problems such as poverty, war and displacement due to climate change. It is also a fact that states need to build walls with various technologies, including virtual borders, in line with their goals of protecting their sovereignty. As Wendy Brown puts it in her book *Walled States, Waning Sovereignty* (Princeton University Press, 2010, 24), "the weakening of state sovereignty, and more precisely, the detachment of sovereignty from the nation-state is generating much of the frenzy of nation-state wall building today."

[3] Petra Molnar, "Territorial and Digital Borders and Migrant Vulnerability Under a Pandemic Crisis," in *Migration and Pandemics: Spaces of Solidarity and Spaces of Exception*, ed. Anna Triandafyllidour (Springer, 2022), 45–64.

[4] Molnar, "Territorial and Digital Borders."

[5] Marie McAuliffe, "International Migration and Digital Technology: An Overview," in *Research Handbook on International Migration and Digital Technology*, ed. Marie McAuliffe (Edward Elgar Publishing, 2021), 1–13, https://doi.org/10.4337/9781839100611.00008.

[6] Lorna McGregor and Petra Molnar, "Digital Border Governance: A Human Rights Based Approach," Office of the United Nations High Commissioner for Human Rights and the University of Essex, September 18, 2023, accessed July 18, 2024, https://www.ohchr.org/en/documents/tools-and-resources/digital-border-governance-human-rights-based-approach.

[7] In this paper, the term "migrant" is used as a comprehensive umbrella term. The global governance of migration distinguishes between forced and voluntary migration, involving different governance systems and actors. However, this distinction is problematic because people migrate for various reasons, making mixed migration a more accurate representation. Forced and voluntary migration exist on a continuum, challenging the binary distinction. Furthermore, it is frequently challenging to precisely determine individuals' migration status, as their categorization may shift over time; an individual may initially be classified as a migrant and subsequently as a refugee. Consequently, these distinctions, although clear in theoretical frameworks, are fluid and variable in practical contexts.

psychological and social harm.[8] New technologies deployed at borders not only aim to prevent migrants from entering EU countries, but also focus on predicting the routes they will take and the risks they will face from the decision-making stage to the conclusion of their migration journey. This paper examines the integration of advanced surveillance technologies in the European Union, the multiple uses of technologies, and their impact on migrants and migration management. In doing so, the paper observes that states have used border surveillance technologies to control and dehumanize migrants and human smugglers,[9] while migrant solidarity networks use the technology for tactical interventions to bypass state-imposed border restrictions.

Border Governance and Technology

Globalization has put migration and security into focus. Regional conflicts, civil wars and ethnic tensions, especially in the post-Cold War period, have compelled many people to migrate.[10] States have considered these movements threats to their stability. After the September 11, 2001, attacks in New York City, public discourses began to associate migration with terrorism.[11] However, this relationship is not grounded in objective reality; it is a socially and politically constructed connection. Migrants have become symbols of wider fears, allowing states to justify measures such as increased border control and surveillance.[12]

The securitization of migration as a trend that needs to be stopped, controlled and prevented has prompted the innovation and introduction of "effective" new technologies in this field.[13] This situation is the upshot of a dynamic of cooperation and competition among different public and private actors[14]

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[8] Lena Karamanidou and Bernd Kasparek, "From Exception to Extra-Legal Normality: Pushbacks and Racist State Violence against People Crossing the Greek-Turkish Land Border," *State Crime Journal* 11 (2022): 12.

[9] Studies by Gabriella Sanchez show that "smugglers" or facilitators differ in organizational level and power. They differ in terms of official data, which shows that some smugglers are independent operators, often working on behalf of friends and family members or being migrants themselves trying to reach a target. Others take part in organized networks and make a living from it. As the term "smuggling" evolves, it is important to remember its contested nature. See Gabriella Sanchez, "Intersectionality and Migrant Smuggling Research," in *Research Handbook on Intersectionality*, ed. Mary Romero (Edward Elgar Publishing, 2023), 458–75; Gabriella Sanchez, "Rethinking Migrant Smuggling through Data," in *Routledge Handbook of Transnational Organized Crime*, eds. Felia Allum and Stan Gilmour (Routledge, 2021), 409–21; Gabriella Sanchez, "Portrait of a Human Smuggler: Race, Class, and Gender among Facilitators of Irregular Migration on the US–Mexico Border," in *Race, Criminal Justice, and Migration Control: Enforcing the Boundaries of Belonging*, eds. Mary Bosworth, Alpa Parmar and Yolanda Vázquez (Oxford University Press, 2018; online edition, Oxford Academic, 22 March 2018), https://doi.org/10.1093/oso/9780198814887.003.0003.

[10] William Walters, "Migration and Security," in *The Routledge Handbook of New Security Studies*, ed. Martin Shaw (Routledge, 2010), 217–28.

[11] Walters, "Migration and Security."

[12] Walters, "Migration and Security."

[13] Bruno Oliveira Martins and Maria Gabrielsen Jumbert, "EU Border Technologies and the Co-Production of Security 'Problems' and 'Solutions'," in *The Spiralling of the Securitisation of Migration in the European Union*, eds. Valeria Bello and Sarah Léon (Routledge, 2023), 104–21.

[14] Ruben Andersson, "Hardwiring the Frontier? The Politics of Security Technology in Europe's 'Fight Against Illegal Migration'," *Security Dialogue* 47, no. 1 (2016): 22–39.

involved in "border management."[15] The belief that the border is a barrier to one's enemies leads state and non-state actors to treat border security like warfare.[16] As such, borders are one of the areas where intense human rights violations are most evident. State and non-state actors turn the routes migrants take into objects of security policy using high-level surveillance mechanisms.[17] These policies affect the routes migrants can take, forcing them to rely on more difficult and dangerous paths,[18] and threatening their right to asylum.[19] Cross-country information- and intelligence-sharing programs enable the collection and sharing of large amounts of private data about people on the move. These systems can lead to discrimination and misidentification (for example, through facial recognition tools) due to biases in biometric data.[20]

Biometric technology processes and stores people's information, creating large databases.[21] It uses biometric features, such as fingerprints, retinal scans, facial and voice recognition, blood vessels and vein patterns, ear shapes and gait to verify a person's identity.[22] With biometric border mechanisms, human mobility is not only controlled, but also subject to risk assessment.[23] Thus, the intervention of the state into the private sphere increases dramatically.

Complex data-sharing and surveillance mechanisms also help the European Union to externalize[24] its border controls with greater accuracy, allowing it to monitor migrants on routes in third countries long

[15] Anthony Cooper and Chris Rumford, "Cosmopolitan Borders: Bordering as Connectivity," in *The Ashgate Research Companion to Cosmopolitanism*, eds. Maria Rovisco and Magdalena Nowicka (Routledge, 2016), 261–76; Polly Pallister-Wilkins, "Humanitarian Borderwork," in *Border Politics: Defining Spaces of Governance and Forms of Transgression*, eds. Cengiz Günay and Nina Witjes (Springer, 2017), 85–103, https://doi.org/10.1007/978-3-319-46855-6_6; Nick Vaughan-Williams, "Borderwork beyond Inside/Outside? Frontex, the Citizen–Detective and the War on Terror," *Space and Polity* 12.1 (2008): 63–79.

[16] Nazli Avdan and Christopher F. Gelpi, "Do Good Fences Make Good Neighbors? Border Barriers and the Transnational Flow of Terrorist Violence," *International Studies Quarterly* 61, no. 1 (March 2017): 14–27, https://doi.org/10.1093/isq/sqw042.

[17] Maribel Casas-Cortes, Sebastian Cobarrubias and John Pickles, "'Good Neighbours Make Good Fences': Seahorse Operations, Border Externalization and Extra-Territoriality," *European Urban and Regional Studies* 23, no. 3 (2016): 231–51.

[18] William Walters, "Border/Control," *European Journal of Social Theory* 9, no. 2 (May 2006): 187–203, https://doi.org/10.1177/1368431006063332.

[19] Amnesty International, "The Digital Border: Migration, Technology and Inequality," May 21, 2024, https://www.amnestyusa.org/reports/the-digital-border-migration-technology-and-inequality.

[20] Amnesty International, "Digital Border."

[21] Amnesty International, "Digital Border."

[22] Amnesty International, "Digital Border."

[23] Louise Amoore, "Biometric Borders: Governing Mobilities in the War on Terror," *Political Geography* 25, no. 3 (2006): 336–51.

[24] Externalization is a migration management strategy that includes measures taken across the border to prevent or deter the arrival of foreign nationals who do not have permission to enter the target countries in the Global North. This migration management strategy is increasingly gaining support from countries in the Global North. Although it is clear on maps today where physical borders begin and end, externalization policies have blurred this distinction. Externalization of borders refers to a series of processes in which certain decisions and consultations enable the state or states to expand their migration and border policies toward third countries at the regional and administrative level. With these policies, physical controls have expanded beyond regional borders. See Jeff Crisp, "What Is Externalization and Why Is It a Threat to Refugees?", Chatham House, March 5,

before they reach EU borders, and to categorize migrants and their movement paths using automated security assessments.[25] The alignment between EU border policies and the advanced capabilities of surveillance and biometric technologies underscores a much broader and more concerning narrative. Border technologies are no longer isolated tools to be used at checkpoint entries; they extend through space and time beyond the point of entry.[26]

The EU Context

The portrayal of migrants as a threat, the increase in border controls and the fact that migration has become a security discourse, dehumanizes migrants. After 9/11, EU countries followed increased security-oriented policies to protect EU borders from people they perceived as security threats.[27] In alignment with the EU Declaration on the Fight Against Terrorism,[28] these countries aimed to ensure the security of the borders in an integrated manner by sharing the data of persons whose biometric information is obtained across EU countries.[29] Although the General Data Protection Regulation (GDPR), an EU regulation on information privacy in the European Union and the European Economic Area, guarantees certain protections regarding the use of automated individual decision-making processes and the protection of personal data, and shows promise as a starting point for broader global standards in this area, it is not sufficient to protect the rights of migrants.[30] The protections provided by the GDPR — of which the European Union often boasts — apply to EU citizens only; migrants are excluded.[31]

The European Union's borders are enforced not only by barbed wire, various security actors and biometric surveillance bureaucracy, but also by violence. Although physical violence is quite common at the borders, it is not the only type of violence there.[32] Silencing the voices of migrants and human rights defenders, whose experiences and perspectives reveal the injustice that borders can create, are examples of epistemic violence.[33] For example, Croatia illegally deported an Afghan minor from the European Union by giving him an electric shock.[34] A report on this incident, based on medical documents, photographs of injuries and statements from the 16-year-old child migrant involved, was published by the Serbian Commissioner

2021, https://www.chathamhouse.org/2020/10/what-externalization-and-why-it-threat-refugees; and Casas-Cortes, Cobarrubias and Pickles, "'Good Neighbours Make Good Fences.'"

[25] Lena Karamanidou, "Surveillance Technologies at European Borders: Assessment on Evros," September 30, 2024, https://borderviolence.eu/reports/surveillance-technologies-at-european-borders-evros.

[26] Karamanidou, "Surveillance Technologies."

[27] Jef Huysmans, *The Politics of Insecurity: Fear, Migration and Asylum in the EU* (Routledge, 2006).

[28] European Council, Council of the European Union, "The EU's Response to Terrorism," accessed December 22, 2024, https://www.consilium.europa.eu/en/policies/fight-against-terrorism.

[29] Vaughan-Williams, "Borderwork beyond Inside/Outside?"

[30] Petra Molnar, "Technology on the Margins: AI and Global Migration Management from a Human Rights Perspective," *Cambridge International Law Journal* 8, no. 2 (2019): 305–30.

[31] Molnar, "Technology on the Margins."

[32] Thom Davies, Arshad Isakjee and Jelena Obradovic-Wochnik, "Epistemic Borderwork: Violent Pushbacks, Refugees, and the Politics of Knowledge at the EU Border," *Annals of the American Association of Geographers* 113, no. 1 (2023): 169–88.

[33] Davies, Isakjee and Obradovic-Wochnik, "Epistemic Borderwork."

[34] Davies, Isakjee and Obradovic-Wochnik, "Epistemic Borderwork."

for Refugees and Migration in September 2019; the Croatian Ministry of the Interior stated that the report was "not supported by facts" and "has no basis in reality."[35] Similarly, the Croatian state rejected a report published by Human Rights Watch based on multiple testimonies from pushback victims, and even video footage of an illegal pushing incident, because it did not provide "concrete evidence." As seen in these two examples, such epistemic violence invalidates the testimony and evidence of those directly affected, undermines their credibility and dismisses evidence of border violence.[36]

The technological advancements made in EU border governance enhance security functions by "efficiently" monitoring border movements and migration journeys, and identifying potential security threats.[37] They also raise concerns about their impact on human rights, in particular the privacy and fundamental rights of migrants.[38] Data, technology and AI in border governance are used to undermine and discriminate against the rights of migrants, leading to ethical and legal challenges.[39] For example, facial recognition surveillance technology — a technology in which people's faces are scanned, identified and profiled en masse — is not compatible with international human rights law because it amounts to mass surveillance.[40] Yet facial recognition surveillance technology is increasingly used by governments to target people based on their ethnicity. Like many technologies, it deepens existing structural inequalities and affects marginalized and vulnerable groups, including migrants, the most.[41] The uncertainty around the uses of technology, including AI, in border regions is thus deeply concerning. The implementation of these advanced technologies in EU border governance throws into sharp relief the challenge of balancing security with safeguarding the fundamental rights and privacy of migrants.[42]

As Europe privatizes and securitizes its borders, it continues to benefit from technological developments and cooperation with the private sector, as member states collaborate with private tech-driven corporations to develop advanced surveillance technologies. Their use of surveillance technologies and biometrics raises questions about accountability and compliance with regional and international law. Private companies (such as Thales Group, SITA and Palantir) significantly influence security narratives and solutions by shaping security issues to align with their services and profit motives. These companies have the power to shape the understanding of and response to security threats, often defining problems in ways that match their ability to provide solutions, thus maintaining a cycle of profit-driven

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[35] Davies, Isakjee and Obradovic-Wochnik, "Epistemic Borderwork."

[36] Davies, Isakjee and Obradovic-Wochnik, "Epistemic Borderwork."

[37] Bruno Oliveira Martins and Michael Strange, "Rethinking EU External Migration Policy: Contestation and Critique," *Global Affairs* 5, no. 3 (2019): 195–202.

[38] Stefania Panebianco, "Conceptualising the Mediterranean Global South: A Research Agenda on Security, Borders and Human Flows," *De Europa* 4, no. 1 (2021): 17–34.

[39] Aleš Završnik, "The European Digital Fortress and Large Biometric EU IT Systems: Border Criminology, Technology, and Human Rights," *Dve Domovini/Two Homelands* 49 (2019).

[40] Anna Bacciarelli, "Time to Ban Facial Recognition from Public Spaces and Borders," *Human Rights Watch*, September 29, 2023, https://www.hrw.org/news/2023/09/29/time-ban-facial-recognition-public-spaces-and-borders.

[41] Bacciarelli, "Time to Ban."

[42] Karolina S. Follis, "Vision and Transterritory: The Borders of Europe," *Science, Technology, & Human Values* 42, no. 6 (2017): 1003–30.

security measures.[43] The Schengen Information System, the Eurodac biometric fingerprint database and the Visa Information System constitute other control-and-audit mechanisms. The European Commission's Smart Borders Initiative, the European Border Surveillance System (Eurostar) and its "mobility partnerships" with third countries — from Azerbaijan to North African countries to Cape Verde — work in lockstep with these corporations.[44]

Eurosur, managed by the European Border and Coast Guard Agency (Frontex), is an EU initiative that started as a pilot project in 2011. Its aim was to make border surveillance more effective by improving the "interoperability" of border surveillance initiatives between Frontex and EU countries with southern or eastern European external borders.[45] It has been described as a computerized "system of systems."[46] It identifies areas of future intervention,[47] detects cases of irregular migration and maps border crimes.[48] However, Eurosur's system is not designed for real-time intervention. It produces risk analyses and provides a constantly updated map.[49] Eurosur consists of three main "layers": an events layer that monitors events and identifies potential risks; an operations layer containing information on assets available for intervention; and an analysis layer that includes intelligence reports and risk assessments.[50]

Although humanitarian aims were added to Eurosur's mandate at a relatively late stage in its development, Eurosur is fundamentally a control-oriented initiative, not one that privileges respect for the human rights of migrants.[51] Problems have emerged with the system, including its limited capacity to rescue people, especially in emergencies.[52] The suffering and deaths experienced by migrants at sea are partly attributable to the inadequacy of combined surveillance and rescue operations, and the lack of sufficient legal migration routes, which forces many migrants to undertake dangerous journeys.[53] In other words, Eurosur responds with mere surveillance to the socio-political and humanitarian problems associated with migration. Evaluating migrant deaths and ship accidents, senior Frontex official Gil Arias-Fernández admitted that Eurosur's capacity to save people in emergencies is quite limited.[54] Given all these international cooperation and control mechanisms, determining where the EU border begins and ends becomes increasingly hard to define. In examining Frontex operations and surveillance

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[43] Anna Leander, "The Power to Construct International Security: On the Significance of Private Military Companies," *Millennium* 33, no. 3 (2005): 803–25.

[44] Adrian Little and Nick Vaughan-Williams, "Stopping Boats, Saving Lives, Securing Subjects: Humanitarian Borders in Europe and Australia," *European Journal of International Relations* 23, no. 3 (2017): 533–56.

[45] Little and Vaughan-Williams, "Stopping Boats."

[46] William Walters, "Live Governance, Borders, and the Time–Space of the Situation: EUROSUR and the Genealogy of Bordering in Europe," *Comparative European Politics* 15 (2017): 794–817.

[47] Martina Tazzioli, "Spy, Track and Archive: The Temporality of Visibility in EUROSUR and JORA," *Security Dialogue* 49, no. 4 (2018): 272–88.

[48] Martina Tazzioli, "Eurosur, Humanitarian Visibility and (Nearly) Real-Time Mapping in the Mediterranean," *ACME: An International Journal for Critical Geographies* 15, no. 3 (2016): 561–79.

[49] Tazzioli, "Eurosur."

[50] Walters, "Live Governance."

[51] Walters, "Live Governance."

[52] Walters, "Live Governance."

[53] Walters, "Live Governance."

[54] Jorrit Rijpma and Mathias Vermeulen, "EUROSUR: Saving Lives or Building Borders?," *European Security* 24, no. 3 (2015): 454–72.

technologies, EU states' desire to control and manage situations in other countries emerges as the norm rather than the exception.[55] Another reason these border operations are carried out far beyond EU borders is to "offshore" the violence, ensuring that it takes place outside EU borders as much as possible.[56]

From the Smart Border Package to the European e-Justice Portal, technological advancements are transforming EU border governance at an accelerated rate. Due to these high-tech transformations, the European Union's border regime is evolving into a digital and selective border machine. For instance, the European agency eu-LISA, the European Union Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice,[57] pushes for developing and managing large-scale information technology (IT) systems in border security.[58] This transformation has extended the scope of EU rules to further control the external governance of borders and migration.[59] These practices involve several securitization methods, including military/navy, border guards/police and database analysts, reflecting the European Union's aggressive investment in security technology.[60] Furthermore, the European Union's governance includes remote control, surveillance, monitoring and screening at the source, as exemplified by the establishment of Frontex in 2004 for integrated border security.[61]

While technological developments contribute to Frontex's dominance in the field, other adjunct mechanisms reinforce Frontex. The European Asylum Dactyloscopy Database (Eurodac) is an information, communication and control technology that serves in this field, and it works as an Automated Fingerprint Identification System. It is implemented in areas where the rules of the Dublin III regulation — the foundational legal framework regulating asylum applications made in European Union member states — apply.[62] Designed for crisis response, with European states treating the arrival of refugees as a "crisis," the primary purpose of the Eurodac program is to prevent migrants from applying for asylum in different European countries simultaneously, thereby reducing the workload of actors involved in border policing.[63] This system prevents a migrant from applying for asylum in one country after fingerprinting in another EU country. According to the EU regulation of Eurodac, the data of

[55] Rijpma and Vermeulen, "EUROSUR."

[56] Rijpma and Vermeulen, "EUROSUR."

[57] European Commission, "Smart Borders," Migration and Home Affairs, accessed April 17, 2024, https://home-affairs.ec.europa.eu/policies/schengen-borders-and-visa/smart-borders_en.

[58] Matthias Leese and Vanessa Ugolini, "Politics of Creep: Latent Development, Technology Monitoring, and the Evolution of the Schengen Information System," *European Journal of International Security* 9, no. 3 (August 2024): 340–56.

[59] Sandra Lavenex and Frank Schimmelfennig, "EU Rules Beyond EU Borders: Theorizing External Governance in European Politics," in *EU External Governance,* eds. Sandra Lavenex and Frank Schimmelfennig (Routledge, 2013), 1–22.

[60] Didier Bigo, "Freedom and Speed in Enlarged Borderzones," in *The Contested Politics of Mobility: Borderzones and Irregularity*, ed. Vicki Squire (Routledge, 2011), 31–50.

[61] Jennifer Mitzen, "Feeling at Home in Europe: Migration, Ontological Security, and the Political Psychology of EU Bordering," *Political Psychology* 39, no. 6 (2018): 1373–87.

[62] Brigitta Kuster and Vassilis S. Tsianos, "How to Liquefy a Body on the Move: Eurodac and the Making of the European Digital Border," in *EU Borders and Shifting Internal Security: Technology, Externalization and Accountability*, eds. Raphael Bossong and Helena Carrapico (Springer, 2016), 45–63.

[63] Kuster and Tsianos, "How to Liquefy."

migrants whose fingerprints have been taken is deleted after two years. Thus, if a migrant manages to evade migration control for two years, they can apply for asylum in another country at the end of those two years.[64] Although this is presented as a system that allows migrants to be registered, it restricts the mobility of migrants and forces them to use "illegal" ways to seek asylum.

EU countries practise close cooperation as they aim to fill the gap between jurisdictions and manage migration. These collaborations initially started among EU countries, but expanded in scope to keep pace with technological development and to incorporate more countries. With the increase in the number of people migrating in the last 10 years, EU countries have begun to strengthen their borders and make serious investments in this area. Frontex is one of the most critical actors in this field. In this context, borders have been externalized through agreements with third countries. As a result, the surveillance and control of people who want to migrate starts far beyond the borders of the European Union.

Multiple Uses of Technologies

States do not have a monopoly on technology. Migrants, smugglers and solidarity networks effectively use communication applications such as WhatsApp and Facebook to facilitate travel across borders.[65] For this reason, the most crucial possession of migrants during a journey is their smartphone.[66]

Smartphones play a vital decision-making role for migrants during their journeys. Migrants communicate with their relatives and other migrants through communication networks and benefit from the information exchanged.[67] Before setting out, migrants learn about the experiences of people who have gone before them by joining online groups, especially those on Facebook, and often decide which country to go to and a particular route to follow in light of the information they receive from these groups.[68] The frequent sharing of updated information in these Facebook groups can play a life-saving role in migrants' journeys,[69] as they inform one another about which routes are closed and which are patrolled.[70] In these

[64] Kuster and Tsianos, "How to Liquefy."
[65] Gabriella Sanchez et al., "A Study of the Communication Channels Used by Migrants and Asylum Seekers in Italy, with a Particular Focus on Online and Social Media," European Commission, 2018.
[66] Amanda Alencar, Katerina Kondova and Wannes Ribbens, "The Smartphone as a Lifeline: An Exploration of Refugees' Use of Mobile Communication Technologies During Their Flight," *Media, Culture & Society* 41, no. 6 (2019): 828–44.
[67] Agathi Merdi, "ICT Use by Refugees: The Role of Technology in Refugee Mobility," (Master's thesis, University of Twente, 2019).
[68] Bram Frouws, Matthew Phillips, Ahmed Hassan and Maarten Twigt, "Getting to Europe the 'WhatsApp' Way: The Use of ICT in Contemporary Mixed Migration Flows to Europe," Regional Mixed Migration Secretariat Briefing Paper 2 (2016).
[69] Judith Zijlstra and Ilse van Liempt, "Smart (Phone) Travelling: Understanding the Use and Impact of Mobile Technology on Irregular Migration Journeys," *International Journal of Migration and Border Studies* 3, no. 2-3 (2017): 174–91.
[70] Marie Gillespie et al., "Mapping Refugee Media Journeys: Smartphones and Social Media Networks" (2016), doi.org/10.13140/RG.2.2.15633.22888.

situations, migrants have no one but each other to assist them, and they show their support for each other by sharing information through communication.[71]

Human smugglers also use smartphones. In contrast to migrants, they primarily use them to advertise their services, to provide information about who they are and the routes they will take, and to where they will rendezvous with migrants.[72] However, the information smugglers share about themselves can be false, which can cause migrants to be deceived and subject to extortion.[73] On the other hand, migrants learn which smugglers they should work with and those they should avoid through the information they share with each other.[74] The effective use of smartphones enables many migrants to collectively participate in the migration journey with other migrants, without needing a smuggler.[75] Migrants escorted by smugglers can also follow their migration route and communicate with other migrants and their relatives using smartphones, significantly reducing the possibility of smugglers deceiving them.[76] Thanks to smartphones and communication networks, migrants are active participants who can change their route when necessary and decide for themselves what is in their best interest.[77]

Migrant solidarity networks also actively use communication networks. Sometimes these networks aim to facilitate the journey of migrants by sharing information about last-minute border closures on their Facebook pages.[78] Other times, they contact migrants during their journey, offering them support such as food, water and hygiene kits.[79] Solidarity networks are also known to contact migrants and, in the case of the Border Violence Monitoring Network, to document human rights violations at the border. The way solidarity networks use communication networks is closely related to the scope of their respective mandates in the field. Some solidarity networks have adopted pressure tactics on states by focusing on saving the lives of migrants. Alarm Phone is an initiative that carries out vital work in this domain. When seafaring migrants realize their boat will sink, they reach out to the volunteers on Alarm Phone via an emergency alarm number.[80] Alarm Phone decides which country is responsible for the waters where the boat in peril is located and informs the coast guard of that state, putting pressure on it to mount rescue efforts.[81] Forensic Architecture, a research agency at the University of London, also stands in solidarity with migrants by documenting human rights violations, especially at sea, ensuring that states accept their maritime responsibilities.[82]

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[71] Rianne Dekker, Godfried Engbersen, Joris Klaver and Hans Vonk, "Smart Refugees: How Syrian Asylum Migrants Use Social Media Information in Migration Decision-Making," *Social Media + Society* 4, no. 1 (2018), doi.org/10.1177/2056305118764439.
[72] Frouws, Phillips, Hassan and Twigt, "Getting to Europe."
[73] Gillespie et al., "Mapping Refugee Media Journeys."
[74] Dekker, Engbersen, Klaver and Vonk, "Smart Refugees."
[75] Gillespie et al., "Mapping Refugee Media Journeys."
[76] Frouws, Phillips, Hassan and Twigt, "Getting to Europe."
[77] Zijlstra and van Liempt, "Smart (Phone) Travelling."
[78] Gillespie et al., "Mapping Refugee Media Journeys."
[79] Frouws, Phillips, Hassan and Twigt, "Getting to Europe."
[80] Maurice Stierl, "The WatchTheMed Alarm Phone—a Disobedient Border-Intervention," *Movements: Journal für Kritische Migrations und Grenzregimeforschung* 1, no. 2 (2015).
[81] Stierl, "The WatchTheMed Alarm Phone."
[82] Forensic Architecture, "Borders," accessed November 1, 2024, https://forensic-architecture.org/category/borders.

While states try to prevent migrants from crossing their borders by using the latest technologies, migrants, smugglers and solidarity networks find ways to cross borders using technology, communication networks and smartphones.[83] While states cooperate, share information and produce anti-migrant policies, migrants and solidarity networks support each other by constructing resistance to these anti-migration policies through their communication networks.[84] For this reason, although states use technology and make serious investments to increase border security, migration cannot be entirely prevented. Anti-migration policies only serve to force migrants to choose more difficult routes and can lead to violations of human rights.[85]

Conclusion

The "effective" use of technology in migration management, and the fact that private-sector actors play an important role in governance, raises grave concerns regarding ethics and international human rights, even though states have the impression that they manage migration quickly and "effectively". In particular, the externalization of EU border policies and the agreements made with third countries, many of which have abysmal human rights records, cause serious human rights violations. For this reason, states need to consider the following migration management suggestions regarding human rights:

- States and private actors should be transparent about migration management technology development and implementation processes. Public reports should be published about how technologies work, what data is collected, how it is used and to whom it is provided. Companies and governments that develop and use technology must be held accountable for its use.

- The GDPR should extend its protections to migrants through automated individual decision-making processes and personal data protection. It should go beyond covering only EU citizens. Rights should apply to all individuals, regardless of their citizenship status. The highly regarded GDPR should therefore also include provisions to protect all migrants.[86]

- Including human rights assessments at every stage of AI technology should be an ongoing, mandatory task. It is essential to create a reliable system to respect human dignity and to detect and prevent harm such as prejudice and discrimination. It is necessary for actors in the AI value chain to work with suppliers and customers to recognize these harms and strive to reduce them in a transparent manner.[87]

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[83] Eleni Diker, "Social Media and Migration," Political and Social Research Institute of Europe, 2015, https://ps-europe.org/social-media-and-migration.
[84] Dekker, Engbersen, Klaver and Vonk, "Smart Refugees."
[85] Gillespie et al., "Mapping Refugee Media Journeys."
[86] Molnar, "Technology on the Margins," 305–30.
[87] Deirdre Ahern et al., "The Speinshart Recommendations on Generative AI and the EU AI Act" (Speinshart Agenda, September 2023), https://doi.org/10.25561/108241.

- It is necessary to make technological development processes more transparent, especially regarding how technologies developed by the private sector work. Intellectual property laws should allow the public to learn about the technology being used for migration management. Additionally, governments and the public sector must develop the internal capacity to understand and manage technology. This will help prevent an overreliance on the private sector and ensure responsible technology application at borders.[88]

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[88] Molnar, "Territorial and Digital Borders."

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