

Digital ID Hackathon in Africa

May 2025



UPANZI
DIGITAL PUBLIC INFRASTRUCTURE
NETWORK

**Carnegie
Mellon
University**
Africa

MSC
MicroSave Consulting

Introduction to the Upanzi DPI Network

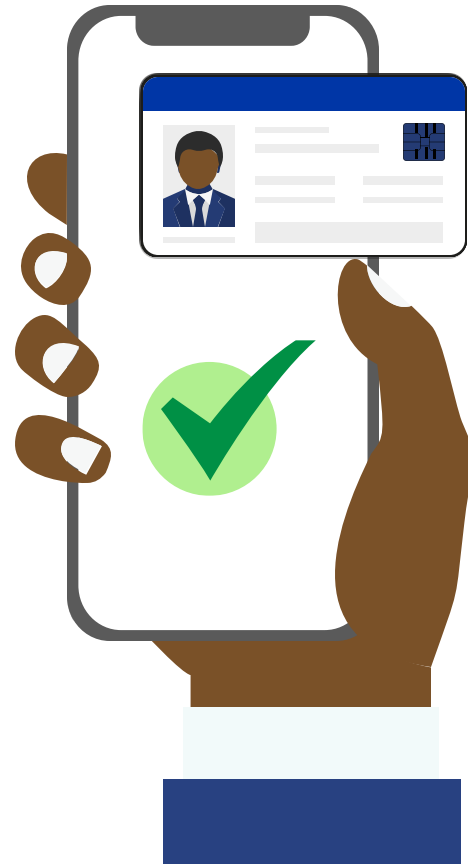
- Initiative to study secure, resilient, inclusive, and sustainable digital public infrastructure in Africa through:
 - Research
 - Capacity building
 - Outreach & knowledge transfer
- Headquartered at CMU-Africa
 - New African nodes in progress
 - Collaboration with CMU Pittsburgh



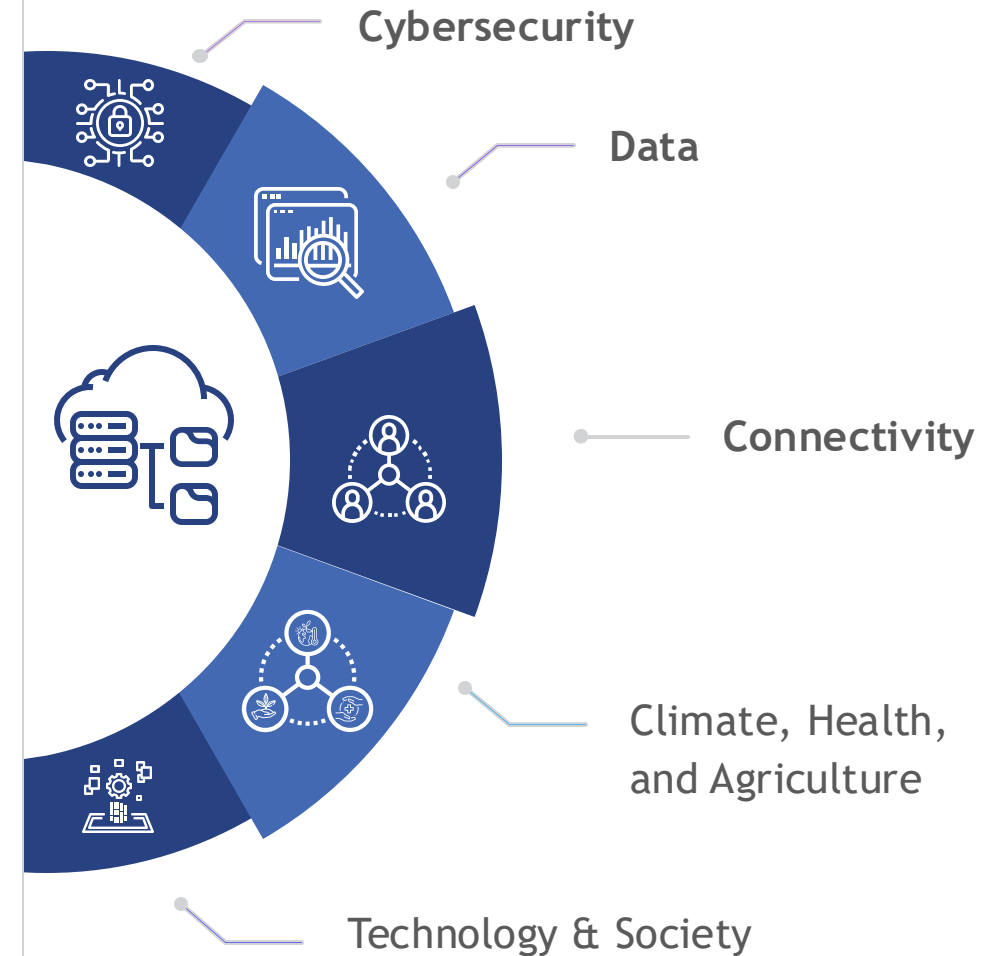
Research Areas of the Upanzi Network

Digital ID

- Cross-Border interoperability
- *MOSIP* ID Platform
- Verifiable credentials
- Events Biometric Authenticator
- Bias in biometric devices
- ID and Data Policies
- Enhancing ID registration and user grievance management



Digital Public Infrastructure



About the Digital ID Hackathon Africa

Global and regional needs
of Africa-led development

Gaps in inclusive,
efficient, and secure
digital identity systems

Critical role of ID
systems in enabling
access to services



**Digital ID
Hackathon Africa**

Focus on use
cases of digital ID

Promote scalable
solutions

Build sustainable
communities and local
capacity in digital ID

Hackathon cycle



Launch



Webinars and information sessions



Idea submission



Semi-finalist



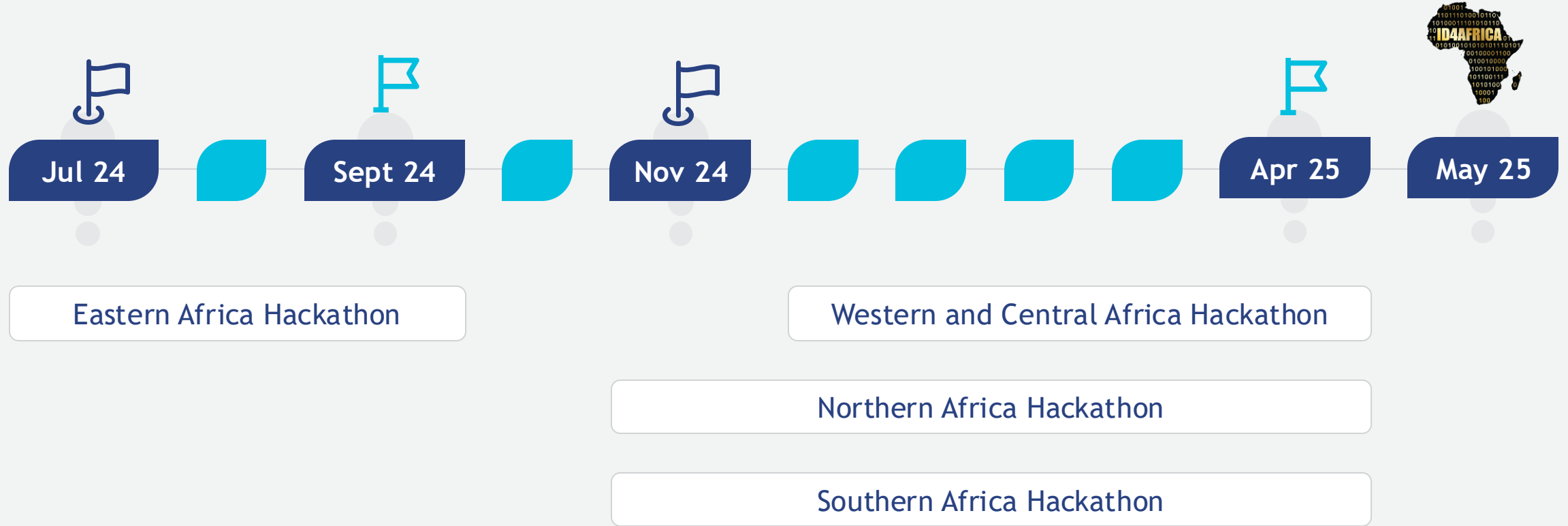
Mentorship & Prototype Development



Finalist



Hackathon timeline overview



Participation overview



Undergraduate, graduate or doctoral levels students from eligible countries.

(At least one participant in the team must be a female.)

20+
Countries
participated

600+
Participants

80+
Ideas submission

30%
Female participation

Participation overview



Eastern Africa

July 2024 - Sept 2024

5
Countries
participated

170+
Participants

20
Ideas submission

Participation overview



Northern Africa

Nov 2024 - Apr 2025

4
Countries
participated

115+
Participants

20
Ideas submission

Participation overview



Western and Central Africa

Dec 2024 - Apr 2025

9
Countries
participated

240+
Participants

32
Ideas submission

Participation overview



Southern Africa

Nov 2024 - Apr 2025

5
Countries
participated

102
Participants

12
Ideas submission

Emerging use cases



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Key Use-cases from Digital ID Hackathon Africa



Agriculture and
Climate Change



Healthcare



Education



Public
Transport



Access to
Public
services



Property and
Asset
Management



Finance
and
Telecom

Emerging ideas from Africa

Agriculture & Climate change



- ▶ Land Registration
- ▶ Gender-targeted subsidies for women-led farms
- ▶ Access to energy including renewable energy
- ▶ Access to inputs and market
- ▶ Personalized agricultural recommendations for farmers



Potential impact



250mil

Farmers in Africa
(majority smallholder farmers)

~40%

Women contribution of
Agricultural labor
force (in sub-Saharan
Africa)

~60%

Agriculture in total
employment (in sub-
Saharan Africa)

Risks and challenges



Data inaccuracies/
Outdated land
records



Social
change



Verification
complexity

Emerging ideas from Africa

Healthcare



- Digital health records
- Africa-wide health repository
- Cross-border vaccination certificates
- Prescription management system for secure, tamper-proof prescription verification
- Pre-screening for blood donation



Potential impact



~24%

Of global disease burden with only 3% of the world's health workers (in sub-Saharan Africa alone)

1.55

Health workers per 1000 people in Africa (WHO recommendation 4.45)

Risks and challenges



Personal data protection



Data security



Digital divide

Emerging ideas from Africa

Cities and public transport



- Face authentication for airport check-in and flight boarding
- Streamlining the driving license obtaining process, reducing corruption, and improving verifiability
- Online ticket booking for public transport
- Ride hailing



Potential impact



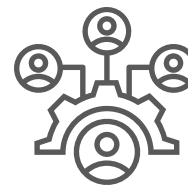
400mil

Flight passengers
by 2035 in Africa

~31%

Population have access to public transport
within walking distance of 500-1,000
meters, with a global average of 56%

Risks and challenges



Inter-agency
coordination



Consent and
data privacy



Digital divide

Emerging ideas from Africa

Access to public services



- Access to public services including for vulnerable populations, refugees, and conflict/disaster-affected people
- Receiving social protection benefits
- Cross-border digital ID to provide essential public services
- Digital government services



Potential impact



23

Member countries of ECOWAS and WAMEU region allow mobility for citizens

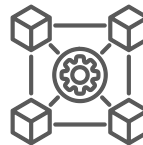
5mil

Refugees/ asylum seekers in East and Horn of Africa and the Great Lakes region

438mil

People in Africa are living in extreme poverty in 2025

Risks and challenges



Interoperability issues



Data protection



Consent and surveillance

Emerging ideas from Africa

Education



- Secure, verifiable academic credentials
- Attendance management and scholarship distribution

Employment



- Employee verification, business registration, pension, attendance

Election



- Digital ID with fingerprints for electronic-Voting

Property/asset management



- Digital ID-Powered Rental Property Management for secure & efficient leasing

Finance and telecom



- Digital ID for banking system, password less payment
- Digital ID linkage with Taxpayer ID for transparency
- Digital ID for verified SIM card purchase



Winning Ideas

Winning teams overview

Eastern Africa



SmartTrais
Rwanda
Social Protection



Farm2Global
Rwanda
Agriculture

Western and Central Africa



Team Retro
Senegal
Healthcare



Smartcare
Togo
Healthcare

Northern Africa



Amanar
Morocco
Agriculture
and Energy



Gatekeepers
Morocco
Transportation

Southern Africa



UmodziRX
Malawi
Healthcare



Bots_Bots
Botswana
Education

Team Presentations



Botswana - Tracking student loans

Problem Statement

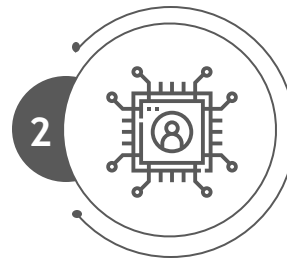


- Manual tracking and outdated contacts cause missed student loan repayments
- No automated way to detect employed graduates
- Funding shortfalls that limit new scholarship awards for the underprivileged

BoSDID detects graduate employment by linking digital ID and tax number to trigger repayment workflows, sustaining and recycling Botswana's student fund.



Problem Solving Approach: Automates loan repayment by detecting when graduates start working, reducing manual tracking.



Use of Digital ID: Links BoSDID with TIN to track graduate employment via BURS (Botswana Unified Revenue Service) tax number



Unique Selling Point (USP): Auto-triggers repayments using real-time government tax data, no need for self-reporting.

New Beneficiary	All	Granted Accounts	Eligible to Pay	Pending Approval	
Search beneficiaries...					
-Olivia Brown	Olivia Brown No university information	-Mason Lee	Mason Lee Central State University	-Isabella Walker	Isabella Walker International University
Loan Amount: No loan		Loan Amount: BWP 16000.00		Loan Amount: BWP 25000.00	
Loan Status: N/A		Loan Status: pending		Loan Status: rejected	
More Details Contact		More Details Contact		More Details Contact	
-Logan Hall	Logan Hall City University	-Benjamin King	Benjamin King Lakeside University	-Amelia Wright	Amelia Wright Desert University
Loan Amount: BWP 13000.00		Loan Amount: BWP 15500.00		Loan Amount: BWP 24000.00	
Loan Status: ready		Loan Status: pending		Loan Status: rejected	
More Details Contact		More Details Contact		More Details Contact	

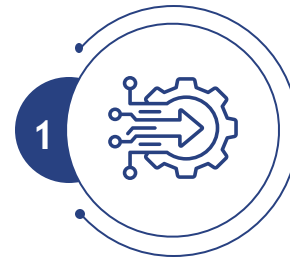
Malawi - Secure prescription verification and management

Problem Statement

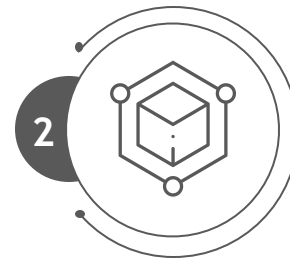


- Prescription fraud and medication errors
- Fragmented health records
- Lack of secure identity verification for patients and providers

Solution Overview: Our solution is to use digital ID-based authentication to securely link doctor’s prescription to patients and aid verification at pharmacy touchpoints



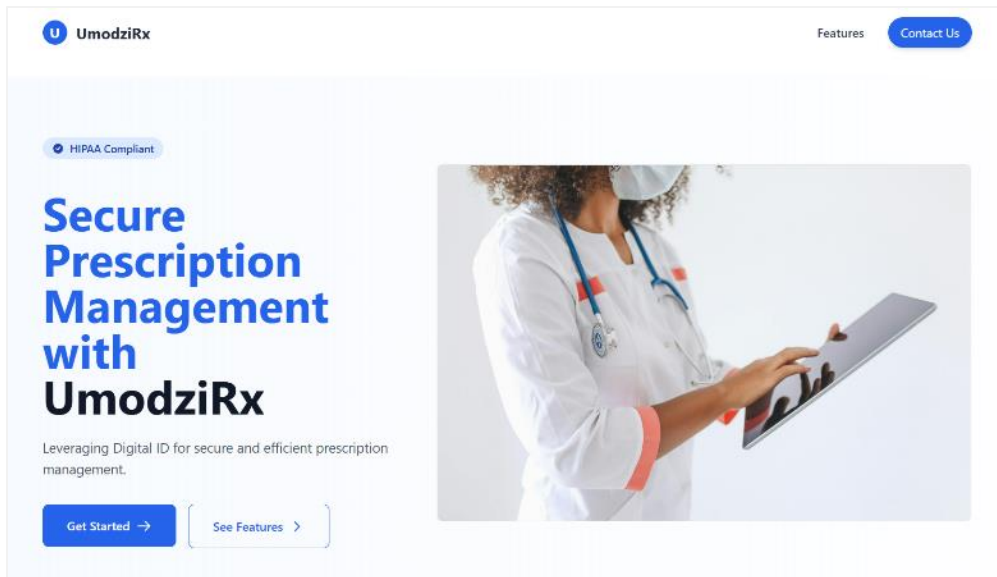
Digital ID Integration: Secure patient/provider registration and role-based authentication.



Blockchain-Powered Prescriptions: Tamper-proof records with real-time access.



Privacy & Scalability: Immutable audits with permissioned access, adaptable to rural challenges.



Morocco - Seamless airport check-in

Problem Statement

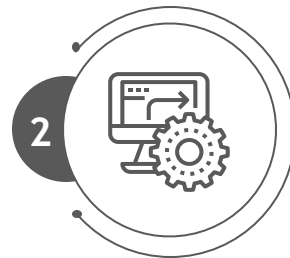


- 15-30 min delays at passport control frustrate travelers and staff
- Manual photo-to-passport comparisons are inconsistent and prone to human error.
- Confusing and complex boarding processes makes the airport experience cumbersome

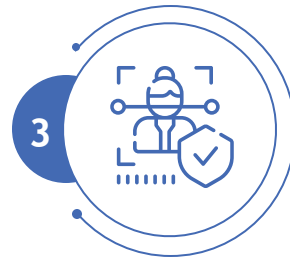
MOSIP Digital ID and advanced face authentication verify traveler identity, enabling a faster border crossing experience in under a second.



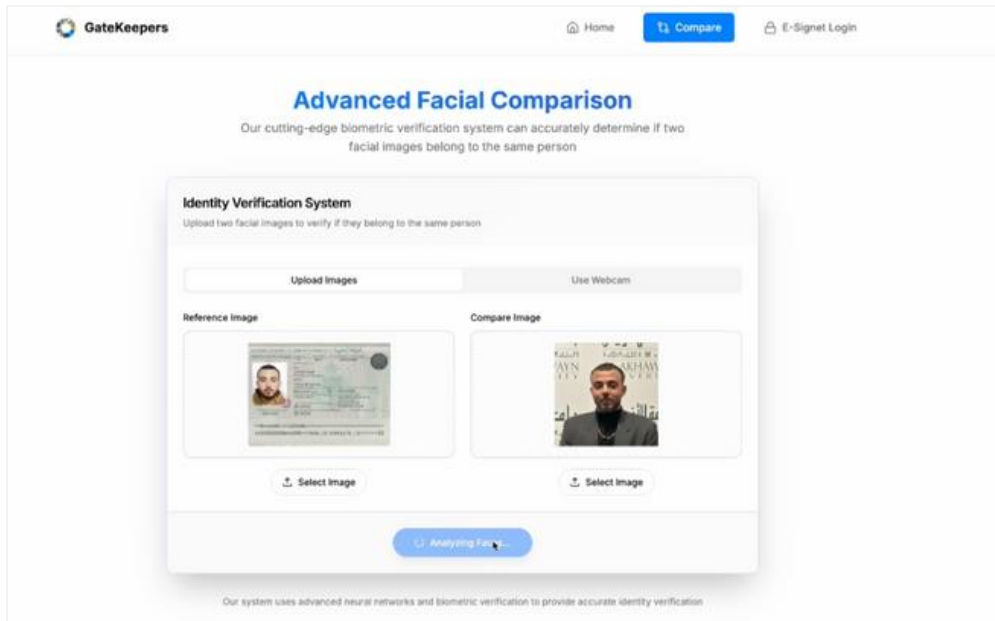
Speed: Instantly verifies passengers identify in seconds instead of wasted minutes.



Accuracy: Automates face authentication to reduce human error with 99.55% accuracy.



Creates a seamless, delightful travel experience. Designed specifically for the African context, unlike existing solutions.



Morocco - Data-Driven Energy Insights and Benefits

Problem Statement



- ▶ Citizen and property data are fragmented
- ▶ Subsidies are untargeted and hard to access
- ▶ Private utilities charge high-profit margins
- ▶ Energy monitoring is manual and unreliable

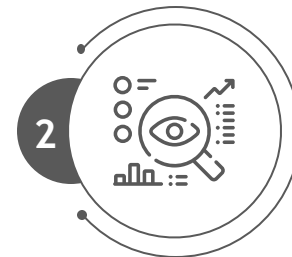
The screenshot shows a navigation bar with options: 'Login as a government employee', 'Entering as a citizen', 'Contact Us', 'Frequently asked questions', 'About the project', and 'Digital Energy Card' with a 'DEI' badge. Below the navigation bar, the main content area is titled 'Features of the digital energy system' with the subtitle 'What do you want to know what was in this project?'. There are six feature cards arranged in a 2x3 grid:

- Real Estate Classification:** Obtaining an accurate energy rating for real estate helps improve energy efficiency.
- Transparency of transactions:** Follow up the status of requests and procedures immediately and transparently through an integrated system.
- Full digitization:** Submit documents and request certificates in a fully electronic form without the need for personal visits.
- Save time:** Speed up the procedures for obtaining energy certificates and simplify the necessary steps.
- Data Security:** Protect personal and real estate data with the latest digital security technologies.
- Energy Saving:** Provide recommendations and guidance to improve energy efficiency and reduce consumption.

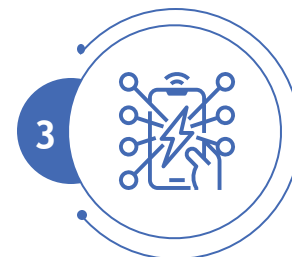
NOURID+ creates a unified Digital Energy ID by merging official data, allowing for real-time monitoring and smart subsidy access. In partnership with SRM (Société Régionale Multiservices), it advances Morocco’s shift from private utilities to inclusive, public-first energy infrastructure.



1 Creates a trusted Digital Energy ID (DE-ID) by unifying citizen and property data



2 Unlocks targeted access to subsidies based on verified usage and supports de-privatization by empowering SRM to deliver citizen-first public services



3 Enables real-time energy monitoring through secure IoT sensors

Rwanda - Smart Traceable Agro-Input Subsidy (Trais)

Problem Statement



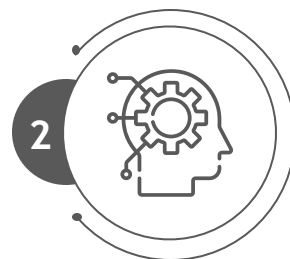
Governments in Sub-Saharan Africa face fraud, elite capture, and non-targeted subsidy allocation—limiting their impact on food security and poverty reduction.

- Ghost Subsidy Beneficiaries
- Lack of data-driven decision making
- Non-targeted Subsidy Allocation

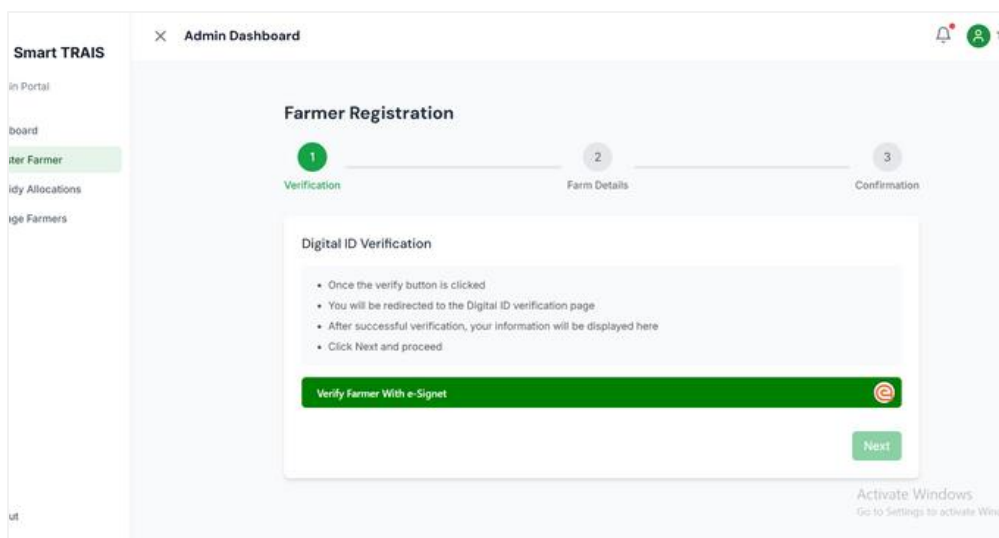
A digital platform that uses single sign-on for farmer identity verification and machine learning for data-driven, targeted subsidy allocation—ensuring secure audits and reducing fraud, elite capture, and misallocation.



Fraud Elimination in Subsidy Programs using single sign on



97% Accuracy of machine learning model for targeted subsidy allocation

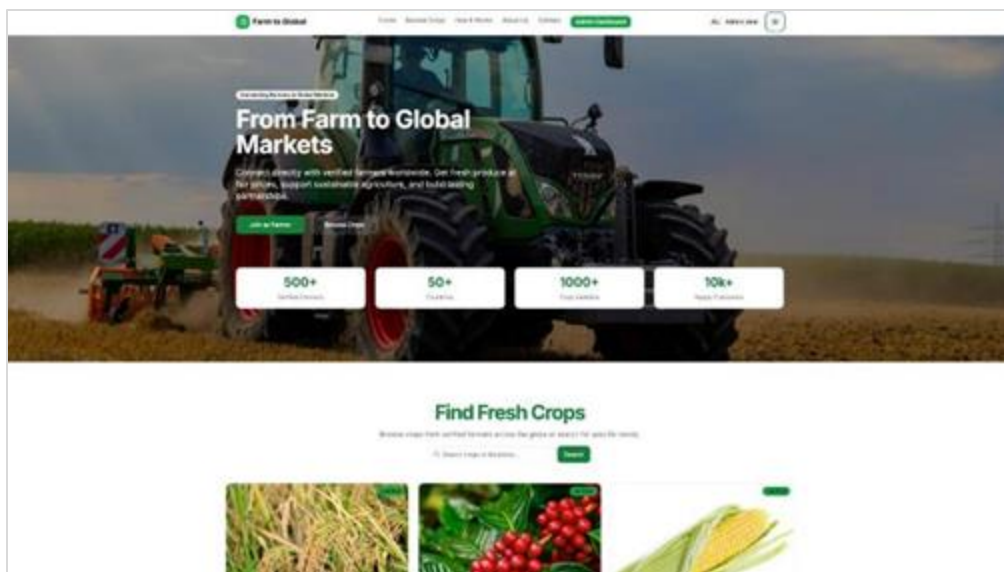


Rwanda - Market linkages for smallholder farmers

Problem Statement



- Smallholder farmers struggle to access markets beyond their communities
- Rwanda alone has 33% of post-harvest loss and extends to 37% in Africa
- Lack of secure identity blocks access to finance and formal services.



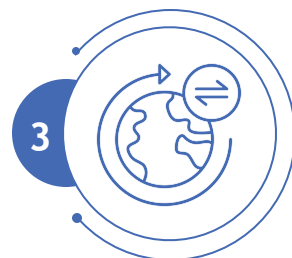
Farm2Global is a digital marketplace that connects Africa's smallholder farmers with clients globally using trusted digital identity systems.



Integrates digital ID for secure authentication of both farmers and buyers.



Admin-verification of farmer listings ensures authenticity and quality assurance.



Enables cross-border, trusted transactions through identity-based trust and product traceability.

Togo - - Identité numérique médicale

Énoncé du problème

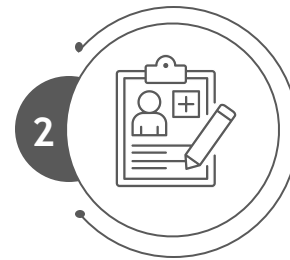


- Absence d'une identité médicale numérique, digitalisation santé à 17,75 % en Afrique.
- Retards dans la prise en charge des patients.
- Prolifération et perte des documents médicaux physiques

CareID est une application mobile sécurisée qui centralise les dossiers médicaux via une identité numérique unique, tout en conservant l'historique médical du patient.



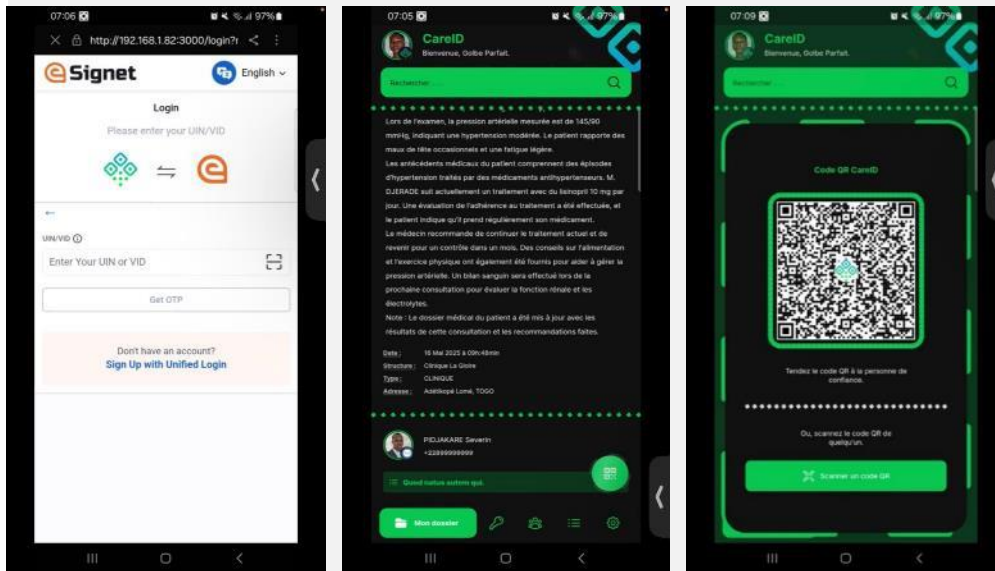
CareID attribue à chaque patient une identité médicale numérique unique accessible via un QR code sécurisé.



CareID permet un accès rapide et sécurisé à l'historique médical du patient.



Un dossier médical électronique régulièrement synchronisé.



Senegal - Innovation numérique pour la collecte de sang

Problem Statement

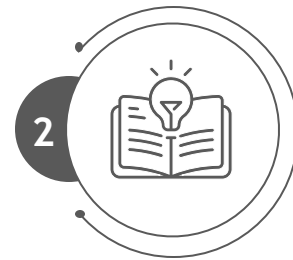


- Les pénuries de sang en Afrique réduisent la capacité des systèmes de santé à gérer les urgences.
- Le Sénégal ne compte que 6 donneurs pour 1000 habitants (l'OMS recommande 10).
- Donneurs et banques mal connectés freinent les soins.

LifeLink utilise l'identification sécurisée pour simplifier le don de sang, accélérer le processus de don et encourager les dons via des alertes et informations ciblées.



1 ID numérique : authentification sûre, partage maîtrisé d'informations, accès aux récompenses.



2 Interfaces vocales et langues locales (en développement) pour briser les tabous du don de sang et rendre LifeLink accessible aux communautés africaines.



3 Intégration future de l'analyse prédictive pour anticiper les pénuries de sang et planifier des collectes proactives.



Building a Sustainable Digital ID Community



Community Success



Webinar Short-courses



Mentorship Program



Digital ID Ambassador Program



Way forward



Hackathon will be opened up for private sector



Incubation support from innovation partners to scale prototypes



Public use case library



Launch a multilingual digital ID online course



Shipping Digital ID Hackathon Africa to the globe

Examining Technical Capacity and Use Case Development for Digital Identity in Africa

Leveraging Open-Source Digital Public Goods (DPGs)



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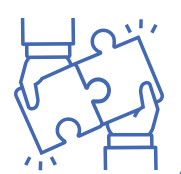
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The challenge and opportunity



Africa accelerating digital transformation



"Walled gardens" limit innovation and collaboration



Open-source Digital Public Goods (DPGs), like MOSIP, offer scalable solutions

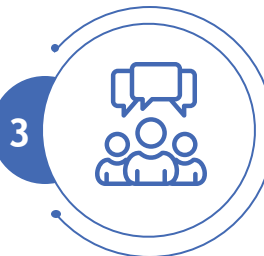
Key Research Question



1 Assess local technical capacity for deploying DPGs



2 Evaluate student-led innovation from hackathons



3 Understand stakeholder interactions with open-source tools

Methodology and impact

Mixed methods: interviews and surveys



Phase 1:
Fieldwork & Interviews
April 2025



Phase 2:
Expanded Data Collection
2025 - 26

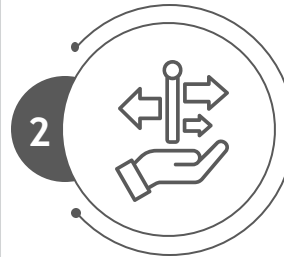


Phase 3:
Analysis & Dissemination
2026

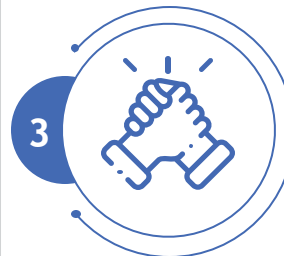
Impact & relevance



Insights into technical capacity gaps



Practical guidance for policy-makers and funders



Enhanced local innovation through institutional support

Our partners

Ecosystem partners



Gates Foundation

Industry partners



MOSIP



CREDEBL

Regional partners



UNIVERSITE
CHEIKH ANTA DIOP
DE DAKAR

Incubation partners

Industry
Innovation
Lab

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