Digital Identity Toolkit

Section 5: Digital identity solutions

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, non-profit organisations and the private sector are developing and implementing digital identity solutions, and they're likely to become increasingly common, and popular, in the future.

While there is already plenty 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 might help close this 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 are 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 their work.

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

Contents

Summary	04
121 Platform	06
Aadhaar	08
Biometric Identity Management System	10
Dignified Identities in Cash Assistance	12
e-Estonia	14
iRespond	16
Last Mile Mobile Solutions	18
Modular Open Source Identity Platform	20
OpenCRVS	22
RedRose	24
SCOPE	26
Simprints	28
Glossary	30

Summary

In this section of the Toolkit you'll find a directory summarising the details of a number of non-profit digital identity systems. While this is by no means a complete list of solutions, it provides a useful snapshot of how digital identity is used in the non-profit and humanitarian sectors, the breadth of options which exist and some insights into the system which may be the best for you, assuming you are looking for a solution for your NGO, government organisation or business.

Simprints, for example, specialise in providing digital identity solutions to healthcare providers, working with organisations including BRAC and Mercy Corps. BIMS is a biometric identity system created by the UNHCR to facilitate aid distribution for refugees, whilst e-Estonia is a national digital identification system used by Estonian citizens to access a range of government services online.

Digital identity: Solving everyday problems

This overview of digital ID solutions will give you a flavour of what's out there. To help you understand what each provider offers, we've broken down the details for you into: type of solution, who it targets, how it is used, its unique selling point (USP), and a few key uses. As part of our review, we'll also look at how each provider verifies and authenticates users.

121 Platform

www.121.global

What

An initiative launched by the Netherlands Red Cross, designed to facilitate and improve the distribution of cash-based aid in humanitarian contexts. The platform uses a series of mobile applications and digital products, depending on the end-user.

Who

121 is a platform launched by 510, an initiative of the Netherlands Red Cross. The platform aims to create digital products that aid the efficiency and effectiveness of the humanitarian aid delivered by the Netherlands Red Cross. The organisation has partnered with other humanitarian partners such as Dorcas, Red een Kind and Tearfund, alongside other tech partners, to develop the 121 platform to facilitate cash-based aid. This has led to several pilots in countries including Ethiopia, Malawi and Ukraine.

How

121 has two separate components depending on the end user:

a) If the end user is a displaced person, three applications are available which:

i. provide information about how to access aid;

ii. allow the user to self-register for aid using personal data;

iii. facilitate communication between the user and aid workers.

b) If the end user is a cash program manager or an aid worker, two platforms are available which:

i. collate information about relevant aid programs in one central space;

ii. improve the efficiency of establishing and executing a cash-based aid programme.

Key selling point

121 uses Human Centred Design, a framework that uses the real-life experiences of people involved in all stages of the process, including both those receiving and distributing aid, to co-design and guide the creation of these solutions.

Main uses

- Receive up-to-date information about available aid programmes
- Communicate with local aid service providers using instant messaging (via a WhatsApp helpdesk)
- Self-registration using a smartphone
- Identity verification using a registered phone number to receive digital cash
- Monitor when payments are issued (without monitoring what payments are spent on)

Image taken from https://www.121.global/portfolio/isiolo-kenya/

Aadhaar

www.uidai.gov.in

What

Aadhaar is a unique 12-digit number which both Indian citizens and qualifying foreign nationals can obtain on a voluntary basis. This number can then be used as proof of identity and address, to pass Know Your Customer (KYC) checks, to access subsidies, and to make it easier to get a passport, amongst other things.

Who

The Aadhaar scheme was set up by the Government of India and was initiated in an attempt to create a single, cohesive national identity system.

How

Aadhaar is a national scheme, run on an online platform. Alongside the platform is an app and a physical card. To get an Aadhaar, citizens must go to an enrolment centre where, upon verification of their identity (applicants must provide proof of identity and proof of address documents), biometric data in the form of iris and fingerprint scans are taken.

Key selling point

The Aadhaar scheme is touted as the world's largest biometric identity programme. There has been a 93% uptake of this service and registration is free.

Main uses

- Proof of identity
- Proof of address
- Direct Benefit Transfer
- Biometric attendance systems
- To open bank accounts
- Paying taxes
- Registering MSMEs (Micro, Small and Medium Enterprises)

Image taken from https://www.istockphoto.com/photo/senior-citizen-of-india-gm1392456520-448690394?phrase=aadhaar

Biometric Identity Management System (BIMS)

www.unhcr.org

What

BIMS is a multi-modal biometric identity management system created to register and identify those who receive aid from the United Nations High Commissioner for Refugees (UNHCR). It can be used to register and verify the identity of refugees in order to improve aid distribution.

Who

BIMS is a digital identity system launched by the UNHCR, an agency dedicated to providing aid and protection for refugees, forcibly displaced communities and stateless people.

How

Using technology developed by global consultancy firm Accenture, BIMS uses its Unique Identity Service Platform (UISP) software in combination with webcams, iris scanners and fingerprint scanners to record biometric information without the need for an internet connection. Users must present 2 of either their irises or fingerprints to be positively identified.

Key selling point

It only takes 5 seconds to identify a registered user, which is much quicker than manually checking records. Additionally, webcams and scanners only require a USB connection to a laptop, making it a viable solution from any location. As a result, BIMS can assist large volumes of people quickly and efficiently.

Main uses

- Identity cards for those without official identity documents
- Document issuance
- Aid distribution
- Keep a record of beneficiaries

Image taken from https://www.unhcr.org/uk/news/briefing/2022/9/6311bba14.html

Dignified Identities in Cash Assistance (DIGID)

www.hiplatform.org/digid

What

DIGID is a project focused on addressing the challenges faced by those who have no recognised proof of identity. The project has two phases. The first aims to offer solutions for those in need of humanitarian cash assistance but have no official forms of identification. This lack of identification prevents people from registering for aid. The second focuses on applying the findings from the first phase to the context of migration.

Who

DIGID is funded by Innovation Norway and a consortium composed of the Norwegian Red Cross, Norwegian Refugee Council, Norwegian Church Aid, and Save the Children Norway. The International Federation of the Red Cross (IFRC), in partnership with the Norwegian Red Cross, has been leading the technical implementation of the DIGID project. Gravity is the technical digital identity provider.

How

DIGID involves enrolling beneficiaries to the system using biometric technology and uses blockchain technology to store the data. Beneficiaries are enrolled using either biometric devices such as fingerprint scanners, or by entering their personal details using a tablet or cell phone.

Key selling point

Beneficiaries can view their own credentials, and see any data that an NGO has collected about them. They can also request to update, delete and recover their data as needed, meaning that users have greater control over their privacy.

Main uses

- Provide humanitarian cash assistance
- Creation of digital wallets
- Share credentials (with consent) using biometrics

Image taken from https://hiplatform.org/digid

e-Estonia

e-estonia

www.e-estonia.com

What

e-Estonia enables Estonian citizens to interact with the State through digital solutions, one of which is a digital ID card. As a result, many bureaucratic processes can be completed quickly and easily online.

Who

e-Estonia is a drive set up by the government of Estonia which is mandatory for all citizens and permanent residents over the age of 15. It is designed to increase the accessibility and efficiency of government services in the country.

How

Each individual receives a unique 11-digit personal identification number from the Government. This is stored on a physical ID card which also contains a ready-to-use e-ID chip. This can only be used if the user enters the correct PIN codes, known only to them. To access the full range of government services available, the user needs their ID card, a card reader and an internet connected device with the correct software, which is free to download. All that is needed is a completed application form which requires some personal data, a document proving the applicant's identity, a photograph and a state fee. No biometrics are required, and the submitted information is encrypted and saved on to the card.

Key selling point

The digital ID card can be used for an extensive range of public and private sector services. It is an incredibly comprehensive and well-established system with 99% of Estonians registered.

Main uses

- Voting
- Legal Travel ID
- Healthcare records
- e-Governance
- Business Services
- Education and research services

Image taken from https://e-estonia.com/

iRespond

www.irespond.org

What

iRespond aims to give an identity to those who have no valid form of identification. They work in several countries across Africa and Asia. One initiative is based in Mae La Camp in Thailand, where iRespond and the International Rescue Committee have created a digital identity programme to provide 35,000 displaced people with access to healthcare and educational services.

Who

iRespond is an international NGO working with other global NGOs, government agencies and leading organisations in the healthcare, clinical trials and protection sectors.

How

iRespond assigns a unique identifier to each user, primarily through an iris scan, but also through other biometrics if necessary. Once a user is enrolled, an encrypted biometric template is created and a random unique 12-digit number is generated. In order to verify the identity of the beneficiary before assistance is provided on subsequent visits, their template must be matched and the system must return the same 12-digit number.

Key Selling Point

The technology is privacy-preserving as no personally identifiable information or protected health information is collected or stored. As a result, sensitive information cannot be obtained by any third party.

Main uses

- Delivery of humanitarian assistance
- Verification for employment
- Identification of refugees
- Vaccination records

Image taken from https://www.irespond.org

Last Mile Mobile Solutions (LMMS)

www.lmms.org

What

LMMS is a series of digital solutions designed to improve aid distribution and rapid reporting functionality to humanitarian aid workers. Among these solutions is a digital identity registration module. Through a single registration by the user, multiple individual providers are able to provide their services to beneficiaries.

Who

LMMS is a solution developed by World Vision International, an NGO which focuses on helping vulnerable children. The solution has been implemented in over 30 countries worldwide and manages the data of over 10 million beneficiaries. Humanitarian agencies that use, or have used, LMMS include World Vision International, Oxfam, UNHCR, Adventist Development and Relief Agency (ADRA), International Committee of the Red Cross (ICRC), Action Against Hunger, CARE, Food for the Hungry, Save the Children, Welthungerhilfe, Medair, UNFPA and World Vision (WV).

How

Users provide a photograph and personal details by way of registration, after which their household receives an LMMS card. This acts as an ID card, and has a unique barcode which contains the data of all those registered to the household. When beneficiaries need to collect their aid (food, water, medicines, etc), aid workers scan the barcode on the LMMS card and verify the identity of the beneficiary using the photograph on the card. The system then calculates what aid the beneficiary is entitled to receive and records this information in the system.

Key Selling Point

Household members or individuals only need to register once digitally, after which they have access to several services and interventions by multiple providers. Registration can be done offline and the system can be integrated with third party applications.

Main uses

- Aid delivery
- Management of aid recipients
- Cash transfers
- Monitoring and evaluation

Image taken from https://lmms.org

Modular Open Source Identity Platform (MOSIP)

www.mosip.io

What

An open source platform on which national foundational IDs are built. A national foundational ID is a multi-purpose identification system which can be used by the whole population for a wide range of services. MOSIP helps governments and other user organisations to freely implement a digital, foundational identity system in a cost-effective way.

Who

The MOSIP project is based in the Bangalore Institute of Information Technology and is funded by the Bill and Melinda Gates Foundation and Omidyar Network. It primarily targets government bodies and institutions.

How

MOSIP creates a country's base 'foundational' identification system where individuals receive a unique identifier from the government. This foundational ID can then be used to access a wide variety of government and private services. As countries consider how best to build foundational ID systems, they face several policy and technological choices. Once these choices are made, countries often grapple with a number of common implementation challenges. These include ensuring uniqueness in the system, interoperability, privacy by design, reaching scale, avoiding vendor lock-in and maintaining affordability.

The open source code can be used by nations to build their own identity systems. A core technology layer provides the foundation for the system. A system integrator layer then allows each country to customise the platform so that it is specific to their use, while a final use cases layer allows the country to add their own ID-linked services.

Key selling point

Working with governments to create secure records, MOSIP is modular in its architecture, and provides flexibility to countries in how they implement and configure their systems. It also helps avoid vendor lock-in, allowing the solution to be more cost effective.

Main uses

- Government ID
- Various government and administrative services (paying tax, healthcare, etc.)

Image taken from https://www.mossip.io

OpenCRVS

www.opencrvs.org

What

OpenCRVS is an open source digital civil registration system designed to facilitate the registration of individuals in low-resource settings. Similar to MOSIP, the system can be customised to best meet the needs of each nation.

Who

OpenCRVS has been developed by the Digital Birth Registration Team at Plan International, who are a development and humanitarian organisation working in over 75 countries across the globe to advance children's rights and gender equality.

How

The open source code can be downloaded alongside a toolkit which explains how the system can be customised by an administrator. The software is able to record population data and is interoperable with other government systems.

Key selling point

The platform brings together all aspects of civil registration into one easily accessible place, and allows the administrator to add any appropriate services due to its customisable nature. The system can operate online or offline and is freely available, with no licence fees or ties to software vendors.

Main uses

- Civil/birth registration

Image taken from https://www.opencrvs.org/uploads/images/_2049×AUTO_fit_center_80_none/IMG_20200114_124627_2022-06-08-225901_thsl.jpg

RedRose

www.redrosecps.com

What

RedRose is a data management system that combines data collection tools with payment mechanisms in order to provide cash assistance to beneficiaries. It consists of three main software tools:

1. **ONEplatform** - a web-based information management system.
2. **ONEapp** - a multi-purpose app for Android devices, for both offline and online operations.
3. **RRCollect** - a data collection app for Android devices (compatible with ODK and XLSForms) which can be used in both offline and online environments.

How

A combination of user's personal details, fingerprints and a photograph are recorded, depending on the requirements of each humanitarian project, in order to create a unique profile for the beneficiary. This allows the user to be issued with a smartcard or a wristband with a pre-loaded financial balance, where designated vendors can sell goods to the beneficiaries through hand-held terminals. When the vendor's terminal is online, it synchronises with the ONEplatform which is able to record and monitor all transactions made. From some projects, users must verify their identity using either a PIN, fingerprint or facial recognition to use e-vouchers.

Who

RedRose is an organisation which offers solutions for governments and NGOs to effectively deliver cash assistance. They have partnered with over 25 organisations including the International Committee of the Red Cross (ICRC), the World Food Programme (WFP) and the United Nations Development Programme (UNDP).

Key selling point

The ONEapp automatically and continuously synchronises to the ONEplatform, even in environments with unstable mobile connections, meaning that real time data is still available to programme managers. All functional connectivity methods (2G, 3G, LTE, Wi-Fi) can be utilised and will be selected automatically, based on their availability, for synchronising data to the ONEplatform.

Main uses

- Beneficiary registration
- Real time programme management
- Vendor interface
- Monitoring and evaluation

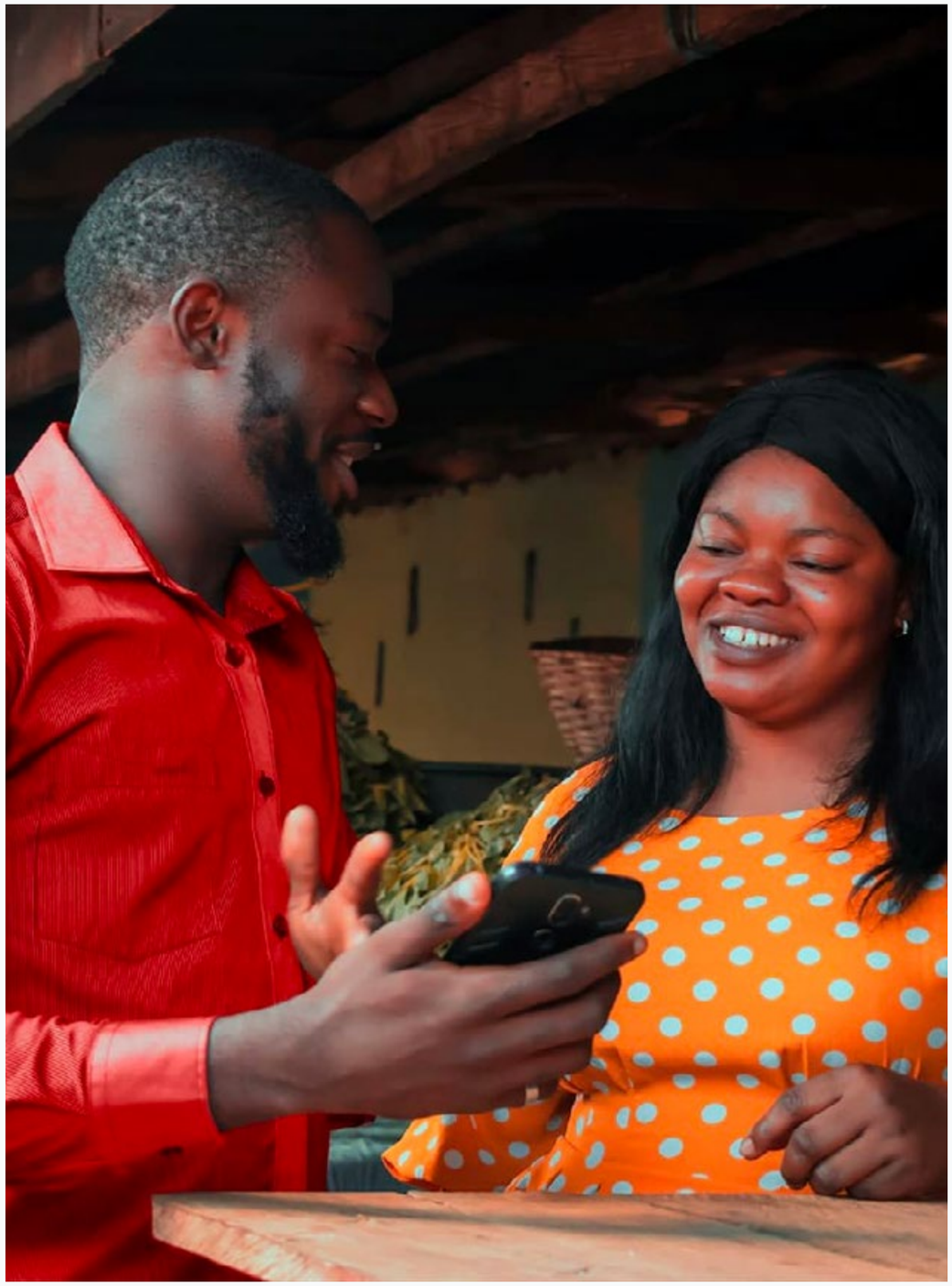


Image taken from https://www.redrosecps.com

SCOPE

documents.wfp.org

What

SCOPE is a beneficiary and transfer management platform that can be used to register users, intervention setups, distribution planning, transfers and reporting. As a system, SCOPE allows offline registration of people's data so that it can be used in the most remote locations. With additional hardware, SCOPE cards can be created, which can act as verified ID, store important records and distribute financial assets.

Who

SCOPE is run by the World Food Programme (WFP) which is the food-assistance branch of the United Nations, the world's largest humanitarian organisation. It aims to alleviate world hunger and food insecurity, and has helped over 128 million people in over 120 countries and territories.

How

In its simplest form, SCOPE can provide a World Food Programme ID card using personal information, however with the collection of biometric data such as photographs and fingerprints, it can be used to monitor programme delivery and food vouchers. Registration is simple and only needs to be done once. SCOPE allows for the importing of existing beneficiary data from external databases or from other sources such as online documents and paper copies.

Key selling point

SCOPE is present in 68 countries where the WFP is present. This means it has been successfully deployed in some of the world's most poor, hostile and marginalised places.

Main uses

- Cash distribution
- Distribution planning
- Manage beneficiary information

Image taken from https://www.istockphoto.com/photo/african-village-life-gm479084073-36605072?phrase=africa%20village

Simprints

www.simprints.com

What

A biometric digital identity solution developed by a UK-based non-profit tackling issues such as fraud and a lack of reliable ID in the developing world, all through fingerprint tracking. It focuses on the UN's Sustainable Development Goals and aims to 'get big work done' and started life with a particular focus on healthcare and vaccine delivery.

Who

With a combination of hardware and software for direct implementation, Simprints focuses on delivering digital identity solutions for charities and NGOs, and in particular, healthcare providers. The company partners with organisations such as BRAC, Mercy Corps, Watsi and the Children's Investment Fund Foundation. Some of Simprints' delivery work has been for Shasthya Kormis (monitoring ante- and post-natal care visits in Bangladesh), Cohesu in Kenya to track diseases, the Economic Research Institute and UNICEF in Nigeria to monitor maternal health services, as well as Impact Network for student attendance.

How

Simprints authenticates, optimises ID and monitors through:

1. Using various tools to enhance the matching accuracy of fingerprints
2. Supporting multiple languages in which the data is captured in the app, so that it is optimised for end users in multiple locations
3. Allowing for finger selection to improve efficiency and accuracy

Key selling point

Simprints claims to have a 228% higher accuracy rate than most other digital identifiers that manage the scarred and worn fingerprints often captured in the developing world.

Main uses

- Aid distribution
- Education
- Monitoring and evaluation
- Maternal health
- Immunisation
- Cash transfers

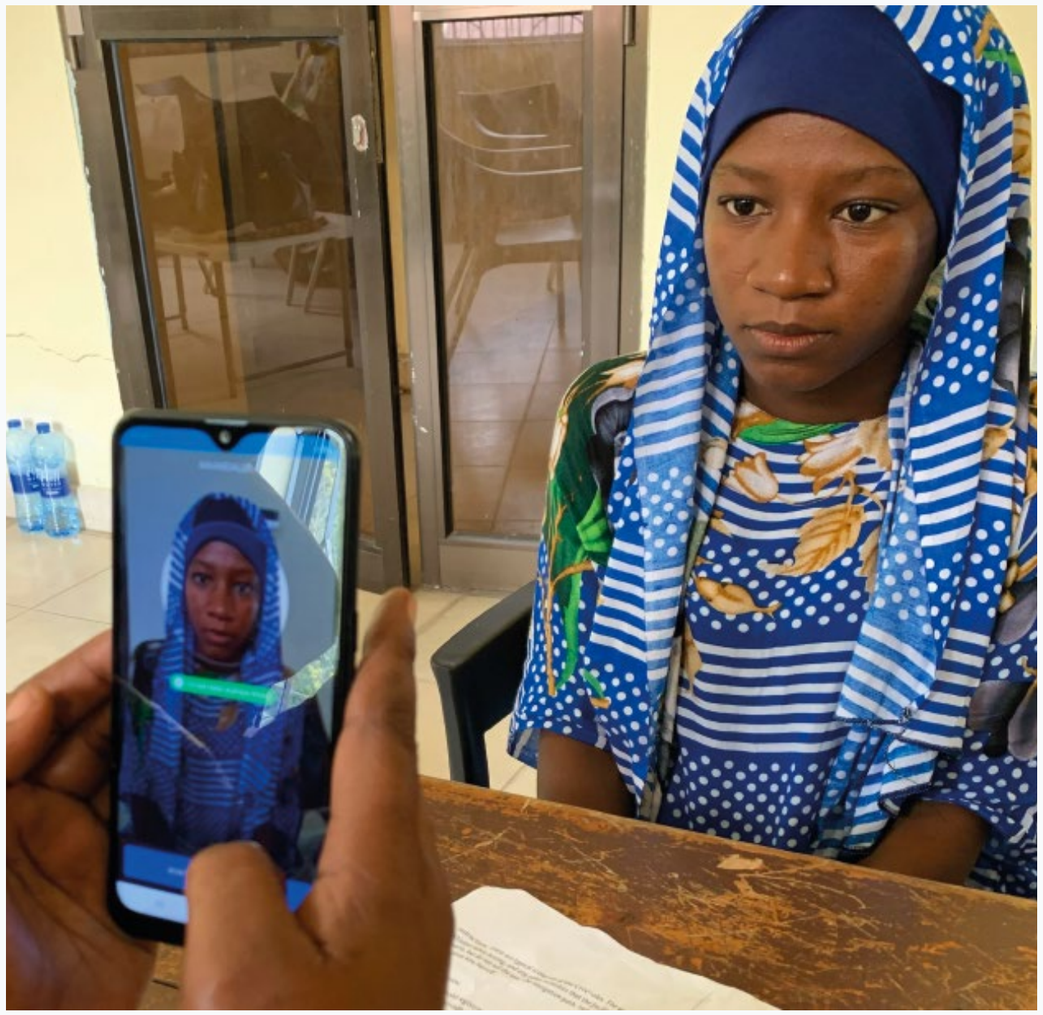
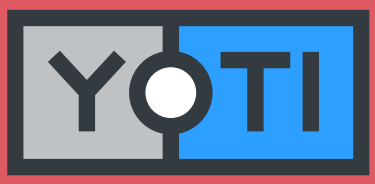


Image taken from https://www.hylandcredentials.com/

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 Yoti 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.
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.



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