



IDENTIFICATION FOR DEVELOPMENT



Emerging Applications of ID in Health, Agriculture, and Education

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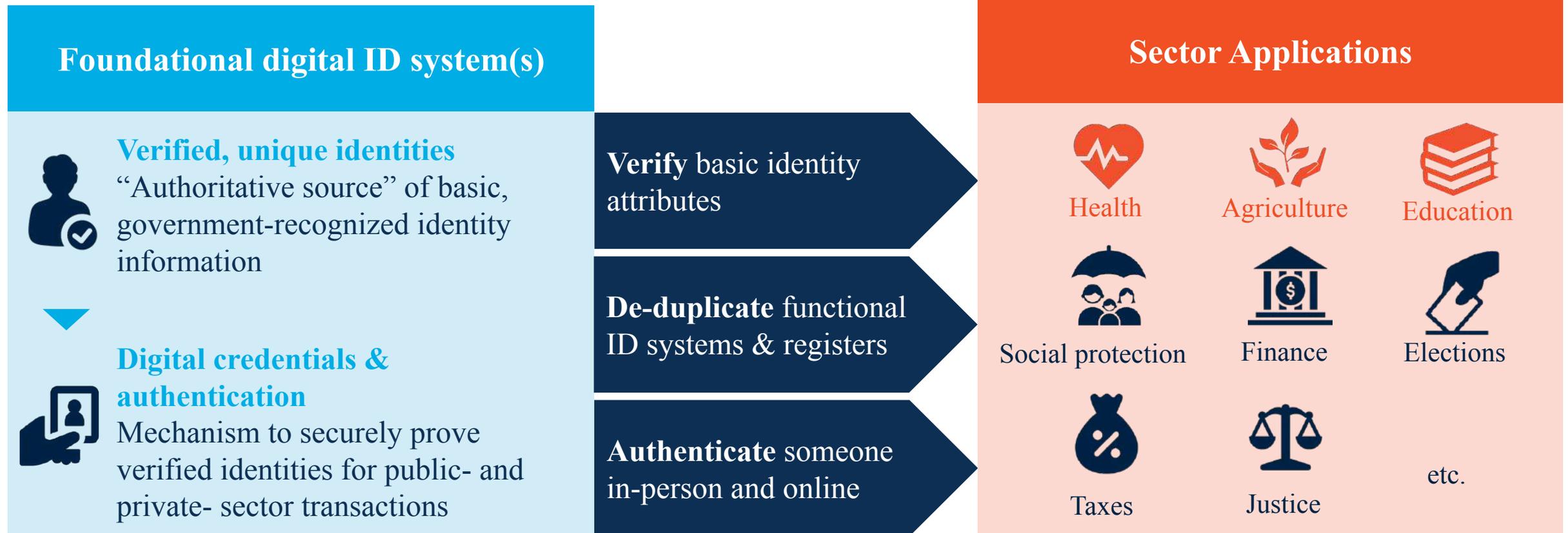
Outline

- 1. Benefits of a foundational ID system across sectors**
- 2. Summary of three World Bank case studies on the role of ID for:**
 - Health
 - Agriculture
 - Education
- 3. Common challenges and success factors**

What can a foundational ID system do?

ID matters across sectors for (A) **onboarding of new beneficiaries/users/clients**, (B) **secure transactions**, and (C) **accurate record keeping**

→ Each sector/application can develop its own (“**functional**”) ID system, OR ...





Health

The Role of Digital Identification for Healthcare: **The Emerging Use Cases**

Identification for Development (ID4D)

World Bank



Potential applications of ID in health care



Patient management & treatment

Unique patient identities and authentication can facilitate EHRs and improve administration, patient management, and quality of care.

- **Estonia:** Using eID to authenticate for e-services, e-prescriptions, etc., has streamlined administration and patient control.
- **Botswana:** NID number as unique patient identifier improved patient follow-up and retention in various HIV/AIDS treatment programs.



Health insurance & social benefits

Unique identities and authentication can increase coverage, reduce fraud, and streamline billing and claims processing.

- **Thailand:** NPR used as baseline for universal healthcare scheme → rapid scale-up, no need for a separate enrollment campaign.
- **Korea:** Determinations of NHI premiums rely on the national ID number to verify subscriber's personal income, tax, and pension information.

Potential applications of ID in health care (cont.)



Data for planning and research

Unique identities can help link and aggregate data to improve performance, resource allocation, crisis management, and treatments.

- **Thailand:** NID number links health records across individuals & facilities → anonymized for use in research, monitoring performance, improving services, and planning.
- Similar systems in **Korea** and **Estonia**



Reinforcing CR and ID systems

Links between health system and foundational systems can improve birth and death recording and increase incentives to enroll for ID.

- **Estonia:** Adoption of eID has increased significantly as more services (such as e-health) have been linked to the system.
- **Thailand:** Health system improves civil registration through automatic, daily notifications of births and deaths.

*Despite these benefits, also **risks to privacy** from linking health systems to foundational identifier and **risks of exclusion** where ID is mandatory to access services.*



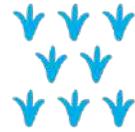
Agriculture

The Role of Digital Identification in Agriculture

Emerging Applications



Potential applications of ID in agriculture



Subsidy and benefits distribution

Unique identities and authentication can improve access and delivery and reduce fraud in subsidies targeted to farmers.

- **India:** Aadhaar reduced double-registration and fraud in fertilizer subsidies and other social programs frequently used by farmers (e.g., PDS).
- **Estonia:** With eID and X-Road, farmers can apply for agricultural subsidies in 45 minutes—down from 300 minutes in the old paper-based system—and have fewer payment delays.



Land and asset registration

Unique identities and authentication can increase access to registration services, reduce fraud, and increase supply-chain traceability.

- **Malaysia:** MyKad required for land registration; authentication reduces fraud and forgery.
- **Uruguay:** Farmers register cattle with NID → livestock traceability system that facilitated access to the European Union export market and higher prices.

Potential applications of ID in agriculture (cont.)



Data-driven farmer profiles

Unique identities can form the basis of profiles used to offer personalized services, connect farmers to information and resources, and facilitate supply-chain traceability

- **Malaysia:** The Federal Agricultural Marketing Authority (FAMA) apps for farmers and fishermen build on MyKad to record data on business licenses and market participation and disseminate market information to target groups.

Private sector apps could leverage foundational ID in the future ...

- **Uganda:** Akorion startup to build farmer profiles and provide this data (with the farmer's consent) to banks and insurance companies to provide targeted financial services.
- **Kenya:** Digifarm allows farmers to create profiles (e.g., with size of their farms, activities, etc.) and access discounted inputs, advice, and financing. Information is anonymized and shared with the government for long-term planning related to food security.



Education



(Paper forthcoming)

Potential applications of ID in education



School enrollment

Proof of identity and age can facilitate age-appropriate school enrollment, but mandating certain credentials can create a barrier to entry

- **India:** UIDAI has encouraged schools to act as enrollment points for Aadhaar while strongly emphasizing that *denying a student admission for lack of an Aadhaar number is not permitted under the law.*



Student record-keeping and tracking

Unique student identifiers and record management can facilitate portable student records and progress-tracking across schools

- **Kenya:** iMlango system—deployed for over 180k rural students—provides unique student ID and personalized learning platform to track attendance and learning outcomes.

Potential applications of ID in education (cont.)



Social protection programs

Unique identities and authentication can improve targeting and administration of safety nets (e.g., school meals and CCTs).

- **Peru:** Pilot used the NID to crosscheck registration in *Juntos* CCT with school attendance to identify eligible children who were not enrolled; biometric authentication reduced time for attendance checks by 70%.



HR management for teachers

Unique teacher identities and authentication can facilitate performance management, professional development, and secure salary payments.

- **Liberia:** Improved HRMS and teacher ID cards allowed the Ministry of Education to pilot mobile money payments, reportedly decreasing the time and cost to collect salaries.



Challenges /
Success Factors

Foundational ID systems must be **complemented by strong sectoral systems**



Cannot replace functional/sectoral registries and information systems but *can* reduce redundancies, increase the trustworthiness of onboarding and authentication, and serve as a **platform** for third-party applications.



Digitized, accurate, and interoperable **sectoral registries and information systems** (e.g., EHRs, student registers, farmer profiles, etc.) are needed to manage sector-specific attributes and longitudinal record-keeping.

(This “**separation of purposes**” is also essential for **privacy and data protection**)

For benefits across sectors, foundational ID systems must be **inclusive**



Low coverage in general and/or target population → **limited benefits and applications** of a foundational ID system in health, agriculture, education, etc.



Without universal coverage, requiring an ID to access services will **increase exclusion** unless service points also facilitate enrollment.

For benefits across sectors, foundational ID systems must be **trusted**



Low levels of accuracy and uniqueness or weak authentication mechanisms → will *NOT* be a reliable source of identity information or secure authentication



Must protect privacy and data security by default—critical for all applications, but especially those with very sensitive personal data (e.g., health). To begin ...

- Strong legal frameworks for data privacy and protection
- Data minimization, purpose specification, and separation of roles
- Use of tokens or pseudonyms rather than “raw” identifiers
- Anonymization and aggregation of data
- Encryption
- User-centric ID systems with personal control and oversight, etc.



IDENTIFICATION FOR DEVELOPMENT

**Helping countries realize the
transformational potential of digital
identification.**

www.id4d.worldbank.org

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