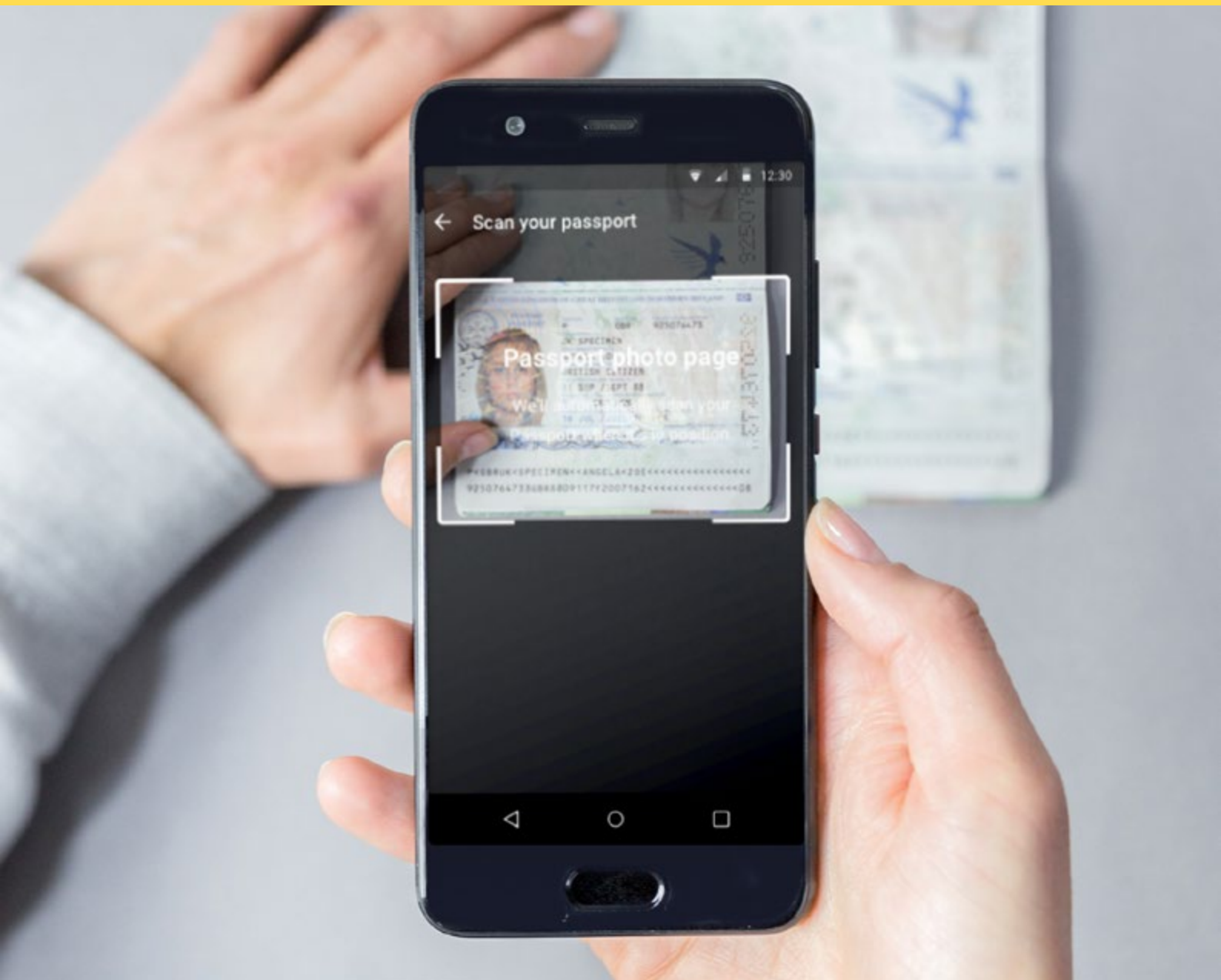




Digital Identity Toolkit

Section 2: Identity basics

May 2023



What is this Toolkit?

Digital identity is a relatively new but rapidly evolving sector that can and will affect many aspects of our everyday lives.

Digital identities verify and authenticate someone's identity. They can then be used to access a wide range of services and opportunities, from health and education services, voting and travelling, through to online shopping and dating. Governments and the private sector are developing and implementing digital identity solutions, and they're likely to become increasingly common in the future.

While there is already a lot of information on this topic, much of it is in lengthy, technical reports and hasn't been collated into a simple format that non-technical people can understand. We hope this Toolkit can help close that gap.

This Toolkit has been designed to help you find everything you need to know about digital identity. Before producing it, we spoke with individuals and non-profits around the world to get a sense of what they'd like to know about digital identities.

The audience for this Toolkit is members of the public, non-profits, entrepreneurs, developers, journalists and academics who want to learn more about digital identity and how digital identities might be relevant to them in their lives or work.

We hope you find this Toolkit helpful and welcome your feedback about how it could be improved.

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Introduction

Identification is a way of recognising someone as a unique individual, and can be used to verify that somebody is who they say they are.

Identification allows you to unlock a whole range of opportunities in the modern world such as public services like healthcare and education, receiving unemployment benefit and loans, or buying or selling land.

Identity really matters. Despite being recognised as a human right, an estimated 1.1 billion people globally still lack an official ID. Poor, rural and marginalised populations are the most affected. Since they are unable to access some of the critical services and opportunities outlined above, they risk becoming even more vulnerable.

Those without identification are also at risk of becoming stateless, which leaves them legally and politically invisible and destined to a life of poverty.

People have needed to identify themselves throughout human history. At first, they relied on physical features such as birthmarks and tattoos. Later, they began to rely on formal documentation such as passports, driving licences and birth certificates.

In modern times, paper-based systems are being replaced by digital identities which are more secure and trustworthy, can be used easily online, can't get lost, and enable users to access a whole suite of services in one go.



What is identification?

The Oxford Dictionary defines identification as 'the process of showing, proving or recognizing who or what someone or something is'. More simply put, it is a way of identifying someone as a unique individual, and a way of verifying that somebody is who they say they are.

There are many elements of a person's identity including their gender, ethnicity, sexual orientation, class status, nationality, age, religious or political affiliations, or their physical or cognitive abilities.

Ignacio Mas and David Porteous of the Digital Frontiers Institute consider two main types of identity in their paper [Minding the Identity Gaps](#).

1. Identity based on intrinsic uniqueness: This is the idea that you're unique on a biological level, proven by your fingerprint, birth certificate and other methods. This aspect of identity helps us differentiate one individual from another, and is the traditional basis of formal identity.
2. Identity based on behaviour: This is the total of actions and character traits that paint the full picture of who you are — even though you won't find room for these qualities on a passport application. This aspect of identity is typically used to provide more information about you as an individual, but it doesn't necessarily differentiate you from everyone else in the world.

In this Toolkit we focus mainly on identity based on intrinsic uniqueness as this is this type of identification that gives people access to the broadest range of services and opportunities.

What identification is used for

People need to identify themselves in a wide variety of everyday situations. Having no way of proving who you are can exclude you from many activities, including:

- Opening a bank account
- Accessing public services - for example, medical care or admission to a school or university
- Accessing public support such as student loans, pensions, unemployment benefits and many government grants
- Travelling to another country
- Renting or buying a house, applying for a mortgage, or buying or selling land
- Getting married
- Buying cigarettes or alcohol or entering a nightclub where you need to prove your age
- Buying a mobile SIM card (in some countries)
- Registering to vote (in some countries)
- Owning a car and applying for/renewing a driving licence
- Applying for a passport
- Opening a mobile money account (such as M-PESA in Kenya)

Types of traditional identification

Documents that are regarded as sufficient identification vary from country to country, and different identification is considered acceptable for different institutions. For example, to rent a movie, borrow a book from a library or buy alcohol, photo identification - such as a driving licence - will most likely be sufficient. In some countries, you may be asked for proof of address, such as a utility (gas, electricity, water) bill to access some services, including opening a bank account or picking up mail at a post office.

Some countries have compulsory identity cards. Where there is no compulsory identity card, a range of documents can be used for identification. For example, in the USA, where almost two-thirds of citizens do not own a passport, a driving licence functions as an identity document. In other countries, proof of identity documents also include a passport, a firearms licence (New Zealand), a ration card (India) and a national age card (Ireland). In the UK, passports or driving licences can be used as a photo ID.



'Birth registration is generally the most important document for accessing rights and services. By itself, it may not always be enough to access the full panoply of rights but it is often necessary. Death registration documentation may also be important for activating inheritance rights. Birth certificates are often called "breeder documents" because other forms of identity documents rely on birth registration and birth certificates to verify and authenticate a person's identity.'

[The Knowledge Platform Security and Rule of Law](#)

Examples of paper-based/traditional forms of identification include:

- Passport
- Government-issued driving licence
- Credit card
- Birth certificate
- Employee ID
- School or student ID
- National ID card (in some countries)
- Ration card
- Pensioner photo card
- Marriage certificate
- Post office passbooks
- Weapons licence
- Disability ID
- Refugee identity card
- Voter ID (some countries)
- Thumbprints

Paper documents are becoming increasingly replaced with smartcards and electronic technologies. In almost all countries, including most of the European Union, some form of government mandated ID card is now the standardised and compulsory means of proving your identity. Britain is one of the few exceptions.



Why identity matters

Identity as a human right

Article 6 of the Universal Declaration of Human Rights stipulates that 'Everyone has the right to recognition everywhere as a person before the law'. Yet we are still far from making this ideal a reality. Although, in many regions of the world, almost every person has been legally registered or recognised, the [World Bank's Identification for Development Global Dataset](#) (2017) estimates that 15 percent of the world population, or 1.1 billion people, still lack an official ID. Without it they cannot vote, own land, access healthcare or social services, or go to school or university.

The international community is seeking to address this fundamental barrier to realising basic human rights. Target 16.9 in the UN Sustainable Development Goals aims 'to provide legal identity for all, including birth registration by the year 2030'.

[Sustainable Development](#)

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We need identification to access critical government and private services

As the scope and sophistication of ID systems improve they can have a huge impact. They can help people realise their individual rights, improve accountability, build government capacity, enhance national security and increase opportunities for greater citizen interaction with public services such as accessing health records or filing taxes. They can also serve more specific purposes, such as ensuring that pensions, transfers and subsidies reach their intended beneficiaries or providing more accurate details for voter rolls.



‘Have you ever opened a savings account? Taken out a loan? Used a credit card? I bank, therefore I am, oversimplifies the connection, but your ability to prove you are who you say you are is a prerequisite for your ability to access the financial services you need to live a stable life, support your family and follow your dreams.’

[Accion](#)

Globally, an estimated 650 million children between 0-16 years old have not had their birth registered. As well as being unable to access critical services, children who are unable to prove their age are at risk of being forced to marry. Lacking a birth certificate may also prevent young people from finding work in the formal sector or completing education. Poor, rural and marginalised populations are the least likely to have their births registered, increasing their vulnerability further.

As the Omidyar Network explains, ‘without a form of identity, one is at risk of being disengaged from the formal economy, government benefits and programs, and other critical opportunities’.

For example, people without ID in Kenya cannot buy a mobile phone and they aren’t allowed to apply for government tenders. They cannot own property or buy a vehicle. Due to heightened insecurity in the country, people can’t even enter a government or some private buildings without an ID, nor can they enrol in school, sit national exams or get their marriage officially recognised. The Kenyan government needs to identify its citizens to plan and deliver services efficiently, raise revenues and stimulate economic growth.

In the USA, research has shown that it can be virtually impossible to escape homelessness if you don’t have an ID. This means being shut out of federal, state and county buildings, where social services agencies that help the homeless are often located. It makes it much harder to get a job, find a place to live, open a bank account, get food stamps and disability benefits, or, in some instances, even stay at a homeless shelter. In some states, no ID means not being able to vote.

‘According to a survey by the National Law Center on Homelessness and Poverty, in a given month in 2004, 54 percent of homeless people without [a] photo ID were denied access to shelters or housing services, 53 percent were denied food stamps, and 45 percent were denied access to Medicaid or other medical services.’



[The Pew Charitable Trusts](#)

People who lack an ID are also at risk of becoming stateless, like millions of others around the world. If the state doesn't acknowledge your existence and legal status, you are often unable to access basic rights and services, such as education, freedom of movement, healthcare and access to justice. Sometimes entire communities lack documentation. This leaves them legally and politically invisible. Without effective citizenship, millions - especially the poor and members of minority groups - become marginalised and are prevented from realising their rights and reaching their full potential. This fuels discontent and conflict, and can exacerbate poverty as these individuals are only able to work in the informal economy where they are often exposed to unfair or exploitative working conditions. Their needs are also ignored by the state.

But it is not just the state that has an interest in our 'identifiability'. Commercial enterprises, such as banks and retailers, have long been interested in verifying the identity of their customers. You need identification to be able to access many of these kinds of services. You might, for example, be prevented from opening a bank account or using mobile money as regulations require that financial service providers formally verify users. It can also be difficult to shop online or travel overseas.



Accessing identification can be a significant challenge

People may have difficulty accessing legal identity documents due to various factors:

- Prejudiced officials refusing to register births.
- A late or non-standard birth registration requiring court proceedings (for example, for orphans or abandoned children) that were never completed.
- The government requiring documents that the client cannot get, such as parents' IDs or witnesses of the circumstances of the birth, to register a birth.
- Cross-border cooperation requirements to obtain evidence, proof or copies of documents.
- Officials refusing to register marriages between people of different ethnic backgrounds, nationalities, religions or cultural beliefs.
- The parents' marriage never being registered officially. If the spouses are dead, their children may have a need for the certificate and may not know that it does not exist.
- Divorce papers being difficult to get in countries where there are discriminatory attitudes against people (often women) seeking divorce.
- Situations of conflict or natural disaster, where the civil registration systems break down. In this case, records may have been destroyed, and temporary, informal solutions may have taken their place.

“

‘Unfortunately, gaining access to legal identity documents can be difficult or even impossible.

In theory, governments should provide documents to their citizens, but in reality, the process is complicated by burdensome bureaucracies, distant offices, and even discriminatory officials.’

The Knowledge Platform Security and Rule of Law

A human face

To bring all of this to life, what follows are some case studies to give you a sense of the difficulties some people encounter when they are unable to prove their identity:

Case study A: South Africa

I always knew where I belonged, then my ID was stolen and I was nowhere and I was no one.

In my heart I am a South African. But for a short time I had nothing to prove this. This was terrifying, even though I am in the lucky position to have an ID number and am on the system. I was able to replace my most important document with relative ease.

Many people battle for years to try to prove who they are. I was reminded of it recently when desperate 'faceless people' had yet again to turn to the courts to be able to belong somewhere. The Department of Home Affairs will not issue birth certificates and ID documents without being thoroughly convinced the person it issues these documents to is indeed South African.

However, even being a legal citizen can be hard to prove with incompetent officials who do not really want to assist. Sometimes things are out of your hands, as in the case of a Cape Town father who only realised five years ago that his now 11-year-old daughter's birth was never registered.

This was not his fault. He had used a private company to register his daughter's birth. He filled in the required documents and paid the fee. Ten days later the birth certificate was delivered at the hospital. All went well, and the father was even able to obtain a passport for his daughter. But, to his shock, he discovered five years ago that the birth certificate was fraudulent. He found out when her passport had lapsed and he tried to renew it. Home Affairs told the father his daughter was not on their system.

This was the start of the father's uphill battle to obtain a legal birth certificate for his daughter. He visited various Home Affairs offices and filled in the required documents.

The department questioned why the father did not have the proof of his application for the birth certificate 11 years ago. The father said he had not kept it. Who would after all these years?

The company did not respond, and the hospital simply said it was not liable. The child is meanwhile being home schooled as no school wanted to accept her without any valid papers.

The father said it is a major problem as his child is faceless. She cannot participate in any extramural activities. But the biggest problem is that, without a birth certificate, she cannot obtain an ID document. Without this, she can basically not function as an adult because, in the future, she won't be able to open a bank account or get a job.



Adapted from IOL: Without an ID, You Are No One in Your Own Country. <https://www.iol.co.za/news/opinion/without-an-id-you-are-no-one-in-your-own-country-16779617>

Case study B: Kenya

Few people in the Kiambaa area of Kikuyu constituency on the outskirts of Kenya's capital can dispute Mushewa Ndolo's talent as a carpenter. His hard work and handiwork has endeared him to dozens of loyal clients for whom he tailor-makes furniture.

But the father-of-four, who works from an abandoned, dilapidated structure at Kiambaa shopping centre alongside other men from his community, is struggling to grow his business. He cannot apply for tenders or other 'big jobs' because he doesn't have a bank account. Nor can he own property or even buy a vehicle – all because he doesn't have any official ID.

Mushewa is one of nearly 4,000 members of the Shona community in Kenya, a stateless group whose forebearers migrated to Kenya from Zimbabwe as missionaries more than 50 years ago, but who are not recognised by the state as Kenyans and, as such, have never been issued with Kenyan identification papers.

'Life is not easy for us. We cannot own property, register a mobile phone SIM card, operate a bank account or take part in any activity where official identification is required,' Mushewa said. He explained that he and other members of his community have petitioned the Kenyan government about their status, but with no success.

His predicament is shared by Elijah Wangila, an indigenous Kenyan who lives without an ID card and who has never applied for the mandatory document, even though it is issued free of charge to those deemed citizens.

Wangila says that he doesn't have an ID card because he missed the opportunity to apply for one when he turned 18. Applying now, years later as a father of five, would arouse suspicions, he claims, as well as being a tedious bureaucratic nightmare. As a result, he is forced into an 'identityless' life of casual and irregular work.

'The government treats people over the age of 25 without an ID with suspicion,' he said. 'They think that such people refused to seek ID cards because they wanted to engage in crime.'

Luckily, Wangila's wife has an ID card, and so she has been able to apply for their children's birth certificates, saving them from the same difficulties of living life without official identification as their father.



Adapted from Equal Times: Africa's Invisible Millions Survive Without ID Documents. <https://www.equaltimes.org/africa-s-invisible-millions#.XK9Y-FlgzblV>

Identity is linked to power

In other words, our gender, ethnicity, sexual orientation, class, religion, age and other individual characteristics can have a significant effect on whether we have social, political and economic power. Men may be able to access more opportunities than women, or people from a certain tribe or political party may more easily gain employment or access government services.

‘Social and cultural identity is inextricably linked to issues of power, value systems, and ideology.’

[Critical Media Project: Why Identity Matters](#)



Case study: Open Society Justice

Since 2013, paralegals at [Namati](#), the [Open Society Justice Initiative](#), and [Nubian Rights Forum's](#) citizenship programme in Kenya have gathered data about discrimination as people have applied for documentation, and then used it to show the existence of illegal discrimination. They found female applicants experienced a longer wait for documentation. They also found that delays in issuance of late birth certificates were causing problems for students who could not take crucial tests without them.

Two [policy briefs](#) featuring the data have been submitted by the Open Society Justice Initiative, which represented the Nubian community in litigation before the African Committee of Experts on the Rights and Welfare of the Child. Now these organisations are working with additional partners in other parts of Kenya, and all of the partners use a common case form to gather data across all sites. It is expected that data from multiple sites across the country will strengthen national advocacy in the future.

‘While many assume that anyone can accrue social, economic and political power if they have talent, ability, and work hard (the idea of meritocracy), we also need to acknowledge the way historically ingrained prejudices are built into existing institutions and structures and consider how they create barriers and limit opportunities.’

[Critical Media Project: Why Identity Matters](#)





A brief history of identification

The following section has been adapted from two sources:

[*Trulioo: The History of ID Verification*](#)

[*Gresham College: Identity and Identification*](#)

Identity verification has been around for thousands of years. It can be as simple as remembering your friend's face and picking them out from a crowd to something as complex as verifying identity based on the blood vessel patterns on the back of someone's hands.

Before official documents were produced, people were often identified by unique features such as a scar or birthmark. As far back as 100,000 years ago, jewellery and other decorative goods helped to identify people, whilst tattoos were used in ancient Egypt around 2000 BC.

Once people started to write and keep records, identification was recorded too. Even in the Babylonian empire, governments started collecting citizens' personal information for a census as early as 3800 BC, and the Roman Empire created documents that are still common today, such as birth certificates, land title deeds and citizenship records.

Over time, we started relying on documents for identification purposes, predominantly those issued by the state, such as passports and birth certificates. During the thirteenth century in Britain, it was imprudent for anybody to wander far from their village without some form of identification in writing, such as a letter from an official testifying trustworthiness or explaining exactly why they were on the move.

By the end of the seventeenth century in England, the forms of identification that might have to be carried by a person on the move had increased and became more specialised in order to curb criminality, or to control and facilitate mobility. These included apprentice passports, certificates for maimed and shipwrecked sailors, beggars' licences and parish pauper badges. In some circumstances, these were supplemented by the use of physical marks, applied directly and painfully onto the body of offenders to identify and publicise their marginal or criminal status.

The first documents resembling passports were invented in England during the reign of King Henry V in 1414. Then, in the 1800s, the United Kingdom and the Netherlands created unique identification numbers for their citizens. These later inspired the creation of identity cards, such as the United States' social security number cards, produced from 1936. After World War 2, photo IDs became widespread.

Biometrics can be traced back to the late 1870s when Sir William Herschel used ink fingerprints as manual signatures on wills and deeds. The Japanese automated this process in the 1980s with their automated fingerprint identification system.

In 1977 the first move from paper records to digital ones came when the USA computerised its paper records and established a program capable of cross-referencing between various banking and governmental bodies.

This paved the way for what many would now recognise as 'smartcards', which were first popularised by governments who used them as national identity cards. Germany, Singapore, the Czech Republic and Spain were among the first countries to use smartcards in the late 1980s. These cards enabled citizens to access public services including healthcare, finances and citizenship in one place. The cards could contain a range of information, including an individual's digital signature, date of birth and biometric data such as fingerprints.

Biometric data took a huge leap forward when companies and governments began using new

methods to identify people. For example, in 2004, the US deployed its first state-wide automated palm print database, which was primarily used by law enforcement to match unidentified palm prints to a list of known offenders.

In addition to this technology, other improvements in biometrics include advancements in DNA sequencing, hand geometry, speech recognition, iris recognition, facial recognition and vascular pattern recognition (based on blood vessel patterns in the hands).

But the state has not been the only driver of IDs. There is also a private market in identification, with information being collected and documents issued by commercial providers. These include credit cards, consumer identities and online verifications, which are commonly accessed via codes and passwords. Private companies, including Sagem Morpho in India and Gemalto in South Africa, are arguably now anticipating and driving state identification agendas, rather than just responding to policies devised by governments. The circulation of money and security against forgery and counterfeiting depends on a reliable system of individual identification and has been a big driving force in the process.

In the same way that commercial enterprises are constantly bringing new products to market, new identification technologies and services are being developed and marketed to meet complex commercial needs whilst generating profit.

With the rise of the internet and e-commerce, multi-factor verification has been introduced. This requires different steps to verify a user's identity, usually involving something only they possess and something only they know. The simplest example of this is when using an ATM, where a customer needs a physical bank card and a PIN.

Digital IDs have since become more sophisticated involving processes such as SMS verification, or using logins from social media sites (such as Facebook) to access other sites and services. You can learn more about this in later sections of this Toolkit.

As online fraud has become more common - and e-commerce is now used by millions across the globe - identity verification is becoming a legal requirement in many jurisdictions. Policies and legal controls such as know your customer (KYC) and anti-money laundering (AML) have been introduced, ensuring that the financial and legal industry undertake due diligence to prevent and detect types of fraud and other money laundering activities.

'Identity is the history that has gone into bone and blood and reshaped the flesh. Identity is not what we were but what we have become what we are at this moment.'

[Nick Joaquín: Culture and History](#)



Out with the old, in with the new:

The shift from paper-based to online/digital IDs

In the digital era, older paper-based systems are becoming increasingly irrelevant in an online world.

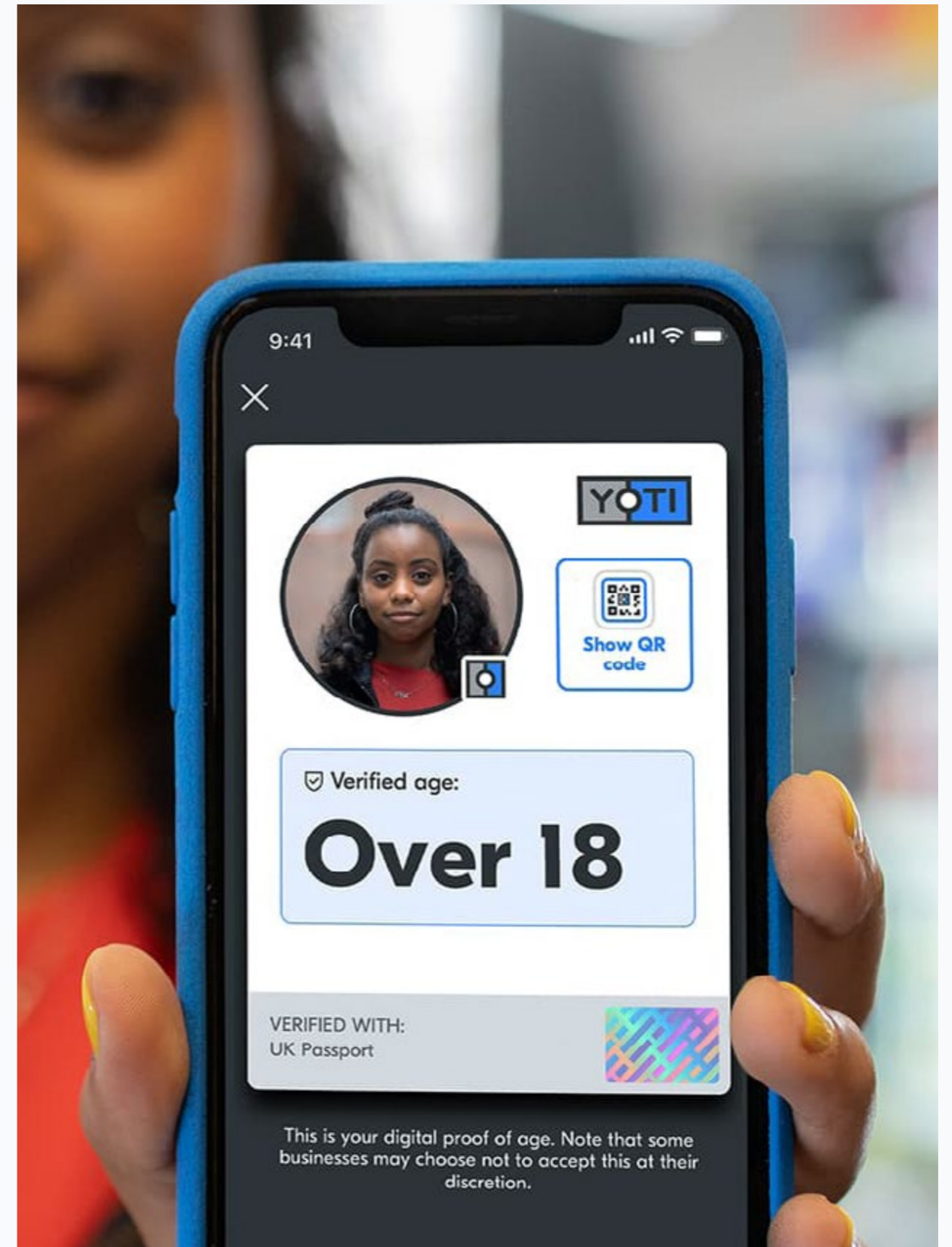
Digital identities are more secure and trustworthy than paper-based identities. Paper-based identification can be easily lost, destroyed in fires or floods, be damaged or deteriorate over time. Paper-based IDs and documents also put people at significantly more risk in comparison to their digital counterparts. They can be duplicated more easily, making people prone to identity theft and fraudulent activities. Paper IDs often aren't machine readable and are therefore hard to verify when required to access online services.

Digital identities are easier to verify and can aid the expansion of services provided online and across borders. Government services can be delivered more efficiently and economically, refugees can quickly and easily access the services they need and citizens can more readily access a global marketplace.

Digital IDs can also remove the need for multiple forms of documentation to access different services and can be used to give people access to a whole suite of services at once.

As Michael Savage explains in [the Guardian](#),

'We envision a future in which individuals could choose to no longer hold a passport, driving licence and birth certificate as individual verifiers. Instead, they could opt for all these forms of documentation to sit under one register of entitlement. This could bring about significant cost savings for government, not least from reduced postage and printing costs associated with different types of physical identification. Physical documentation will probably be required for some time, given varying degrees of digital uptake across the globe, though the long-term picture undoubtedly looks paperless.'



Adapted from Equal Times: Africa's Invisible Millions Survive Without ID Documents. <https://www.equalltimes.org/africa-s-invisible-millions#.XK9Y-FlgzblV>

Glossary

Term	Meaning
AML	Anti-money laundering checks are carried out by regulated businesses to perform due diligence and prevent financial crime.
API	Application Programming Interface refers to the software that allows for communication between two computer programs, such as applications, e.g. when Yofi shares your age with an app.
Back-end system	The infrastructure and system behind the 'front-end' of the digital identity solution. API would be a part of back-end system design.
Biometrics	Biometrics relate to the physical characteristics that can be used to identify individuals. Examples include fingerprint mapping, facial recognition or iris scans.
Blockchain	A way of recording information, so that it is stored across several computers connected in a network. This makes it almost impossible to exploit the system, creating a secure technology.
Cloud Infrastructure	The collection of elements needed for cloud computing. It includes hardware, software, network resources, computing power and storage.
GDPR	General Data Protection Regulation is legislation set out by the EU to protect the personal information of all data subjects within the region.

Term	Meaning
IDSP	Identity Service Providers , sometimes referred to as identity providers, allow people to remotely verify their identity.
KYC	Know-Your-Customer checks form a part of due diligence, which allow institutions to verify the identity of a customer whilst doing business with them.
MFA/V	Multi-Factor Authentication/Verification refers to a security measure in which the user must present at least two pieces of evidence to access a particular service. Alongside a username and password, the additional verification factor is usually based on one of the following things: something you know (e.g. a password), something you have (e.g. a mobile phone), or something you are (e.g. biometric data in the form of a fingerprint).
Open Source	This is a copyright licence under which the user can amend, use and distribute software. This is particularly helpful in easily creating digital identity platforms.
PII	Personal Identifiable Information is any data that can reveal someone's identity, either directly or indirectly. This must be protected at all times.
RP	A Relying Party refers to a server allowing access to secure software.
SDG	The UN has set out 17 Sustainable Development Goals . SDG 16.9 aims to provide legal identity for all, including birth registration.
SDK	A Software Development Kit is a collection of software development tools that makes it easier to develop an application, such as one for digital identity. It may also contain a software framework.

Further reading

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