MIGRATION STRATEGY GROUP

ON INTERNATIONAL COOPERATION AND DEVELOPMENT

AI, digital identities, biometrics, blockchain: A primer on the use of technology in migration management

June 2020

Jessica Bither and Astrid Ziebarth

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STRENGTHENING TRANSATLANTIC COOPERATION

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About the MSG

The Migration Strategy Group on International Cooperation and Development (MSG) is an initiative by the German Marshall Fund of the United States, the Bertelsmann Foundation, and the Robert Bosch Foundation. The MSG brings about 25-30 representatives from different German ministries and other relevant actors together at regular intervals, to discuss current migration-related foreign and development policy issues. From 2013-15, the MSG focused on the theme of labor migration and global competitiveness. From 2016-17, it dealt with the issue of policy coherence in Germany's external migration policy. From 2018-19, the topic was mixed migration movements with a geographical focus on sub-Saharan African countries. From 2020-21, the MSG will focus on how digitalization and technological development will likely change migration management and policy going forward.

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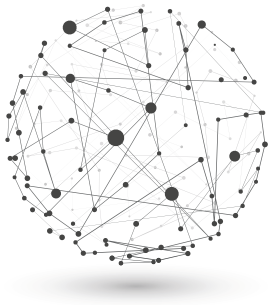

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Glossary

An Algorithm is a set of rules or formula for solving a problem or analyzing a dataset, based on conducting a sequence of specified, pre-defined actions. The development and use of algorithms is fundamental to all aspects of computer science: artificial intelligence, databases, graphics, networking, operating systems, security etc.

Artificial intelligence (AI) applies advanced analysis and logic-based techniques like discovering meaning, generalizing, or learning from past experiences (including **machine learning**) to interpret events, support and automate decisions, and take actions. A rough differentiation is made between weak and strong AI. Strong AI would imitate human thought patterns "perfectly," which ultimately would include ethical discussions, as we currently have, for example, in automated driving. Weak AI is "only" capable of learning within their field of application, i.e. improving functionality but not extending it.

Big data means *high-volume*, *high-velocity* and/or *high-variety* information assets that demand cost-effective, innovative forms of information processing that enable filtering, structuring, decision making, and process automation. This definition has been expanded to include *variability*, the increase in the range of values, and *value*, which addresses the need for valuation of enterprise data. Those information assets can be differentiated into social data, machine data and transactional data and originate from a variety of sources e.g. social media platforms, market information or credit card statements.

Biometrics refer to measurable physiological or behavioral traits like voice recognition, fingerprints, retinal recognition or facial thermograms that can verify the identity of a person through the translation into unique data points. It can be used in access control or criminal forensics, immigration, social security and surveillance, but can also be embedded in hardware, such as notebooks or cell phones. One important distinction is the difference of one-to-one (verification) vs. one-to-many (identification) systems.

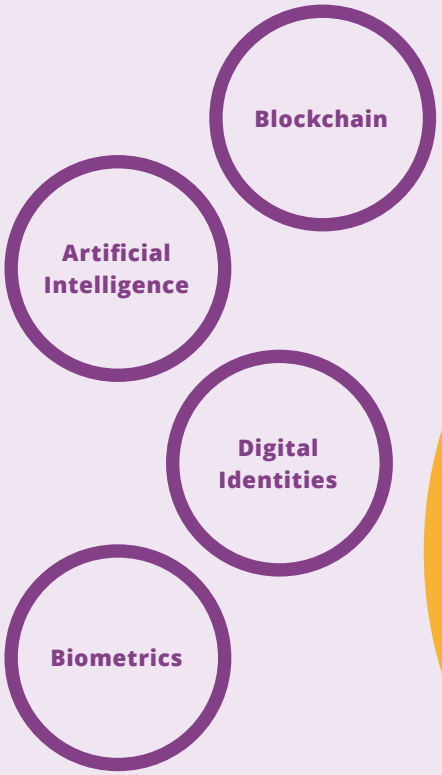
A blockchain is an expandable list (or ledger) of data records. Each data record forms a block. The blocks are chained together by cryptographic procedures. The block contents are protected against manipulation by a single central body by hash values and time stamp procedures. Blockchains are redundantly located in distributed systems, so that manipulations can be recognized by a block chain characteristic. In this way, the data of the blockchain can be made accessible to a large circle of people without the risk of them making changes to it that would be incomprehensible while at the same time maintaining the changeability. This procedure is commonly used in cryptocurrencies. It is important to differentiate between public, private, and managed blockchains.

Digital Identity unlike traditional forms of identity recognized by the state — based on government records or physical forms of identification (called legal identity) — relies on data, biometric identifiers, identifiers linked to services, or online profiles. It refers to one or more online or networked identities adopted or claimed in cyberspace by an individual, organization, or electronic device. In terms of digital identity management, key areas of concern are security and privacy. Because identity theft is rampant on the web, digital identity authentication and validation measures are critical to ensuring web and network infrastructure security in the public and private sectors. Digital identity includes three stages: enrollment, authentication, and authorization.

Machine learning is the implementation of computer algorithms that employ statistics to find patterns in data. It is regarded as an application of AI and is often used for inference, classification, prediction, forecasting, and simulation. A rough distinction is made between "supervised" machine learning, in which one particular variable (the "target") is the focus of the inferential/predictive analysis using all of the other variables in the dataset. An "unsupervised" machine learning algorithm does not specify any target variable, but rather seeks to "cluster" or group variables that appear statistically similar.

Summary

Technology



Policy Fields Assessed

Use of Technology to:

1. Predict movement of people
2. Provide digital identities to refugees and migrants
3. Manage visa and border processes
4. Manage asylum processes
5. Move money back home
6. Work across borders

Main Takeaways

1. Balance the policy-technology relationship: don't fall for techevangelism! Assess the policy challenge first and then how tech can help to solve it.
2. Develop models for ethical cooperation with the private sector.
3. Handle data of migrants and refugees with great care and consent – follow "privacy by design" wherever possible and allow for easy to access recourse in automated decision making.
4. Monitor for bias, discrimination, and reproduction of potential power disparities.
5. Expand tech knowledge base and employ tech-ethicals as well as "bilinguals" who know both tech and policy worlds in migration policymaking.
6. Prepare for and incorporate new types of digital cooperation between ministries and different actors in policy process and design.

0 Introduction

Digitalization and technological change are rapidly transforming every aspect of our societies and economies, and the migration and refugee policy space is no exception. Technology is already affecting migrants, refugees, and people on the move in many ways, but policymakers have yet to systematically address the different uses of technology in the migration management field. The COVID-19 pandemic is likely to accelerate these digitalization processes, making fast policy adaptation crucial.

Technological changes range from broader developments, such as increasing digital connectivity in general — via smart or mobile phones, messaging services and web-based applications, or app-based systems — to more tech-centered applications: **Karim the Chatbot X2AI**[i] has provided virtual psychotherapy to Syrians in Zaatari refugee camp; AI-powered **Free Robot Lawyers** is offering legal help to migrants and refugees; and the non-profit **REFUNITE** (with more than 1 million registered users) helps refugees to find missing family members via mobile phone or a computer. Digital connectivity is providing new options for migrants and refugees to gain access to training or education via online learning platforms and Massive Open Online Courses (MOOCs), or to services delivered virtually by NGOs, international organizations, or governments. Combined with the global spread of social media use, this connectivity has also created new (dis)information ecosystems in the migration space that policy makers must grapple with.

AI and machine learning, biometrics and blockchain-based technology, are already being employed in key areas of migration management. This primer seeks to serve as a first orientation for stakeholders to tech tools and approaches in key migration policy areas, also those areas where technology is advancing rapidly. We outline the potential to better predict migration through AI-powered analysis of big data sources and the increasing use of digital identities, in particular in humanitarian settings. Biometric borders and automated decision making, and the employment of technologies in asylum processes, are other crucial areas covered. Finally, we look at digital financial transfers of remittances (and access

AI and machine learning, biometrics and blockchain-based technology, are already being employed in key areas of migration management.

to them), and how new forms of work in the digital age may transform (labor) migration models.[ii]

These technologies and their usage are part of greater political tides of our time, the pull of geopolitical shifts and their technological component, including competing regulatory approaches of the United States, China, and Europe and diminishing multilateralism. Ultimately, policymakers and other actors must consider the use of emerging technologies in migration and refugee policy within the context of fundamental questions related to democratic values in a digital age, including personal freedom and privacy, what type of data governments should be able to access on their citizens, and issues related to basic human rights. The migration and refugee space is also one where individuals often are exposed to particular vulnerabilities, as well as to the dangers of discrimination and bias. Digitalization in migration management, in this regard, will both open up opportunities and pose new risks, and actors in the policy space, including migrants and refugees themselves, should be part of the discussions that shape it.

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1 Before people move: technology to better predict migration?

State of Play

Especially after the great number of migrant and refugee arrivals to Europe in 2015, policymakers are eager to be able to better anticipate migratory movements. The attempt to forecast future migration flows is not new, but the hope is that new sources of big data and their analysis through AI and machine-learning based algorithms can improve predictive capacity so that countries can better prepare resources and policy responses.

New data sets to predict movement are as diverse as improved high-res satellite imagery, geo-referenced data, cell phone data, or social media. Data science tools allow new input to be analyzed in combination with more traditional data sources or large data sets, ranging from asylum statistics and survey data, conflict indicators or environmental factors such as rainfall patterns or droughts, economic or market data sets, to information sets pertaining directly to migration movements, like the International Organization for Migration's (IOM) Displacement Tracking Matrix (DTM). This new data, in turn, could potentially help to detect otherwise unknown patterns and indicators for migratory movements.[iii] A number of new initiatives and applications have appeared in this field in recent years. Switzerland and Sweden, for instance, are testing predicting asylum applications[iv], and the European Asylum agency (EASO) has tested possible models as part of their Early Warning and Preparedness System. The **PREVIEW** project based at Germany's Foreign Office conducts early crisis monitoring through the use of data sciences and machine learning.[v] It is important to note that predicting migration movements using AI, machine learning, and big data sources is most promising for "early warning systems," but less so for longer-term predictions.

Early Warning vs. Forecasting vs. Foresight

While **early-warning or early-risk assessment** models are typically used to track movements in real time ("nowcasting") or in the immediate future (days, weeks, or months), **forecasting models** have a longer-term horizon (usually months to years). They are traditionally based on *quantitative and statistical* methods, but more recently also venture to combine qualitative and quantitative methods. **Foresight exercises** rely on qualitative scenario planning rather than data (though they may employ, say, "technological change" as a variable in a scenario planning exercise).

What to watch

Accuracy: It's all about the data

As with any type or algorithm or machine-learning-based models, the quality of the output depends on the quality of the data. The migration field suffers from a lack of good and timely data, or data that is insufficiently granular (e.g. local level data).[vi] Even with good data, migration is complex and manifold (from forced displacement, or asylum to family reunification, etc.) and pertains to the aspirations of individuals, thus any predictive modeling must be viewed with scrutiny and caution.[vii]

The policy dimension of prediction models

Determinations within an early-warning prediction system will always be political and ethical, rather than quantitative, in nature. The determination of when and for whom displacement or migration is a "risk" or a "crisis," is inherently political and contextual. Equally the policy responses to the same warnings could vary from sending emergency aid to closing borders, or both. It is also unclear whether reliable predictions would lead to more proactive policy approaches that have categorized reactive global migration and refugee policies of years past (i.e. crisis response vs. crisis prevention).

Privacy and unintended consequences

As with all big data discussions, there are important privacy concerns in such modeling exercises. This applies when deciding which data sources to use — the German PREVIEW unit, for instance, only uses publicly available data (such as from UNHCR, World Bank, or DTM). When using private data, safeguards that protect the anonymity of the individuals behind the data should be employed. There are also the risks of unintended consequences: for example, mobility patterns of certain groups could also be misused by political opponents or authoritarian regimes.

Examples

UNHCR Jetson

A supervised machine learning experiment by UNHCR's innovation unit aimed at predicting the movement of people using goat market prices in country of origin (Somalia) for the modeling project.

Data Innovation Directory (DID)

In May 2020, IOM's Global Migration Data Analysis Centre launched a new data platform featuring projects and initiatives that seek to better understand migration and human mobility in times of crisis using new data sources and methodologies such as satellite imagery, artificial intelligence and machine learning, social media, and mobile phone data.

2 People on the move: digital identities of refugees and migrants

State of Play

International organizations such as UNHCR or the World Food Program (WFP) have many years of experience in digitally registering refugees and the displaced. Registration now occurs primarily via biometrics (fingerprints, iris scans, or facial recognition technology) which is then used to authenticate individual users and is usually a prerequisite for accessing food, health care, and other vital services. The two largest databases are WFP's SCOPE, a web-based platform containing data on over 20 million persons, and UNHCR's Population Registration and Identity Management EcoSystem (PRIMES), with over 10 million entries.[viii]

The use of new technologies has allowed the humanitarian system to respond more efficiently, faster, and at less expense to the complex and growing numbers of people on the move or in vulnerable situations, at the same time limiting fraud and misuse in assistance distribution. It has also enabled workable solutions to changing policy priorities, for example, the increasing preference for cash-based assistance programs. The program Building Blocks by WFP, for instance, allows beneficiaries to buy groceries or access cash-based service by accessing the UNHCR managed refugee biometric database via iris scan.[ix] Actors using such data have moved from pure registration to digital identity management, meaning that unique biometric identifiers are linked to biographic information about the individuals, which can be used to verify an individual in other settings.

In addition, national digital ID platforms that are being rolled-out in more and more countries will also affect refugees and migrants. India's Aadhar system — the world's largest digital ID system with approx. 1.2 billion users — was explicitly designed to include everyone on its territory regardless of citizenship status, including foreigners, such as migrants and refugees. Similarly, digitized national asylum systems or refugee systems are in effect digital identity management systems.

As digital ID related solutions proliferate in the migration and refugee context, they raise important ethical concerns about data security, privacy, access, and meaningful consent.

What to watch

Safeguards for data privacy and transparency

Storing large amounts of highly sensitive personal data, including biometrics, raises questions about how it is stored and protected, but also about who has ownership and access. UNHCR has different arrangements with host governments.[xi] To develop functionalities, it may make sense to share ID data with other actors, such as private companies, but this could have harmful consequences for individuals. For example, what if cell phone data shared in one instance could then be linked back to individuals via another database? Ownership is also a concern: individuals in humanitarian settings do not have access to their own data, or information on the entities with which their data is shared.

Preventing exclusion through digital identity systems

There are potential issues with accidental or deliberate exclusion of vulnerable populations in digital ID systems, including migrants and refugees. The process could fail technically — fingerprints not scanning properly or poor internet coverage leading to system malfunction — or people can be left without options to address cases where the system cannot verify someone. These problems have occurred in India's Aadhar system.[xii] Kenya's national Digital ID program was halted in early 2020 by a supreme court ruling citing the lack of data protection and concerns of further discrimination of marginalized groups or minorities.[xiii] As more services become linked to inclusion in these systems, access concerns and fallibility will become ever more important, not only in humanitarian settings, but also in countries of destination, for example for migrants in unclear or irregular situations.

The promises of digital identities

If implemented properly, digital identities and trust schemes could also greatly improve the lives of migrants and refugees. It could help reach multiple goals of the international community related to identification, including the sustainable development goal (SDG) target 16.9, and related goals of more recent Global Compact for Migration (GCM) or the Global Compact on Refugees.[xiv] Ideally, it could also allow people to "carry" and access important documents with them anywhere, and provide safe digital document storage for those who need to flee their homes without papers (say, health records, property deeds, degrees). These digitized documents could be accessed from anywhere with internet or mobile access via personal biometric identifiers.

Examples

World Food Program's Pilot "Building Blocks"

Integrated with UNHCR's biometric authentication technology using iris scan, the project allows more than 100,000 refugees living in two camps in Jordan to purchase groceries by scanning an iris at checkout using their "account" maintained on the blockchain. "Building Blocks" uses a private, permissioned blockchain in an effort to ensure greater privacy and security for refugees.

Mastercard's Digital Identity Model

Mastercard is one of the main providers of digital identity systems in the humanitarian sector. It does not retain biometric information and their identity model is designed to work across multiple services. The end user can share information with other actor NGOs on a "need to know basis" and has full transparency and control over what she shared. As a principle it is "privacy by design" based.[x]

3 Tracking movement: biometric borders and automated decision making

State of Play

Today, giving up biometric information is becoming more and more a prerequisite for crossing international borders. Ports of entry, at physical land borders, ports, or airports, are also places where governments can legally collect such data on non-citizens. In addition, not only governments but increasingly private actors, such as airlines, are collecting and storing customer data. Airlines are already using facial recognition technology to assist with automated boarding or to ensure passengers find themselves on the right planes.[xv] Overall, biometrically linked technology is increasingly automating decision at borders, such as allowing people to pass through security gates. These automated decisions are linked to increasingly complex and interoperable systems (including databases on asylum, migration, or visas) and tied to the biometric identifier of individuals — the development of the EU-LISA system is a case in point.[xvi] The coronavirus pandemic will very likely fast-track efforts to advance these digital processes at borders, and could potentially lead countries to expand the scope of individual data to include health indicators (such as proof of immunity).

In addition, AI and machine learning technology are being tested in visa processes. Canada, for instance, has detailed the way it is using AI or digital solutions in a white paper from March 2018. Overall, the use of these technologies aims to fulfil the dual role of speeding up processes (visa processing, checking passengers, etc.), while also locating security threats, detecting suspicious travel patterns, and reducing irregular and illegal entries. These systems are, in effect, creating digital borders that are spatially and temporally removed from the actual border. Digital borders can be “activated” at the actual border — but also before or after, say before boarding a plane, or later in a destination country, for example after a visa status changes. While the collection of biometrics to cross borders is not new, recent data processing and analytics capabilities, and the possibility to combine more and more data sets that were originally created for separate purposes, bring about an entirely new set of policy questions, including human rights and ethical concerns.

What to watch

Data access and sharing

As more and more sensitive data on mobile populations is collected and made interoperable with other data sets, and as more actors (airlines, private companies, governments) are both the collectors and sharers of that information, the question of who has access to which personal data is crucial. Data sharing and triangulation[xvii] can have security implications for individuals that may not be obvious: for example, passenger name record (PNR) data of airlines may inadvertently contain information related to, say, sexual orientation (if two people are always traveling together), on health issues (if they require special assistance), or religion (dietary preferences). Moreover, the sharing of this data, e.g. between countries, is highly opaque and there is currently no comprehensive list of who is sharing which information for what purposes with which countries.

Automated decision-making process: transparency and access to recourse

Given how complex the regulatory environment is, it will become ever more important to understand how and why certain automated decisions related to border "activations" are made. For instance, if a red flag appears when a passenger wants to check-in, or is pulled aside for questioning, it is unclear where individuals can turn to for a) an explanation of why a decision was made, or b) having access to recourse if they think the decision was made incorrectly. In the visa process this would include a degree of transparency about how decisions are set (i.e. which data indicates what is a migration or security "risk"). If machine-learning-based algorithms assist decisions, there are further dangers related to biases that concern all machine-learning models. Basing decisions on visa issuance on past data, for instance, would build a system that reinforces the biases that human visa officers had demonstrated.

Bigger implications for migration policy

As more countries worldwide build up biometric databases, there could be bigger implications for migration. For one, such digital borders could lead to less mobility and have serious economic or social repercussion in areas historically and economically based on the free movement of people, like in West Africa in the ECOWAS area. It could also enable increased government surveillance. Finally, if digital borders become ever harder to cross, it may well lead to more expensive, dangerous, and deadly journeys for those fleeing conflict or war and those traveling irregularly.

Examples

IOM's Migration Information and Data Analysis System (MIDAS)

Developed in 2009, MIDAS was developed as a capacity building mechanism and as a lower-cost alternative to the private sector. It includes training on various uses and safeguarding of privacy and biometric data, etc. It is currently used by 20 countries, the large majority of them in Africa.

Automatic Deception Detection System (ADDS)

The EU-financed **iBorderCtrl** project is currently being tested with Hungarian, Greek and Latvian officials. It includes one AI powered module where an Avatar — or a virtual police officer — asks passengers a series of questions, and tries to detect whether they are true. It is not yet clear whether this system actually works, or whether it would ever be used.

4 Managing arrival: new technology in asylum processes

State of Play

Different types of technology, from AI-driven tools, to blockchain solutions, to geo-matching via algorithms, are being tested in asylum processes. The German Federal Office for Migration and Refugees (BAMF), for instance, has piloted several programs as part of its overall digitization strategy. Ushered in after the record numbers of asylum seekers in 2015-16, the strategy seeks to digitize processes so that asylum procedures are faster, more efficient, and less cumbersome for both asylum applicants and those processing the claims.

Part of the technology employed aims to verify information presented during asylum claims. AI-based software at the BAMF conducts "automatic speech analysis" to corroborate claims of countries of origins by asylum seekers, by matching speech patterns to accents of certain geographical regions. Germany, Denmark, and Austria use analysis of cell phone data to varying degrees — from only accessing meta-data, to full screening of personal phones. Blockchain technology is being used to better coordinate across different institutions involved in the process and to eliminate redundancies (for example, duplicate registration procedures).

In addition, an algorithm developed by Stanford's and ETH Zurich Immigration Policy Lab is entering its first testing phase in Switzerland in 2020. It aims to match recognized refugees and those asylum seekers with good chances of receiving asylum with geographic regions or cities where they are likely to find employment. Other countries are customizing this algorithm to their own contexts, and currently planning testing phases.

What to watch

Verification and privacy

There are tradeoffs that exist in the space of asylum processing that raise particularly difficult questions and have potentially grave implications on privacy laws or ethical principles. Is it justified to access applicants personal cell phone data as part of verifying asylum claims? And will this just lead to people using fake phones or giving up even less information? In Germany, a group of refugees has just brought a lawsuit tied to the screening of personal cell phone data in the asylum application process (which can occur under special circumstances). These questions are even more urgent as the tools currently used have only varying degrees of success: accent recognition, for instance, only gives a percentage probability — it is not enough to base asylum decisions on. Recent figures provided by BAMF indicated that in 60 percent of cases where cell phones were accessed, "no additional information" was gleaned relevant to asylum procedure and in 38 percent of cases data corroborated the information provided by the claimant, while in only 2 percent of cases, the analysis contradicted information provided.

New forms of cross-actor collaboration

Digital tools already in use will further change the way actors and agencies work together in the asylum process. Blockchain technology will allow data sharing and evaluation processes to be streamlined and more secure, as it can allow various agencies and actors to access highly sensitive data securely, while still protecting other parts of individuals' data. It is easy to envision parts of these system being expanded to more collaboration between countries, say as part of the EU's Dublin Regulation on asylum, or in return procedures. Ideally, it could lead to a more efficient and faster system, though it can never be a substitute for effective and comprehensive asylum and migration policies.

Better integration outcomes through algorithms

In the ideal-case scenario these algorithms can assist better policy outcomes in the integration field by matching people with suitable locations (see the examples below). If the first pilots being currently rolled out are successful, they could potentially be adapted to other types of migration (labor market migration).

Examples

Immigration Policy Lab - Matching Algorithm for Asylum Seekers

Stanford University's and ETH Zurich's Immigration Policy Lab started a project pilot in 2018 using data-driven methods to assign 2,000 asylum seekers to cantons across Switzerland. An algorithm matches cantons and chances of finding a job with the profiles of the asylum seekers, intending to allow for better integration through labor market participation. A human case worker has the final sign off. Asylum seekers not part of the pilot continue to be allocated randomly.

BAMF - Testing Block Chain Solution for Asylum Procedure

The German Federal Office for Migration and Refugees (BAMF) in 2019 started a pilot project to test a GDPR-compliant blockchain solution at an arrival, ruling, and return center in the city of Dresden. After a successful proof-of-concept phase, the pilot phase tests an IT solution that provides process updates digitally to all participating authorities in a secure and speedy manner.

5 Moving money: remittances and access to digital transfers

State of Play

Remittances from migrant workers form a vital source of income for their families and friends living in countries of origin or displaced, far outweighing official development aid in many countries. Third parties such as Western Union often facilitate such transfers, but they charge considerable fees, some as high as 5-10 percent. Blockchain, the advent of cryptocurrencies, and the proliferation of mobile phones have the potential to make digital transfers, including remittances, faster, cheaper, and more secure. It could help reach the targets of the SDGs (10.c) and GCM (20) of lowering transaction costs to below 3 percent. Advances could also to allow more people to access remittance money easier and directly on mobile money accounts — even those people that may not own a bank account.

Platforms such as Ripple or Stellar offer both government-backed currencies and cryptocurrency transfers using blockchain-based systems that significantly reduce fees and transaction costs. Market leaders for remittances, like MoneyGram and Western Union, are already testing Ripple's xCurrent system.[xviii] The **Leaf Global Fintech platform** offers financial services to refugees, including access to payments from abroad via phones for people on the move and crossing borders. The M-Pesa platform today is Africa's largest mobile money service provider with over 37 million users in 7 countries. As more people worldwide gain access to cell phones, even those without bank accounts (the unbanked or "unbankable") could, at least in theory, access funds through their mobile devices. Moreover, as the use of virtual currencies become more common, more people could have access to cash-like systems that do not require having money in a bank account.

What to watch

Fintech can help, but not compensate for bigger structural issues

Remittances already play a significant development role in the economies of countries of origin. If technology enables more accessible and less expensive options, the benefits will be significant. Nonetheless, there are some important caveats. Access remains challenging: In many cases, individuals such as refugees or persons in vulnerable situations may not meet the prerequisites for owning a sim card, which often requires an official government ID. And second, as the dramatic drop in remittances caused by the COVID pandemic has laid bare (a 20 percent drop in global remittances worldwide is expected for 2020[xix]) — technology alone can never compensate for underlying structural changes of the global economy or political upheavals.

Inherent risks of new technologies

Blockchain and cryptocurrencies, even though they have been around for a while, still present "emerging technologies" and they might not be as secure as presently assumed. The value of cryptocurrencies has fluctuated widely and we do not yet know whether advances in quantum computing may make it possible to break contemporary encryption systems within the next decade. Finally, new forms of cross digital payments will have (yet undecided) regulatory implications relating to cross border payments, with large disruptive potential. Policy stakeholders, international organizations, foundations, and NGOs, need to be aware of potential financial risks for the people they aim to serve, especially if these largely depend on such funds as a major source of income.

Big-picture implications for migration — (de)regulation of financial flows

Finally, the increased use both of new fintech solutions as well as alternative currencies for cross-border payments, and their potential to disrupt the current financial system, could influence core drivers of migration or displacement. For example, alternative digital transfer systems outside SWIFT could bypass current anti-money laundering or counterterrorism financing laws, and untraceable funding including for financing arms sales, could fuel more conflicts or prolong the lifelines of authoritarian regimes. There is currently no agreement between governments and regulators worldwide on how to respond. As the rollout of these technologies progresses at breathtaking speed, both their promises and potential dangers should be given equal consideration.

Examples

LEAF Platform

Leaf provides financial services — like storing savings, receiving money from abroad, and managing money — to refugees on mobile devices (not necessarily smart phones) through secure, transparent, and inexpensive blockchain technology using SMS and a USSD platform. Leaf aims to reach the 2 billion unbanked people around the world.

M-Pesa Mobile Wallet

Established in 2007 by Vodafone's Kenyan associates Safaricom, M-Pesa is a real-time mobile money service with over 37 million customers in seven African countries and 400,000 agents. Using simple mobile phones or smartphone apps, users can transfer money to another registered user's phone who then can redeem it for cash at any agent's store or can spend it at an M-Pesa merchant.

6 Working across borders: mobile labor without migration?

State of Play

As AI, blockchain-based tech, and robotics evolve, they will undoubtedly change training and work globally. While some jobs will become fully automated, others will partially or fully be supported by AI or other technologies. The coronavirus pandemic has shown us that that many more jobs are possible remotely than previously appreciated. It is beyond the scope of this primer to fully assess the changes in the workforce developments of countries of origin and countries of destination and their implications on migration. However, there are examples that hint at new opportunities in the refugee and migration policy space, notably the possibility for labor mobility without permanent migration — and communications technology even substituting for migration, and new jobs through the digital sector itself that can also create new opportunities for migrants and refugees. Technology like easier digital transfers and the use of digital IDs (see above sections) could turbocharge these work transformations.

Recent examples of this trend include the pilot program by the nonprofit REFUNITE, which has allowed refugees in Uganda to earn money by "training" algorithms for AI. Other companies or startups like **Andela**, **Findworka**, or **Think-IT** are using remote working arrangements to connect information and communications technology talents (ICT), such as software developers or data scientists, in African countries with clients in Europe or the United States.

In addition, specific jobs will become more important in a digital world that cannot (yet) be replaced by machines or intelligent systems: for example, data labelling and categorization will continue to rely on human input (i.e. identifying/labelling the fire hydrants used in the "I am not a robot" checks) and hence lend themselves as low-skill tech employment opportunities that can be completed in diverse remote settings. And the gig economy — often a temporary or freelance job opportunity that connects contracting parties via online platforms — will allow for more and more people to access these types of jobs from wherever they are, including people in different migratory or displacement situations. These new types of jobs, however, also bring with them new risks, including impacts on wages, precarious employment, or even exploitation. These should be kept in mind as individual migrants and policymakers search for new opportunities.

What to watch

New employment opportunities, new connections for (migrant) workers

Especially for jobs in the ICT sector itself, new jobs in countries of origin could potentially reduce migration flows as the jobs come to the people, not the people to the jobs. If decent wages are paid, countries of origins could benefit in development terms. Easier and secure low-fee digital transactions could also allow much more remote work and access for new communities to the gig economy, connecting people with employers all over the world. In this regard, a key policy question could be how to enable vulnerable populations access to the gig economy, for example for internally displaced people, or refugees, including in urban settings. Finally, digital work arrangements could lead to new forms of collaboration between countries of origin and countries of destination, such as within the ICT sector itself, with special employment or recruitment programs for ICT talent to work in countries of destination, either for training and education, short-term or long-term employment, potentially also creating new avenues for development policies of many countries.

New (old) winners and losers

There is a risk that such "outsourcing" could negatively affect wages or to lead to a new "race to the bottom" in terms of safeguarding labor rights or other issues. And how will it be an opportunity for solid income and not a source of exploitation? Access to these tech employment opportunities will be particularly dependent on the digital infrastructure, especially in remote regions in countries of origin, and will depend on the level of education and digital readiness of individuals. It can thus further exacerbate the digital divide with unequal access to opportunity within countries, based on not only level of education (often related to wealth) but also access to tech (also often related to wealth).

The diaspora potential

The diaspora community could be important connectors and drivers of these developments, either directly in the ICT sector, or by connecting people and business where remote work is possible. Using their insights into the work culture in the country of origin and the client/destination country — this can be useful for developing cross-border work arrangements and help development economies in the country of origin.

Examples

Digital Explorers

This pilot project supported by the EU has built a new connection between two previously unconnected ICT markets — those of Lithuania and Nigeria. Nigerian ICT workers are employed by companies in Lithuania over the span of one year, and are then slated to return to Nigeria with enhanced skills and act as bridgebuilders between the two markets.

Refunite LevelApp Project

Refunite, a non-profit tech organization, has launched the pilot project LevelApp in Uganda which extends digital work opportunities to refugees who have a smartphone and a mobile money account. LevelApp outsources simple data annotation and image labeling work, can be done from home and aims to be more lucrative than traditional sources of income.

Migration and refugee policy between tech-euphoria and tech-dystopia

Balancing the policy-technology relationship

As the migration and refugee policy fields evolve in an increasingly fast and mobile world, technology will be able to contribute to addressing some of the more pressing policy issues. Its use should not be dismissed as problematic per se — our digital world will need technological development to accompany policymaking and implementation. However, tech tools can never be a substitute for sound migration policy making. As people continue to move across borders, migrating for different reasons, or be displaced, fleeing violence, hunger, and war, developing technology can offer both aid and new risks. The Migration and refugee policy space is subject to the same dangers of "techevangelism" found elsewhere: technologies are employed just because they exist, rather than because they serve an actual policy need or provide an answer to a particular policy question. The same goes for "technosolutionism" — seeking to solve every problem or issue through technology, even though other alternatives may exist.

As technology develops, policymakers in democracies must incorporate advancement more systematically into an overarching policy framework — and align them much more closely with political strategies. It is important to ensure that digitalization processes in different migration-related policy fields — from security, domestic, foreign, economic or development policies — are coherent and harmonized and do not dilute overarching policy goals. Finally, other areas related to digitization — like the growth in fake news and new "infodemics" in the migration space — similar to the ones appearing during the current COVID -19 pandemic — will be important issues to incorporate going forward.

Developing public–private sector cooperation

As technological solutions are being rolled out at a blurring pace, it is worth bearing in mind the political and financial interests, as well as issues relating to accountability of different stakeholders involved. The private sector, including tech companies themselves, are key actors, and the nature of cooperation among private actors, governments, NGOs, and refugees and migrants themselves, will influence the boundaries of policymaking. There can be financial interests at play in expanding the use of emerging technologies to humanitarian settings and the migration and refugee space: digital identity provision and biometric capture and management systems are big business. Banking the "unbanked" would offer huge untapped markets. Actors seeking to engage with the private sector should factor in private sector incentives, including business models, to lead to new modes of cooperation. For example, preparing anonymized cell phone data could serve both a public interest, as well as be a sound business case for mobile providers going forward. In a field in which regulatory capacity and legal frameworks are only being developed, there is a risk of "responsibility laundering" between the private and public sectors, creating accountability gaps without clear legal responsibility. Finally, any type of such new forms of cooperation will require careful scrutiny of the private entities involved.[xx]

Handling data in the migration and refugee space

The handling and securing of personal data are of particular relevance in the migration and refugee space. For one, data collected of mixed migration often occurs in settings in which the concept of meaningful consent is murky at best. There is, moreover, a need to think through unintended consequences that could apply in data collection and presentation concerning the movement of people: without protections in place personal data of migrants and refugees could potentially be shared with authoritarian regimes or political opponents. There are privacy concerns as well in combining data collected in one setting with other data sources, such as cell phone data. All actors operating in these fields should consider how data collected is stored and with whom it is shared. The **Big Data for Migration Alliance (BD4M)**, an Initiative started in 2018 by the IOM's Global Migration Data Analysis Centre (GMDAC) and the European Commission Knowledge Centre on Migration and Demography (KCMD) have set themselves the task to further discussions on how to use big data sources for the analysis of migration and in an ethical manner that protects the privacy of individuals.

Creating digital agency for migrants, refugees, and mobile individuals

Digital tools can improve the lives of mobile populations, including restoring their autonomy and agency. Digital IDs, or increased access to mobile money accounts, or online education, could all be a boon for many people around the world, but only if they are combined with ownership, control, and access to crucial information (a "right to informational self-determination"). This can further only be realized if it includes meaningful participation in the development and implementation of those people who use and are subject to these technologies. From people in vulnerable situations that need to register via biometric information in order to qualify for assistance, or asylum applicants who must give up biometric and sometimes other data, individuals in these situation rarely have a choice about their data, and so it is even more important to create standards of what opportunities exist after this information is given. The same goes for border crossings in general: across the world, anyone who wishes to cross a border at regular ports of entry is increasingly asked to provide biometric information and sometimes other data — without necessarily knowing who will have access and with which actors this is shared. This also means exploring ways to increase digital literacy of all people on the move, from rights-based issues, to navigating a "fake news" information space, and how this is possible even in precarious situations.

There are further principles and processes in the digital space needed to uphold the agency of individuals: access to recourse if automated decisions are made, say in accessing national ID digital systems via biometrics; transparency regarding decision-making (though in complete ADM systems this cannot always be done easily, such as in unsupervised machine learning systems). There are many evolving digital ID models that give users access and control over their personal data — technology built on "Privacy by Design" principles. These solutions should be considered for the management for digital IDs for migrants and refugees on the move as well.

Monitoring for possible discrimination and bias

Developing technologies will allow for discrimination and amplify existing biases in certain policy systems, which could affect migrants, refugees, or minorities. Technology can reproduce existing power disparities, in fact may be likely to do so if not checked and monitored carefully. Decisions on people's migration status, or access to anything from visas to services, could, for instance, be impacted by underlying biases present in algorithm testing data. And exclusion from certain digital system, such as national digital ID systems that are closed to people with a certain status, could exacerbate vulnerabilities.

Making migration policies in the digital age

Policymakers and other actors will also need to adapt the policymaking process itself. They will need to include considerations of technology and digital applications into policy thinking from the very beginning, rather than as an afterthought. This will require hiring people that know both the migration and refugee policy space and have certain technical knowledge ("bilinguals" — those speaking both data science and policy speak). One recent example along these lines is a first initiative in of the BD4M in collaboration with **NYU GovLab's 100 Questions Initiative**, the "10 Migration Questions Initiative," in which 80 "bilinguals" identified a list of 10 precise policy questions questions that data could potentially help solve.

Policymaking teams designing tech uses for migration policy should further be diverse and include the target audience in order to avoid potential design biases etc. As the private sector is often leading the state of the art, policymakers need to find new public-private collaboration opportunities. These big frontier questions will require expertise on ethical questions as part of policy development. Finally, the effects new technologies may have on individuals working with them should be monitored carefully; not only migrants or refugees, but also on other implementers. Using AI assistance for decisions on asylum, visas, at borders, or in policing, may have psychological implications for these decision makers too.

All actors operating in the migration refugee policy space will have to expand their knowledge on applications for AI and other tech tools. This will be crucial to evaluate the potential implications of emerging technologies for migration management going forward. This primer seeks to provide a first orientation.

Endnotes

i Nick Romero, **"The Chatbot Will See You Now"**, The New Yorker, 25 December 2016.

ii The fields highlighted in this primer are not meant to be exhaustive, but meant as starting point for further reflection and research. Other areas more broadly related to technological development or digitalization in general will undoubtedly also greatly impact other migration related fields going forward, for example digital learning tools that can be applied in all phases of the migration cycle, including for integration processes, but also the use of drones and satellites as part of border management.

iii For examples see see World Bank Group, **Big Data Solutions in Forced Migration**, 9 May 2019.

iv OECD, **Can we anticipate future migration flows?**, May 2018., p.6

v German PREVIEW Project: German Federal Foreign Office, **Krisenfrüherkennung, Konfliktanalyse und Strategische Vorausschau**, 7 February 2020.

vi This has implications for "training" algorithms (if training data is unreliable) and in testing it for real time stings (if timely data is not readily available).

vii Objective 1 of the Global Compact for Migration (GCM) aims at improving this migration data landscape and different international organizations have launched initiatives towards this end: For example, **The European Commission's Knowledge Centre on Migration and Demography (KCMD)** and the **IOM's Global Migration Data Analysis Centre (GMDAC)** launched the Big Data for Migration Alliance (BD4M) "to advance discussions on how to harness the potential of big data sources for the analysis of migration and its relevance for policymaking, while ensuring the ethical use of data and the protection of individuals' privacy" and in mid-2018 UNHCR and the World Bank founded the Joint Data Center on forced displacement that same year.

viii Karl Steinacker & Volker Schimmel, Know Your Customer – Wie Digitalisierung humanitären Hilfe verändert, book chapter, forthcoming 2020.

ix Blockchain technology used as part of Digitals ID systems can add extra layers of security and privacy allowing multiple actor to access the system for verification purposes without having access to the entire information on individuals.

x UNHCR, **Planning and Preparing Registration and Identity Management Systems. Understand the Context**, last accessed June 8, 2020.

xi Rebecca Ratcliffe, **How a glitch in India's biometric welfare system can be lethal**, The Guardian, 16 October 2019.

xii Abdi Latif Dahir & Carlos Mureithi, **Kenya's High Court Delays National Biometric ID Program**, The New York Times, 31 January 2020.

xiii SDG 16.9 seeks to "*…by 2030, provide legal identity for all, including birth registration.*" There are various goals of the GCM and the GCR that touch upon different aspects of identity and identification as well.

xiv Dania Saidam, **Mastercard Introduces Consumer-Centric Model for Digital Identity**, Mastercard Content Exchange, 26 March 2019.

xv Francesca Street, **How facial recognition is taking over airports**, CNN, 8 October 2019.

xvi See for instance the various EU initiatives under **EU LISA**.

xvii This type of privacy violation through "data mining" or "data triangulation" is often overlooked. It comes about by combining two or more datasets that each might not reveal much by themselves, but in combination are deeply violative.

xviii Blockdata, **Blockchain is disrupting the $700 billion remittance industry**, Medium, 7 March 2019.

xix Worldbank, **World Bank Predicts Sharpest Decline of Remittances in Recent History**, 22 April 2020.

xx See one example: Privacy International, **One of the UN's largest aid programmes just signed a deal with the CIA-backed data monolith Palantir**, 12 February 2019.

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For more information: **www.faire-migration.de**

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For more information: **www.gmfus.org**

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www.bosch-stiftung.de/migration