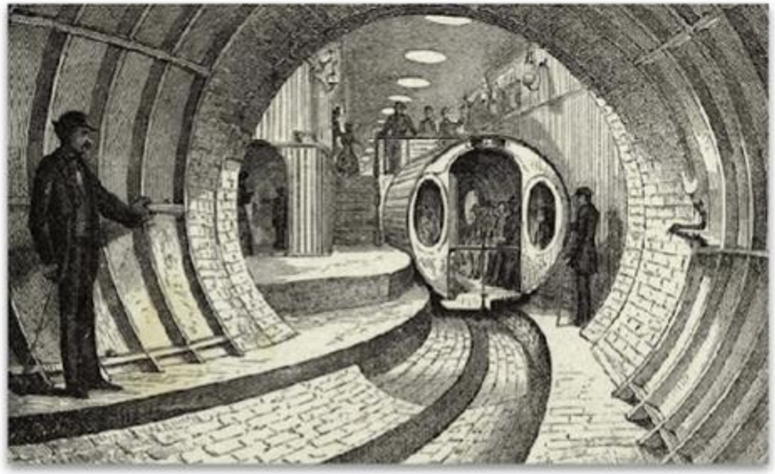
Digital Public Infrastructure & Digital ID

Core Concepts, Challenges, and Opportunities in the Caribbean Context

by Prof. Carolina Rossini, JD, LL.M., MBA

Governments have been building things for many centuries…



For the last century (at best), governments have been delivering public services at scale

But this led to new challenges…

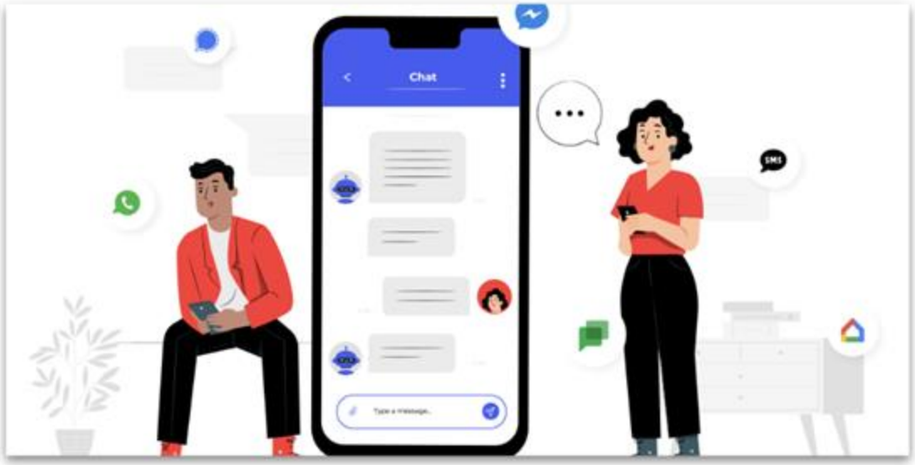
So for the last ~30 years, governments have been trying to change from this: Paperwork, saturation and bureaucracy

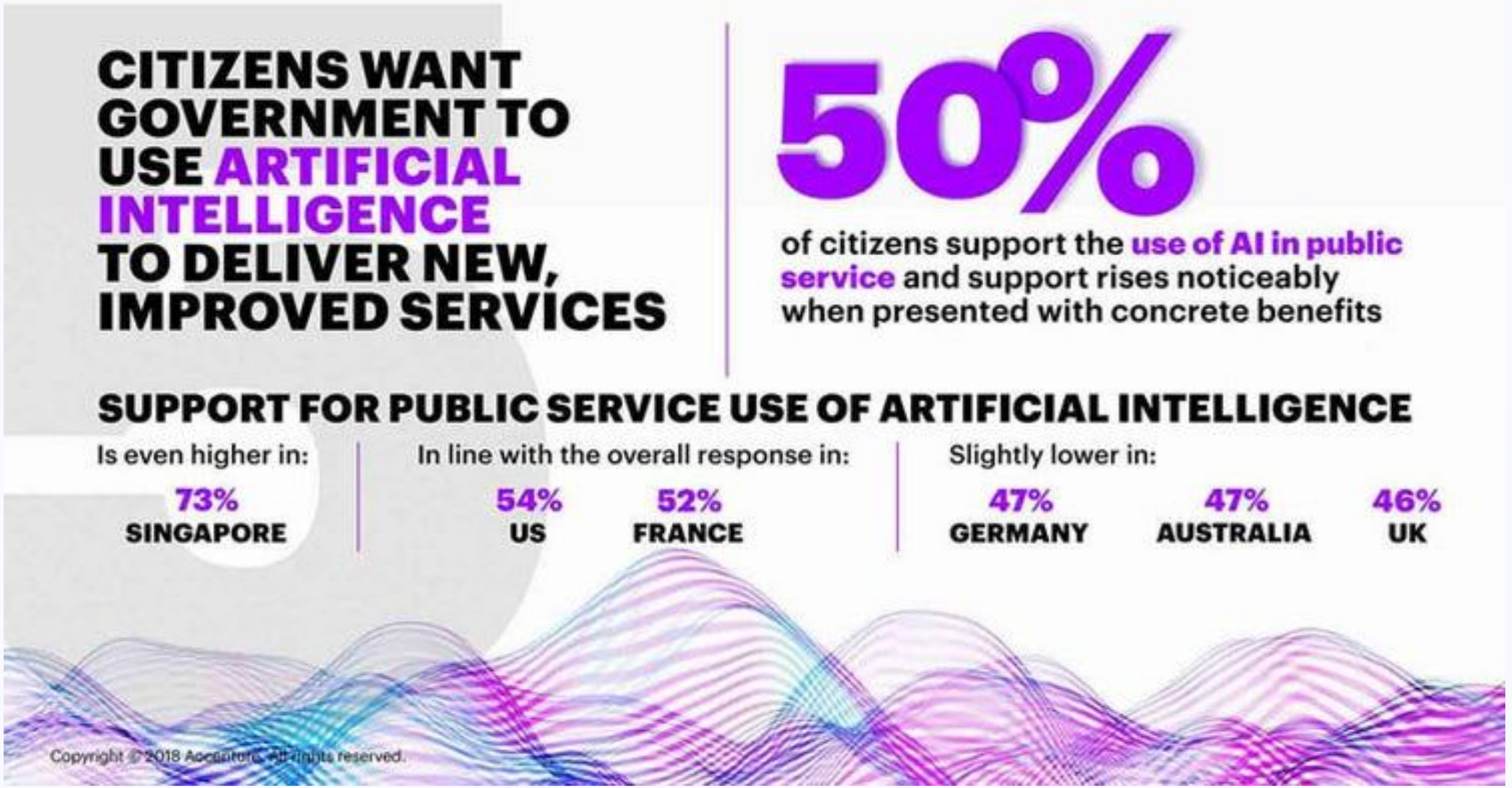
To this:


Certificado vacunación Covid-19
Certificado de vacunación COVID-19


GOV.UK
The best place to find government services and information
Search


Make a Payment
I want to:
Select one
Pay estimated tax
Pay my return
Pay my extension
Continue


Chat



Potential Benefits of Artificial Intelligence Outweigh Citizen Concerns about Responsible Use by Government, Accenture Survey Shows (2018)

Citizens’ satisfaction with their government services and their experiences accessing them translate quickly into positive overall perceptions of government effectiveness and support.

As such, building and operating seamless digital offerings to better serve citizens’ evolving needs should be a key priority for governments and recognized as a core driver of socioeconomic development. Innovation and technological advancements, in this regard, provide governments with vital opportunities to do even better.

Daily Hampshire Gazette

Flurry of opposition stalls vote Northampton police dashcams

F.T.C. sues over tracking data that could expose visits to abortion clinics.

Federal regulators said the sale of geolocation information on tens of millions of smartphones could expose people's visits to private places.

Give this article 22

This article is part of our Daily Business Briefing

nature

Explore content · About the journal · Publish with us · Subscribe

nature > book reviews > article

BOOK REVIEW | 27 May 2024

Tackling 'wicked' problems calls for engineers with social responsibility

Many technologies are high-risk, and their problems cannot be fixed by policy alone; engineers must embrace social responsibility.

Daily Hampshire Gazette

'We have to figure this out': Educators wrestle with help, harm of ChatGPT

By SAM DRYSDALE

State House News Service

Published: 02-07-2023 3:42 PM

education | news | Massachusetts

Daily Hampshire Gazette

News > Local

Police departments' data sharing raises sanctuary concerns

EXCLUSIVE

INTERNET

Sextortion training materials found on TikTok, Instagram, Snapchat and YouTube, according to new report

"Yahoo Boys" is an informal network of cybercriminals who have gained cultural clout over the last several years in West Africa.

MASS LIVE

NEWS

Ludlow town hall victim of cyberattack; some employee paychecks delayed

Wrongfully Accused by an Algorithm

In what may be the first known case of its kind, a faulty facial recognition match led to a Michigan man's arrest for a crime he did not commit.

"Technology brings risks as well as opportunity - risks that threaten to undermine potential positive outcomes. Policy is needed that drives responsible technology design."

-Technology Policy GFC White Paper

https://www3.weforum.org/docs/WEF_Technology_Policy_Responsible_Design_Flourishing_World_2024.pdf

Public Interest Technology (PIT) is the making, managing, and using of technology to

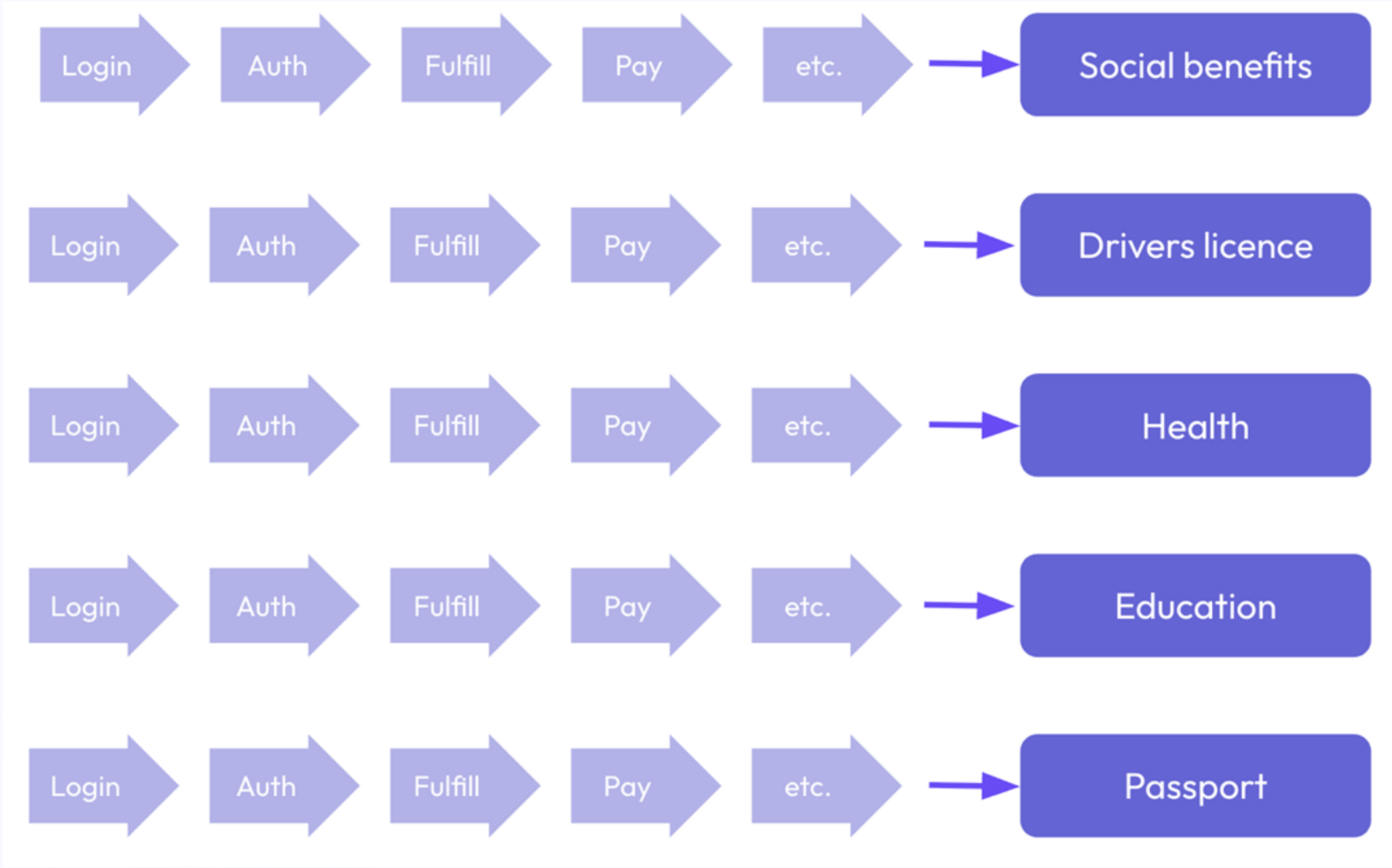
✓ *advance social welfare*

✓ *while reducing human risk.*

Digital Public Services

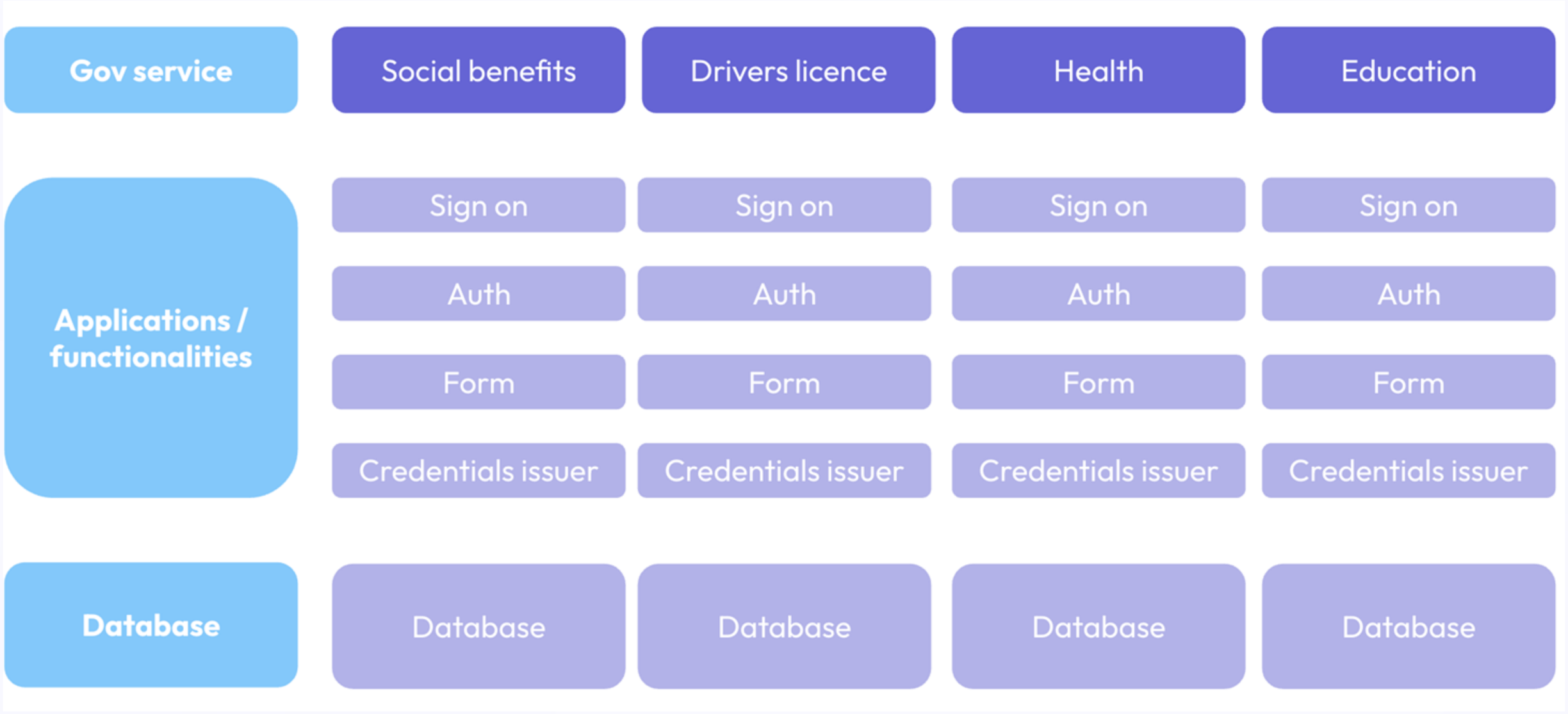
- Social benefits
- Drivers licence
- Health
- Education
- Passport

Bad UX for citizens

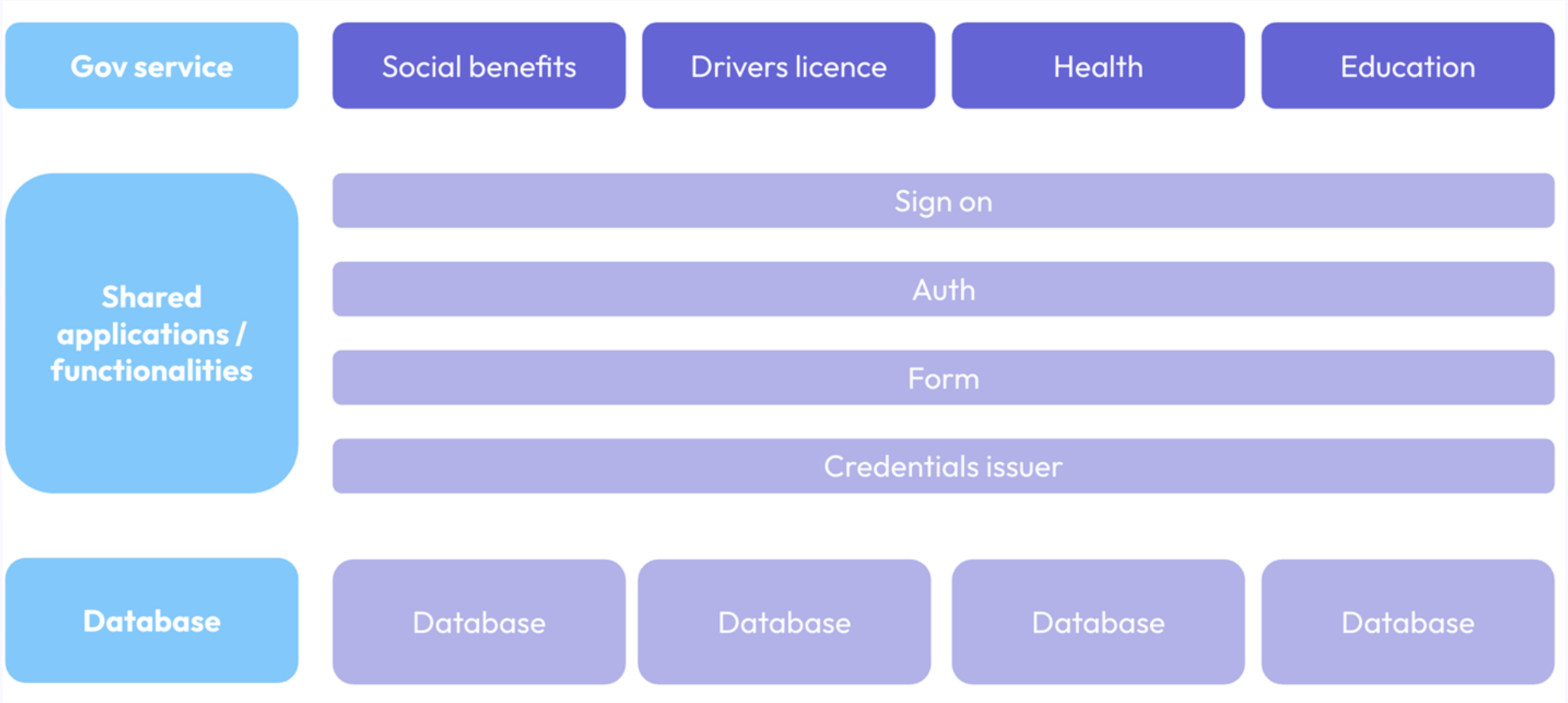


Now, every citizen must remember their username, password, navigate through different portals and pay using different systems.

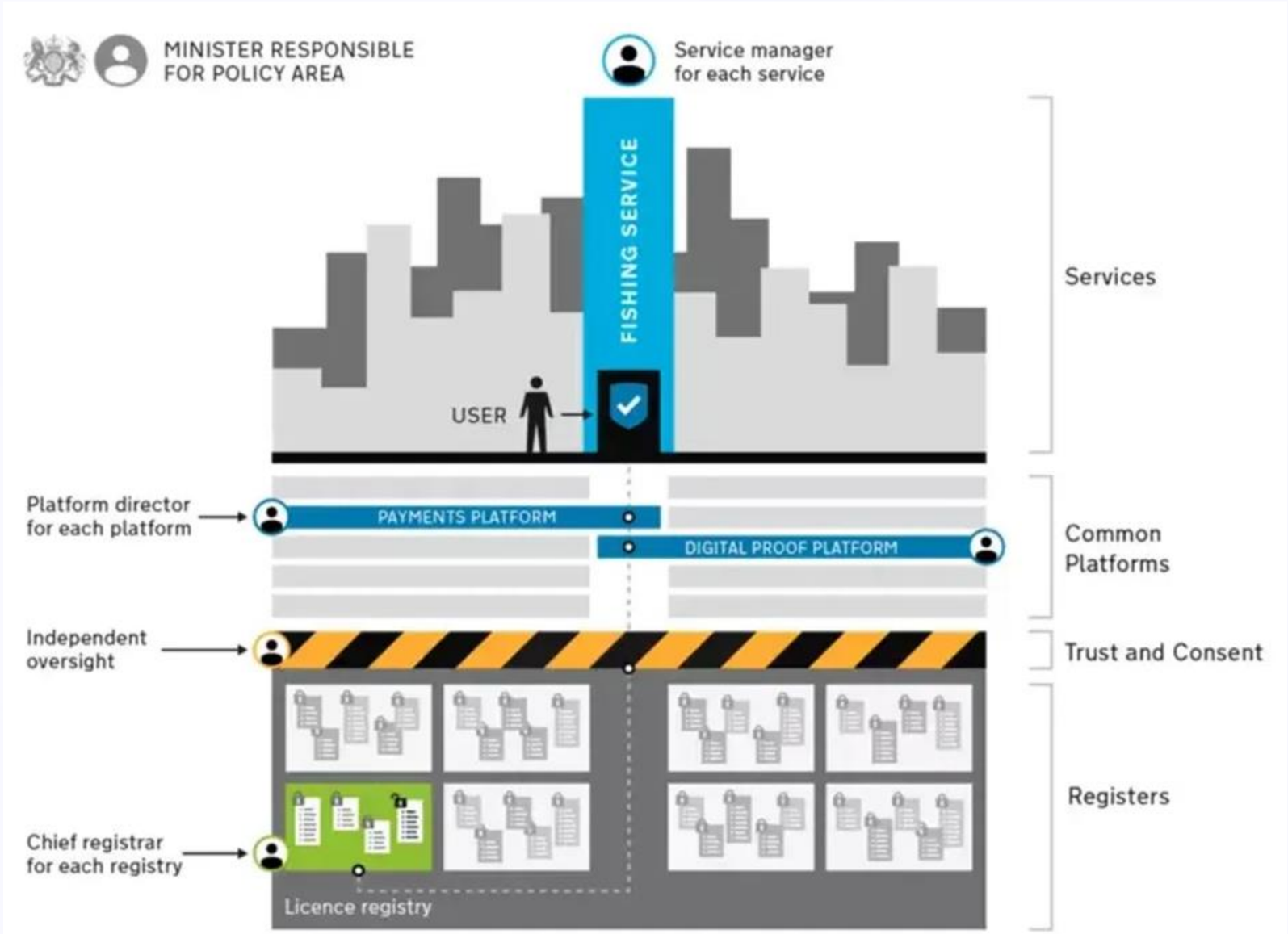
Trying to move from this:



To this:


Gov service
Social benefits
Drivers licence
Health
Education
Shared applications / functionalities
Sign on
Auth
Form
Credentials issuer
Database
Database
Database
Database
Database

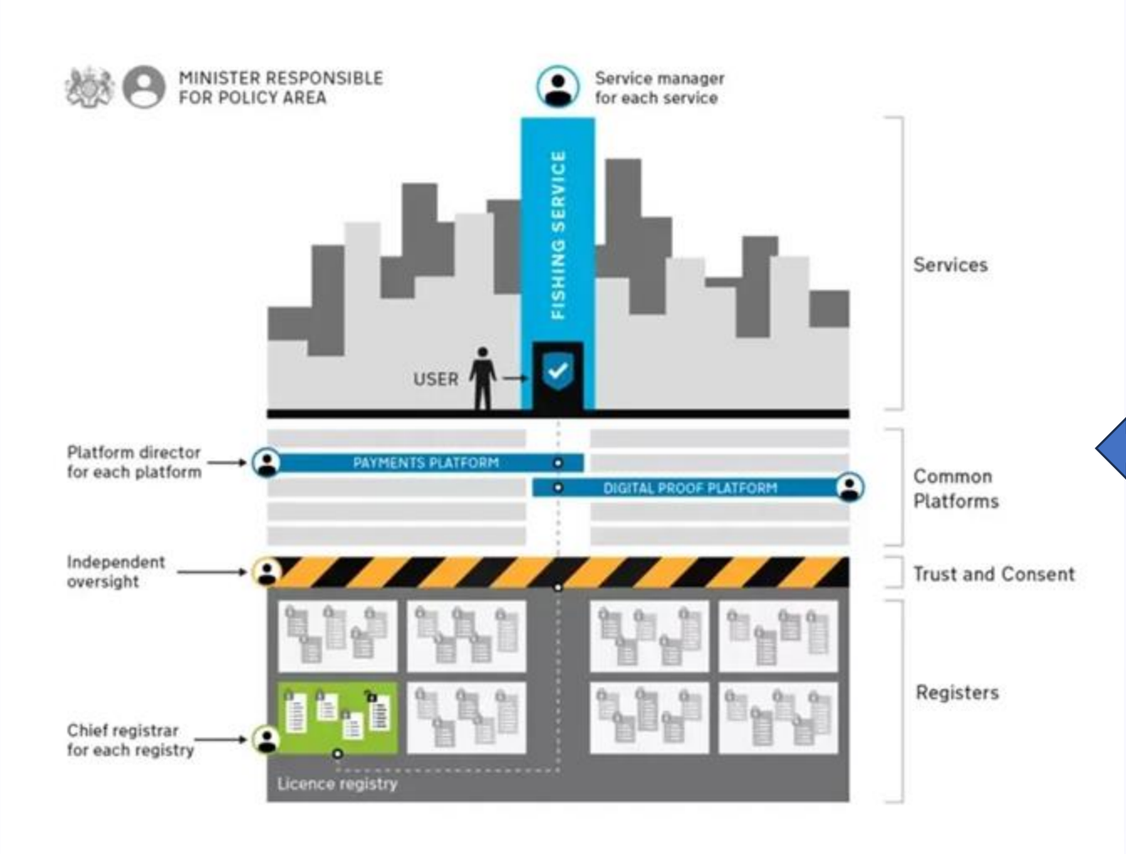
This approach has been labeled as “Government as a Platform” (O’Reilly, 2011)

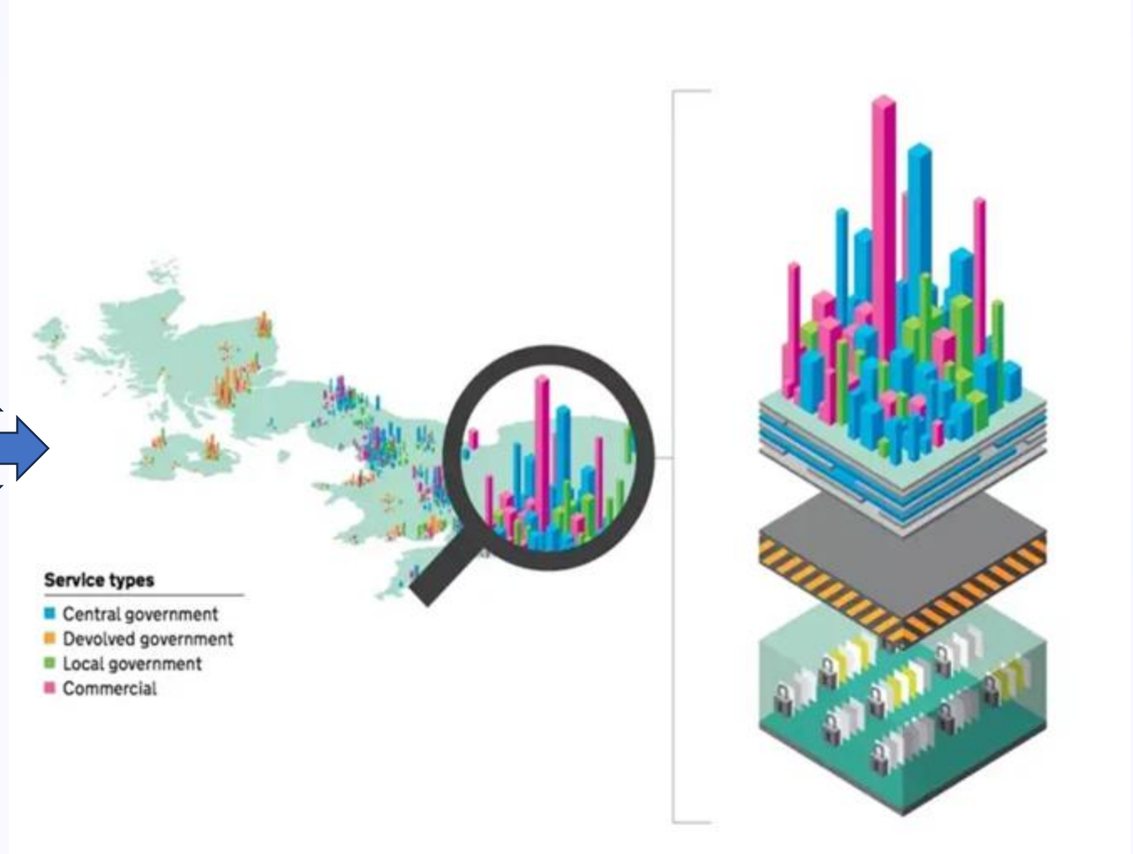


The premise is simple:

Designing foundational digital infrastructure not just for the government but for anyone (public, private, and civil society) to reuse through open protocols and open APIs

~~Shared infrastructure for government~~
Shared infrastructure for inclusive economic development



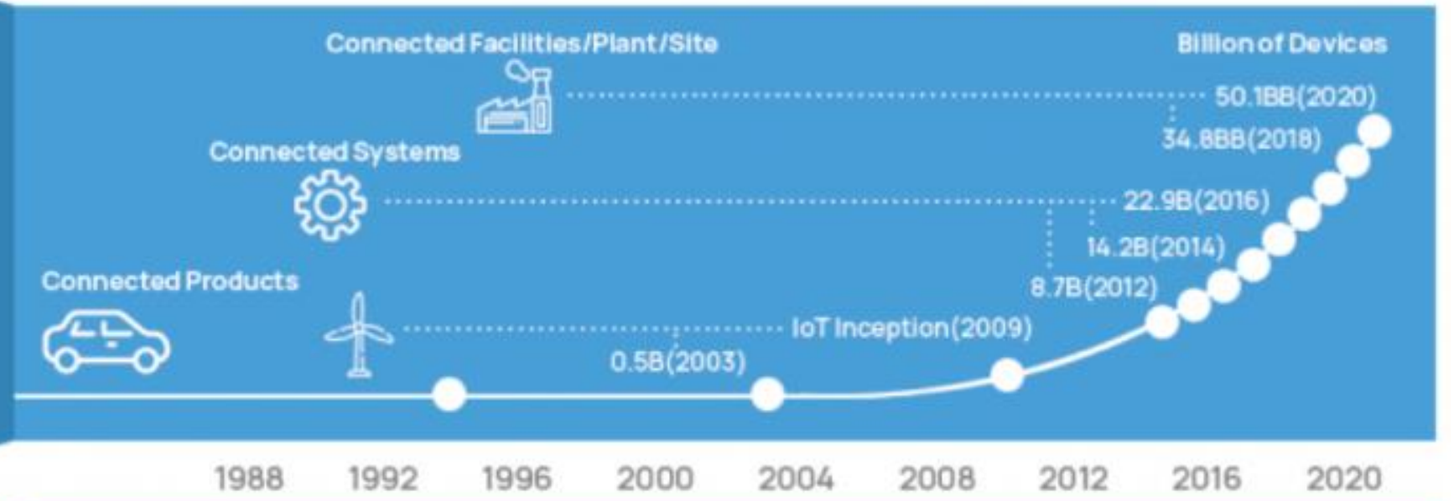


CYBER SECURITY: DIGITALIZATION CREATES OPPORTUNITIES AND RISKS.

Digitalization creates...

Opportunities

Billions of devices are being connected by the Internet of Things, and are the backbone of our infrastructure and economy



...and risks

Exposure to malicious cyber attacks is also growing dramatically putting our lives the stability of our society at risk

What is DPI?

Foundational Systems

Digital infrastructure enabling public and private services

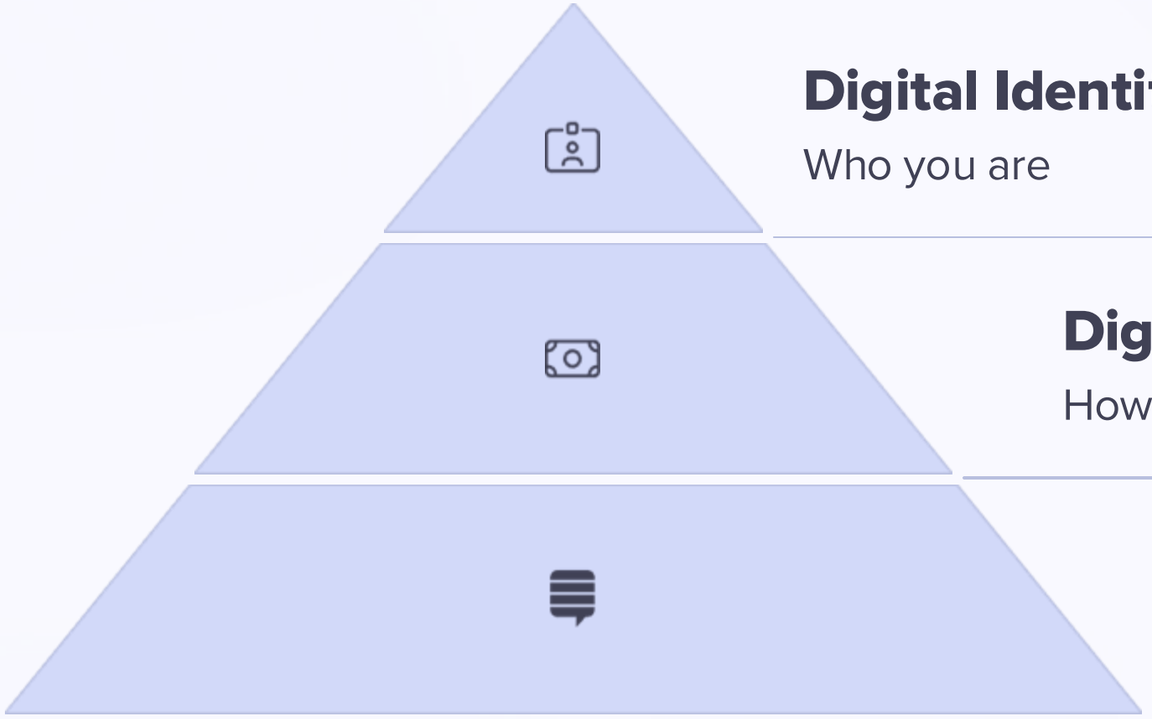
Digital Roads

Invisible layer powering e-government, banking, health

Key Examples

Digital identity, payments, data exchange frameworks

Core Components of DPI



Digital Identity

Who you are

Digital Payments

How you pay

Data Exchange

How information flows securely

Why DPI Matters

Cost Efficiency

Reduces duplication and service delivery costs

Inclusion

Drives digital inclusion and innovation

Transparency

Enables transparent governance and accountability

But that is only true if....

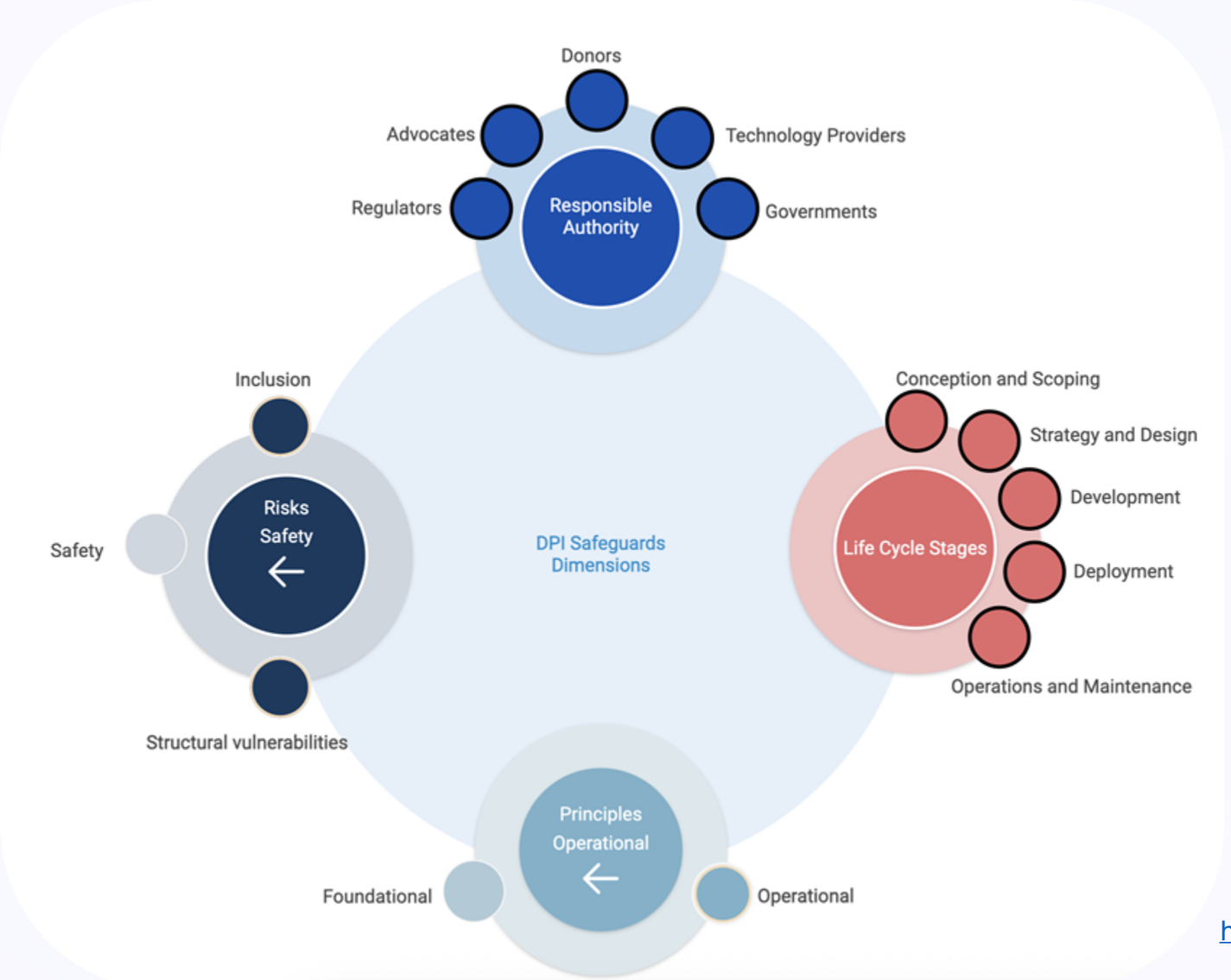
DIGITAL PUBLIC INFRASTRUCTURE

Universal Safeguards

https://www.dpi-safeguards.org/

But that is only true if....

DIGITAL PUBLIC INFRASTRUCTURE
Universal Safeguards



https://www.dpi-safeguards.org/

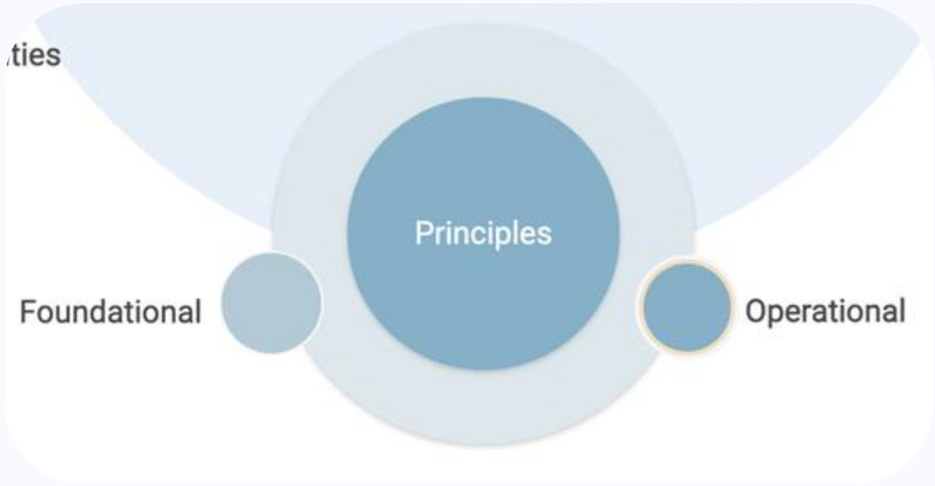
Universal DPI Safeguards Framework

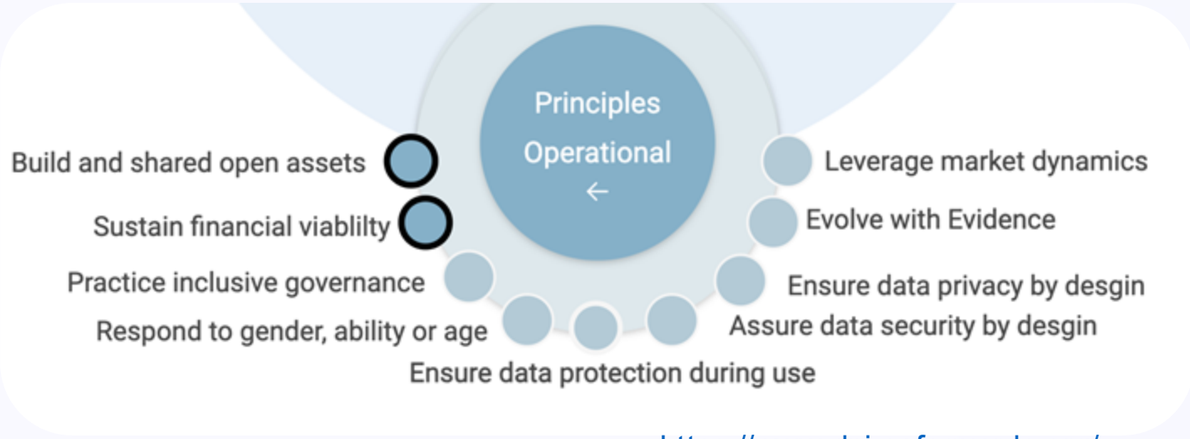
DIGITAL PUBLIC INFRASTRUCTURE
Universal Safeguards

https://www.dpi-safeguards.org/

Universal DPI Safeguards Framework

DIGITAL PUBLIC INFRASTRUCTURE
Universal Safeguards

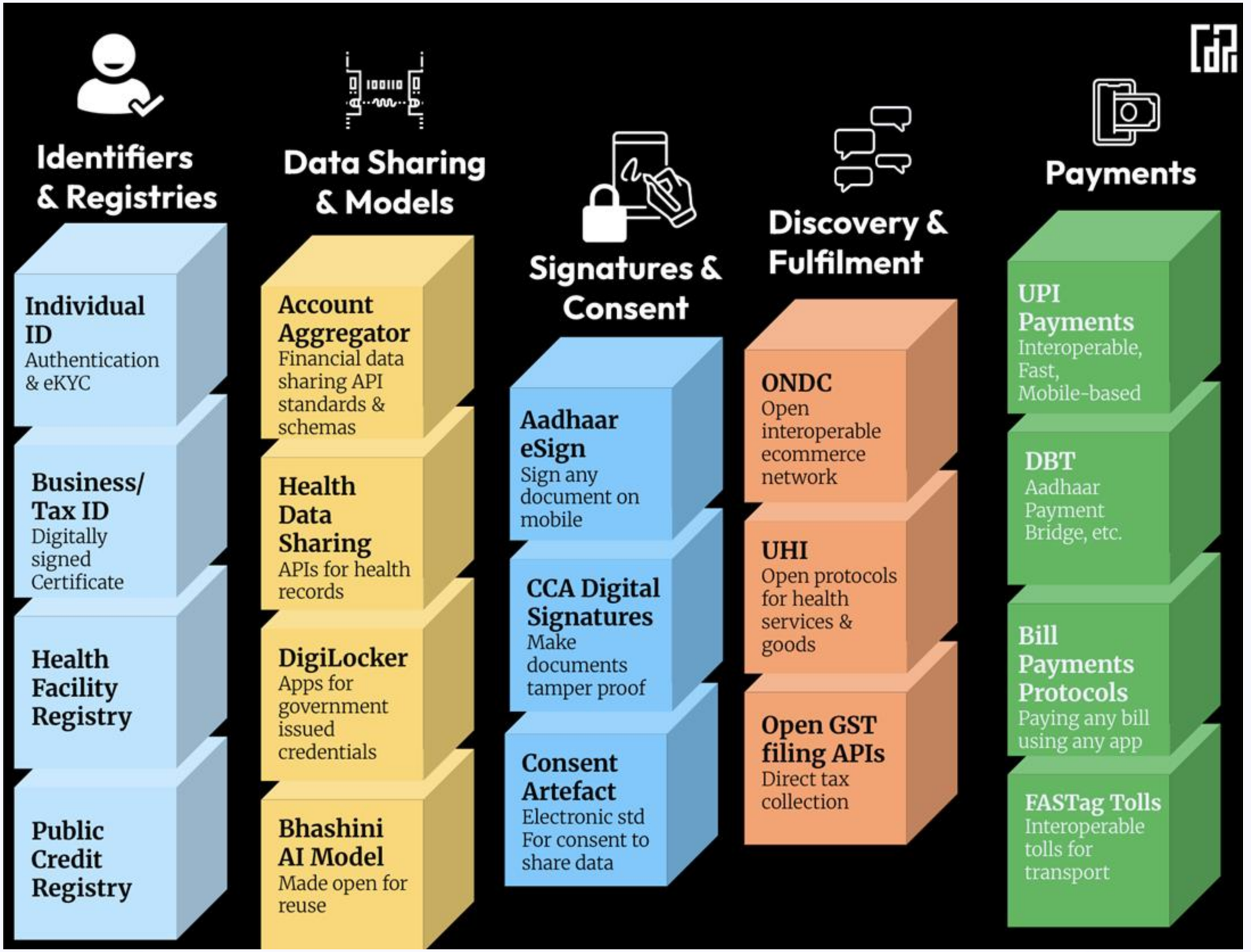




https://www.dpi-safeguards.org/

You don't need to redesign your government.

You can build **one block at a time!**



Digital Public Infrastructure in a nutshell

A set of technology building blocks

powered by interoperable open standards/specifications

operated under a set of enabling rules

with open, transparent, and participatory governance

to drive innovation, inclusion, and competition *at scale*

5 Foundational Digital Public Infra Categories

within & across sectors

Identities

Authenticating any noun in a digital ecosystem (people, entities, & objects) via Registries

Examples

ID Authentication; eKYC; Single Sign On; Civil/Functional ID; Entity Registries (Hospitals, etc); Land Registries; Object Registries (Drugs) etc.

Payments

Making financial transactions with ease

P2P; P2M; B2B; G2P (social benefit transfers); P2G (tolls/tax); etc.

Data Sharing & Credentials

Sharing Data (history, profile, & attributes) or Models peer to peer or publicly

Sharing Personal data with consent; Publishing non personal data via open datasets; Data collection/curation infra to train AI/ML models, etc

Trust Infra

Enabling trust through signatures, PKI, consent, and beyond

eSignature based on identity, Digital signatures/PKI, Consent artefacts, Key registries, Revocation registries etc.

Discovery & Fulfillment

Accessing goods and services via open protocols/APIs

Open APIs for services, eg business registration, tax filing, etc (public/private); Open eCommerce and Mobility networks; etc.

5 DPI Architecture Principles

make digitisation inclusive & scalable

1.

Interoperability driven by open specifications

2.

Minimalist, Reusable building blocks rather than end-to-end solutions

3.

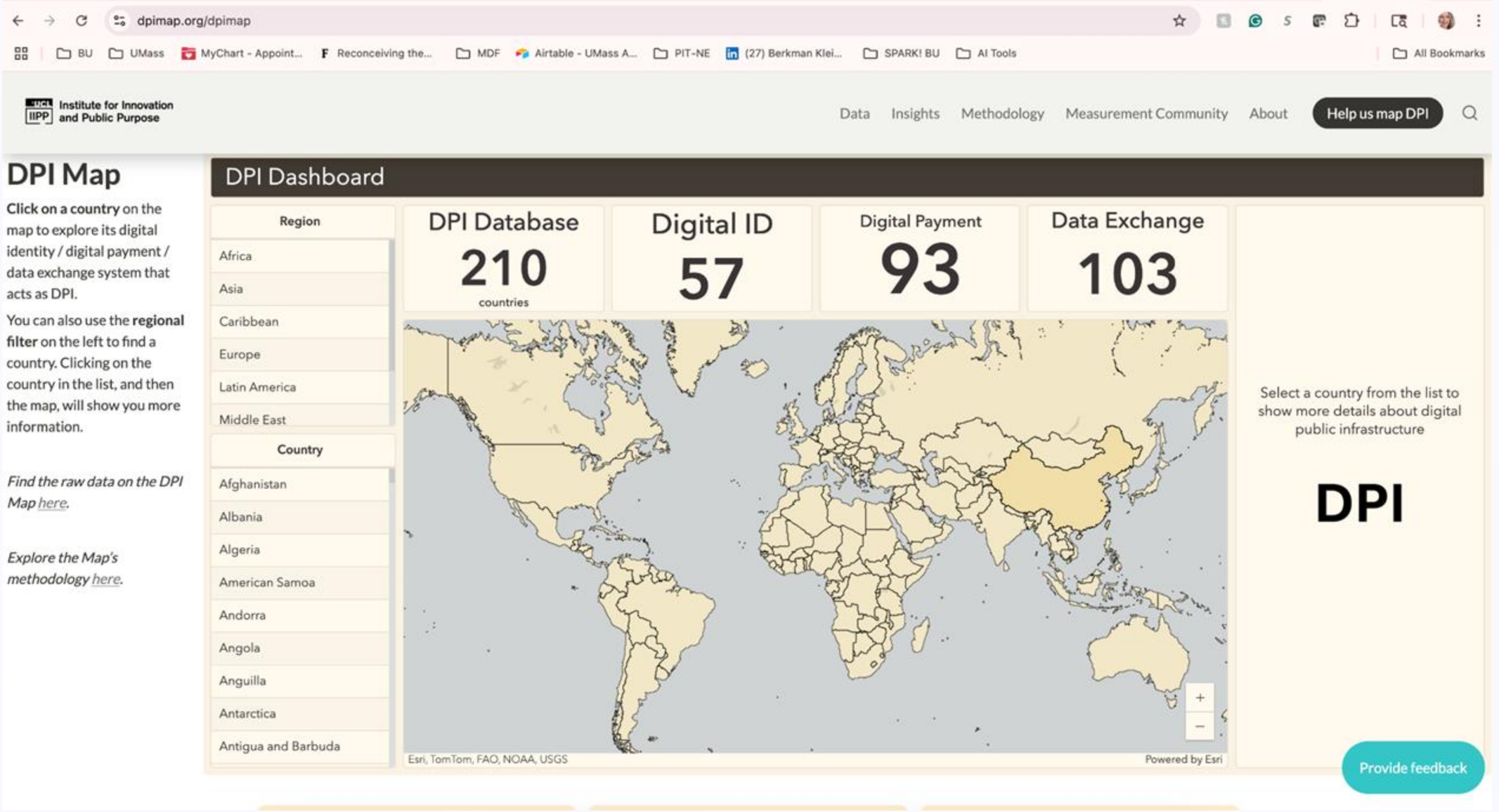
Diverse, inclusive innovation by the ecosystem via open & multi-modal access

4.

Federated & Decentralized with a preference for letting data stay where it's been collected

5.

Security & **Privacy** by design; a trust-no-one architecture



https://dpimap.org/dpimap

What is Digital ID?

Definition

Verifies individuals for service access

Methods

Biometrics, mobile, national registries

Purpose

Access to healthcare, welfare, education

In such an unequal, favorable scenario, it is evident that:

If I don’t exist officially, I don’t have access to the public health system, the banking system, home loans, etc.

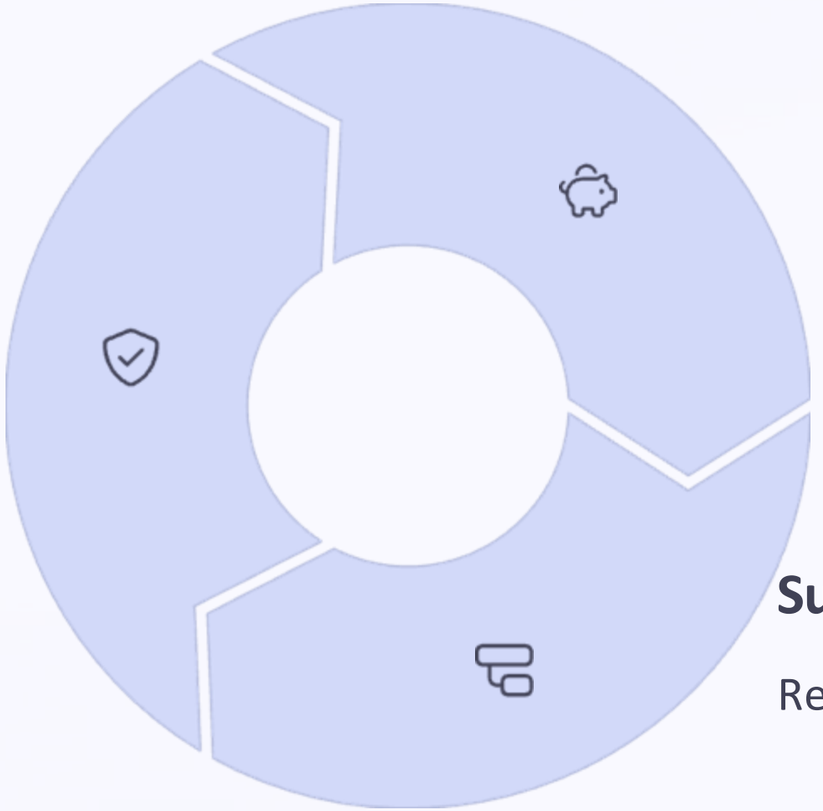
Access to Identity Promotes Dignity

Digital identity makes the access to fundamental rights and individuals’ benefits easier.

Benefits of Digital ID

Reduces Fraud

Improves targeting of services

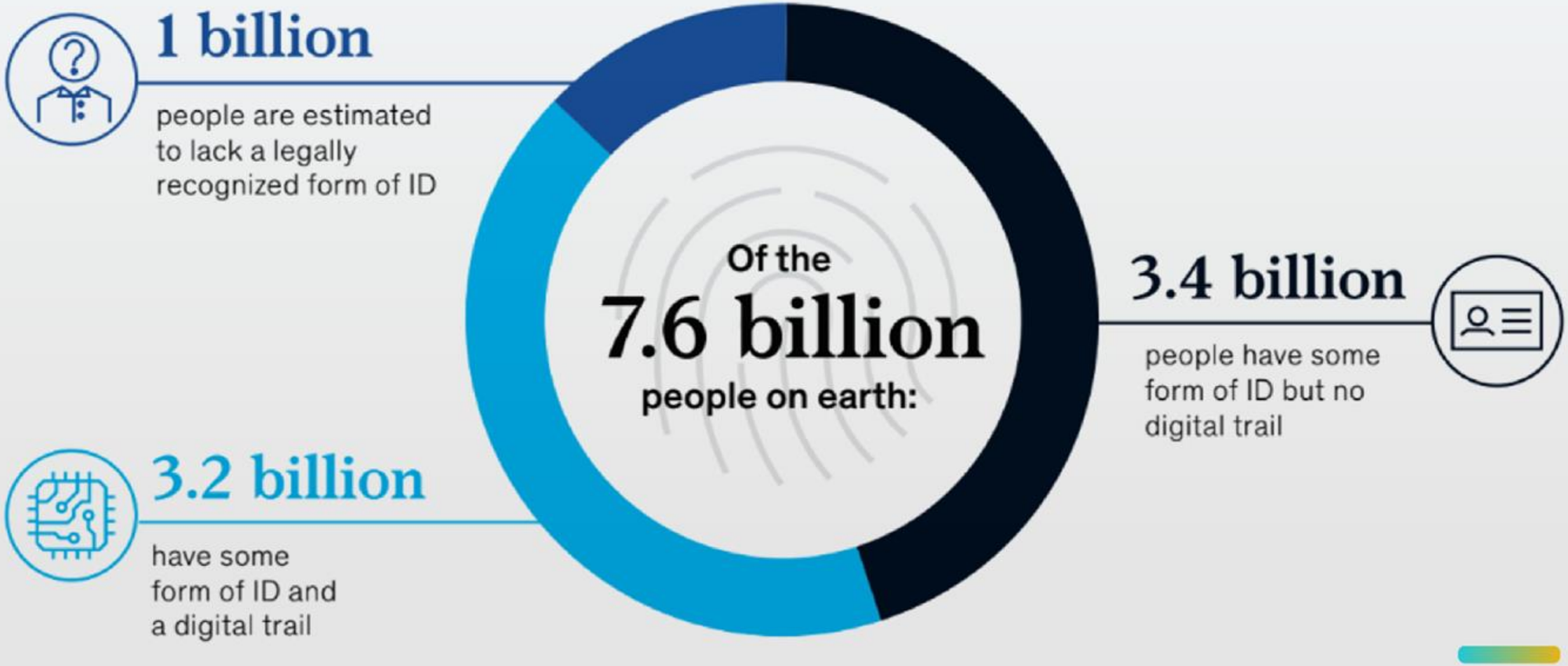


Increases Access

Banking, health, education

Supports Administrative Efficiency

Reduces paperwork burden



Source: World Economic Forum

Learn / TechNet Archive / Security Guidance / Security Viewpoint /

It's Me, and Here's My Proof: Why Identity and Authentication Must Remain Distinct

Article • 05/20/2008

By Steve Riley
Senior Security Strategist
Security Technology Unit
Microsoft Corporation

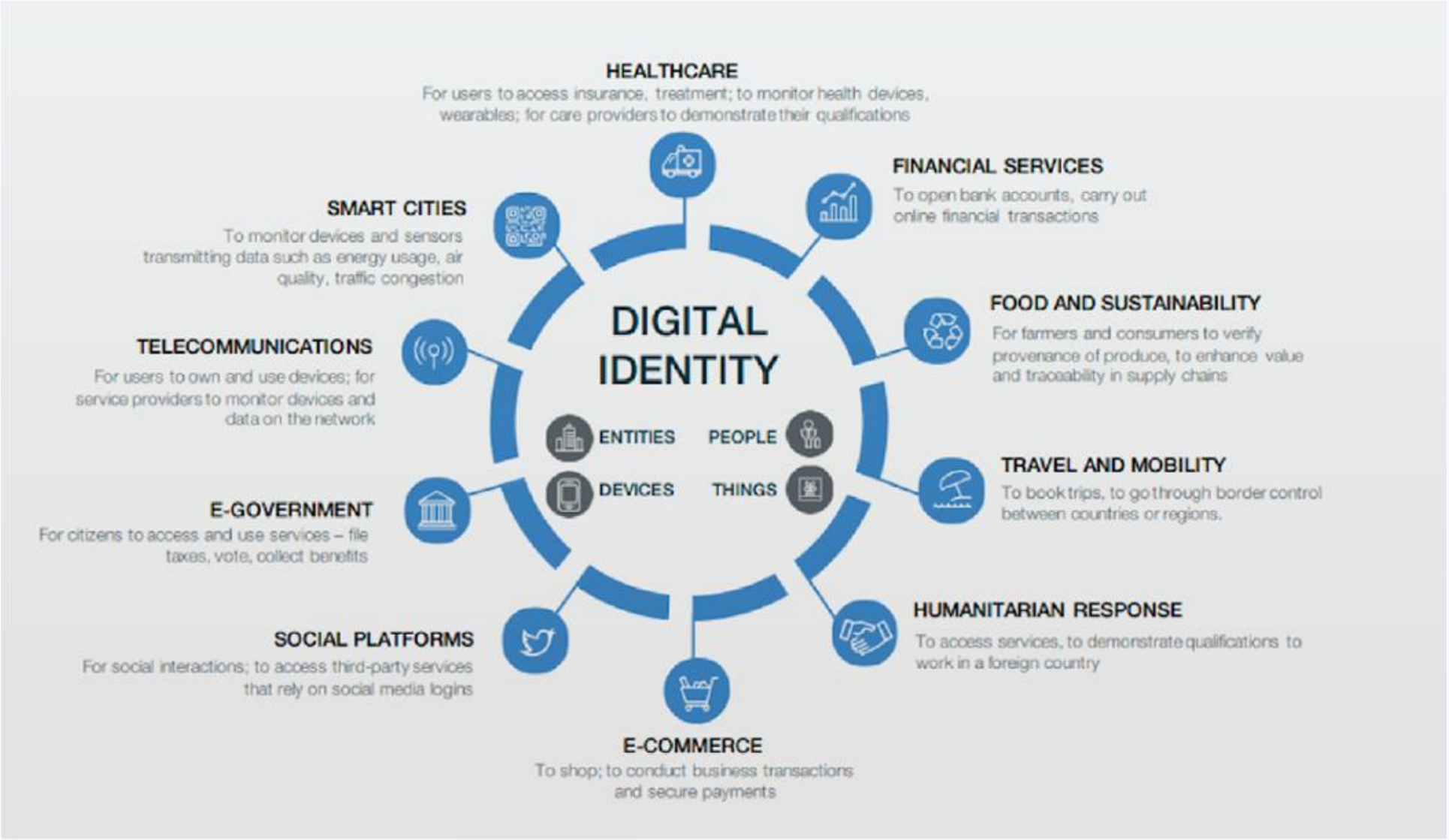
See other Viewpoint articles.

No matter what kinds of technological or procedural advancements occur, certain principles of computer science will remain -- especially those concerning information security. I've noticed lately that, among all the competing claims of security vendors that their latest shiny box will

	Provided by	Answers	Attributes
Identity	principal	"Who are you?"	public assertion
Authentication	principal	"OK, how can you prove it?"	secret response
Authorization	system	"What can I do?"	token or ticket
			access control

"The real question about identity is not just who you are, but what you are allowed to do."

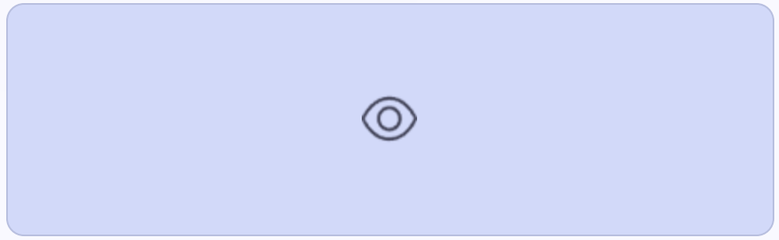
—Bruce Schneier


HEALTHCARE
For users to access insurance, treatment; to monitor health devices, wearables; for care providers to demonstrate their qualifications
FINANCIAL SERVICES
To open bank accounts, carry out online financial transactions
SMART CITIES
To monitor devices and sensors transmitting data such as energy usage, air quality, traffic congestion
FOOD AND SUSTAINABILITY
For farmers and consumers to verify provenance of produce, to enhance value and traceability in supply chains
TELECOMMUNICATIONS
For users to own and use devices; for service providers to monitor devices and data on the network
DIGITAL IDENTITY
ENTITIES
PEOPLE
DEVICES
THINGS
TRAVEL AND MOBILITY
To book trips, to go through border control between countries or regions.
E-GOVERNMENT
For citizens to access and use services – file taxes, vote, collect benefits
HUMANITARIAN RESPONSE
To access services, to demonstrate qualifications to work in a foreign country
SOCIAL PLATFORMS
For social interactions; to access third-party services that rely on social media logins
E-COMMERCE
To shop; to conduct business transactions and secure payments

Risks of Digital ID

Exclusion

Biometric mismatches, lack of documentation



Surveillance

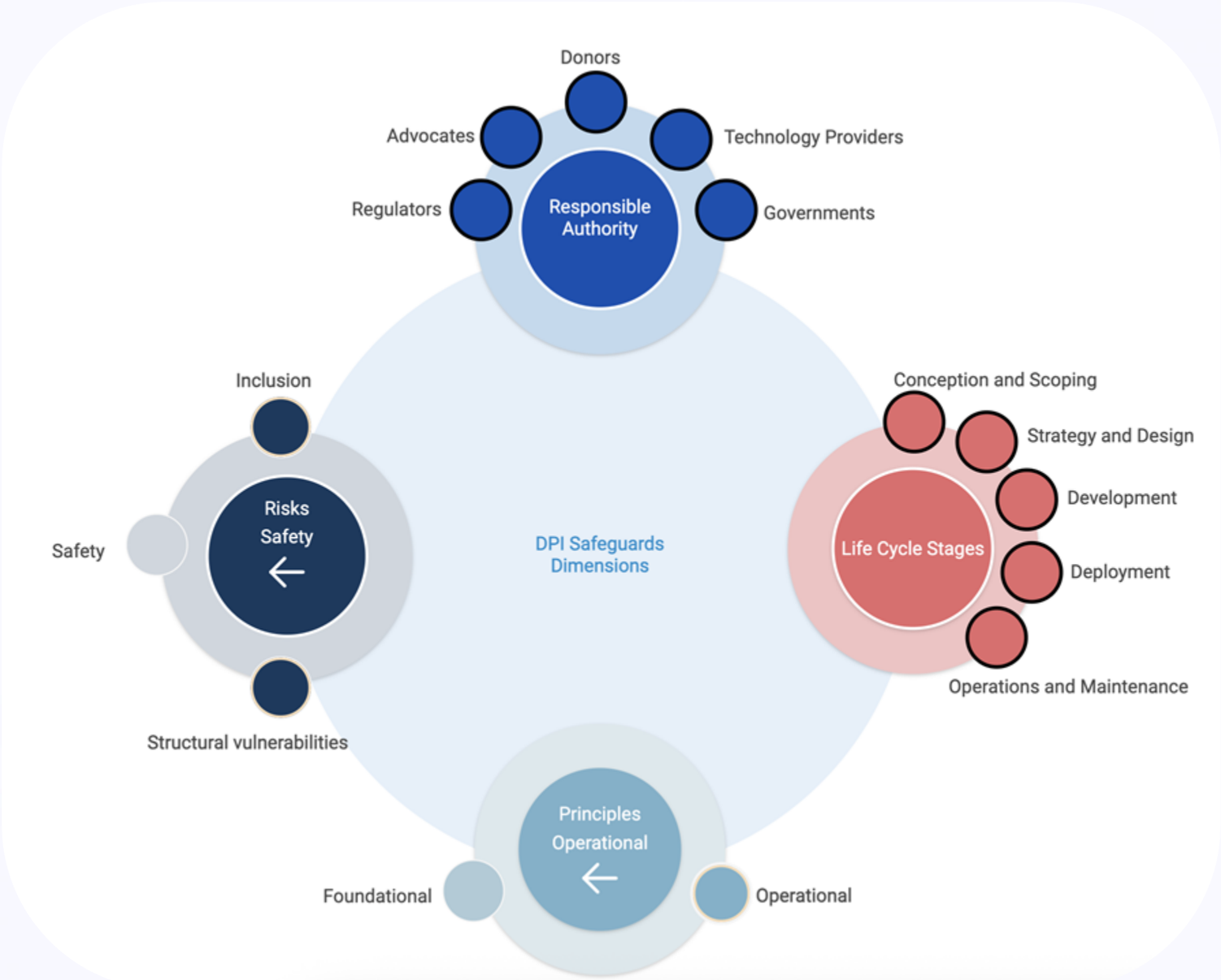
Government overreach concerns

Security

Centralized data breach risks

This is a good guide for your governance!

DIGITAL PUBLIC INFRASTRUCTURE
Universal Safeguards



UNDP MODEL GOVERNANCE FRAMEWORK FOR DIGITAL LEGAL IDENTITY SYSTEM

Good governance of Digital Legal ID is a foundational element of digital public infrastructure (DPI). Welcome to UNDPs new framework for navigating towards a rights-based, multi-stakeholder, governance set-up.

Legal authority for the digital legal ID system(s)

Relationship of the digital legal ID with other foundational and functional identification systems

Legal status of and requirements to use the digital legal ID credential

Impact assessments

Institutional arrangements for management of ID ecosystem

Effective coordination and collaboration

Data protection and privacy laws

Data handling by public and private actors

Data exchange practices

Cybersecurity

ID requirements to access government services

ID requirements to access private sector services

Ensuring requirements do not cause exclusion

Data and planning

[Digital Legal ID Governance]

This is a good guide for your governance!

5 DPI Architecture Principles
make digitisation inclusive & scalable

1.

Interoperability driven by open specifications

2.

Minimalist, Reusable building blocks rather than end-to-end solutions

3.

Diverse, inclusive innovation by the ecosystem via open & multi-modal access

4.

Federated & Decentralized with a preference for letting data stay where it's been collected

5.

Security & **Privacy** by design; a trust-no-one architecture

Cybersecurity Considerations

Protect Databases

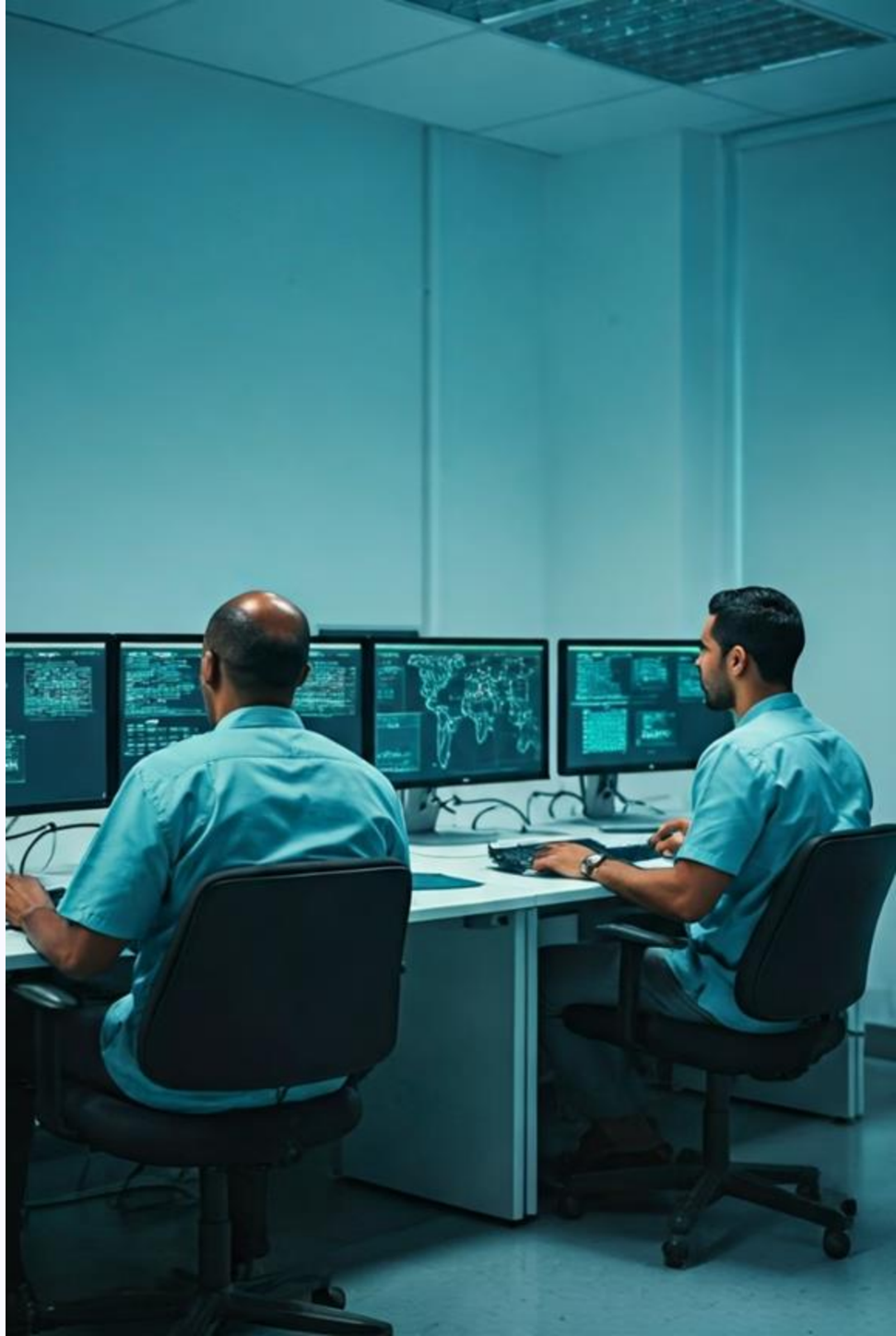
Secure national identity repositories

Prevent Identity Theft

Multi-factor authentication systems

Respond to Breaches

Incident response protocols



Cybersecurity Considerations

Protect National Databases

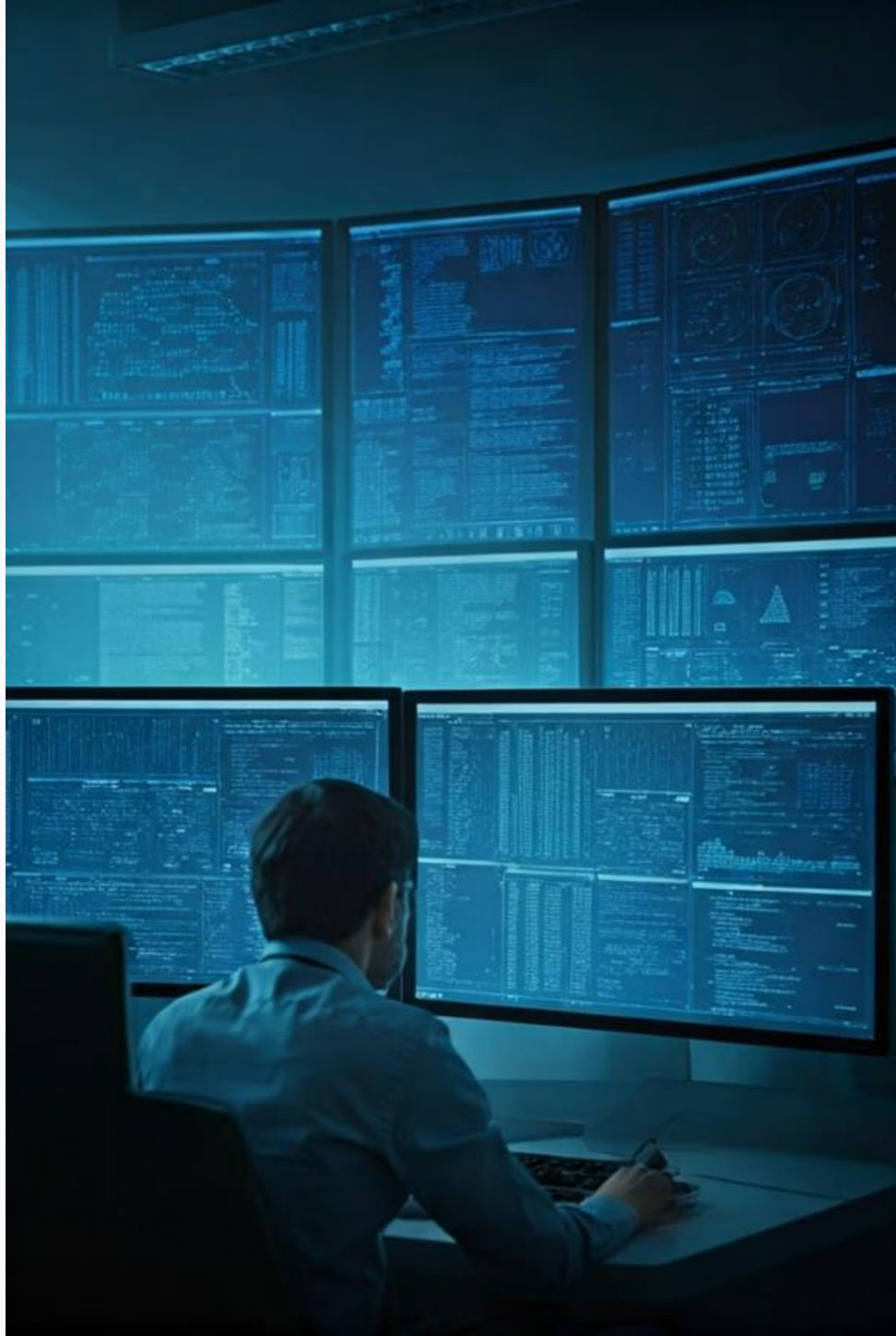
Secure storage of citizen information

Prevent Identity Theft

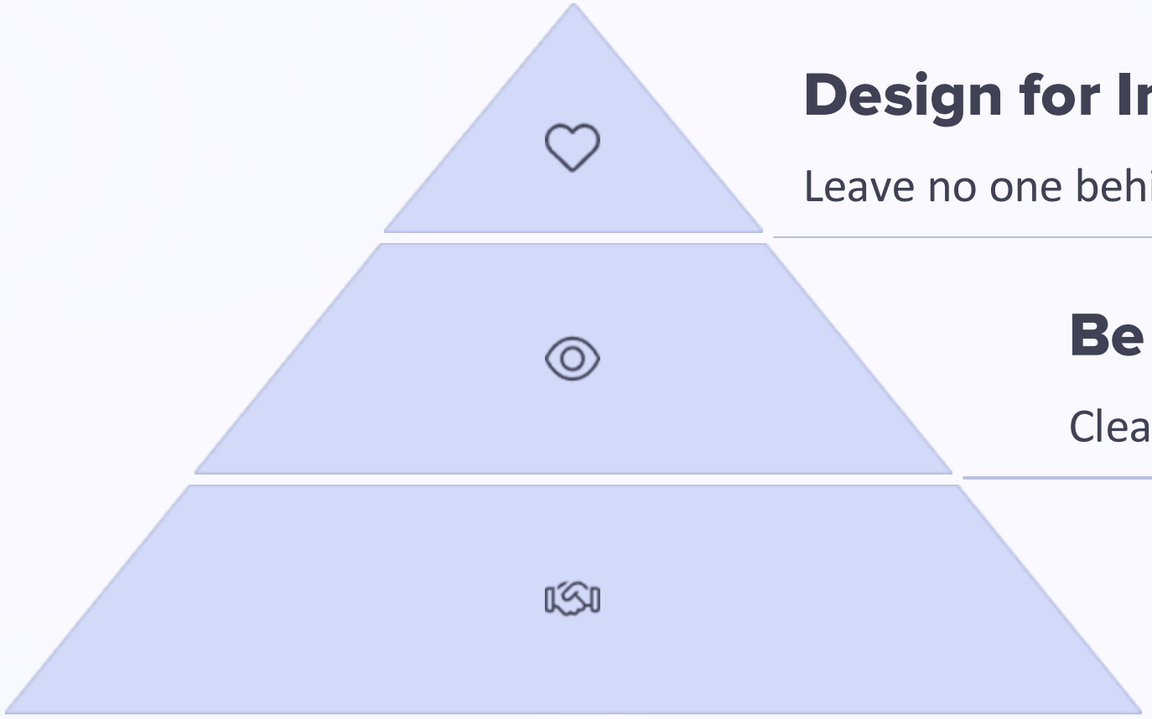
Authenticate users securely

Respond to Breaches

Rapid incident management protocols



Ethical Risk Management



Design for Inclusion

Leave no one behind

Be Transparent

Clear processes and accountability

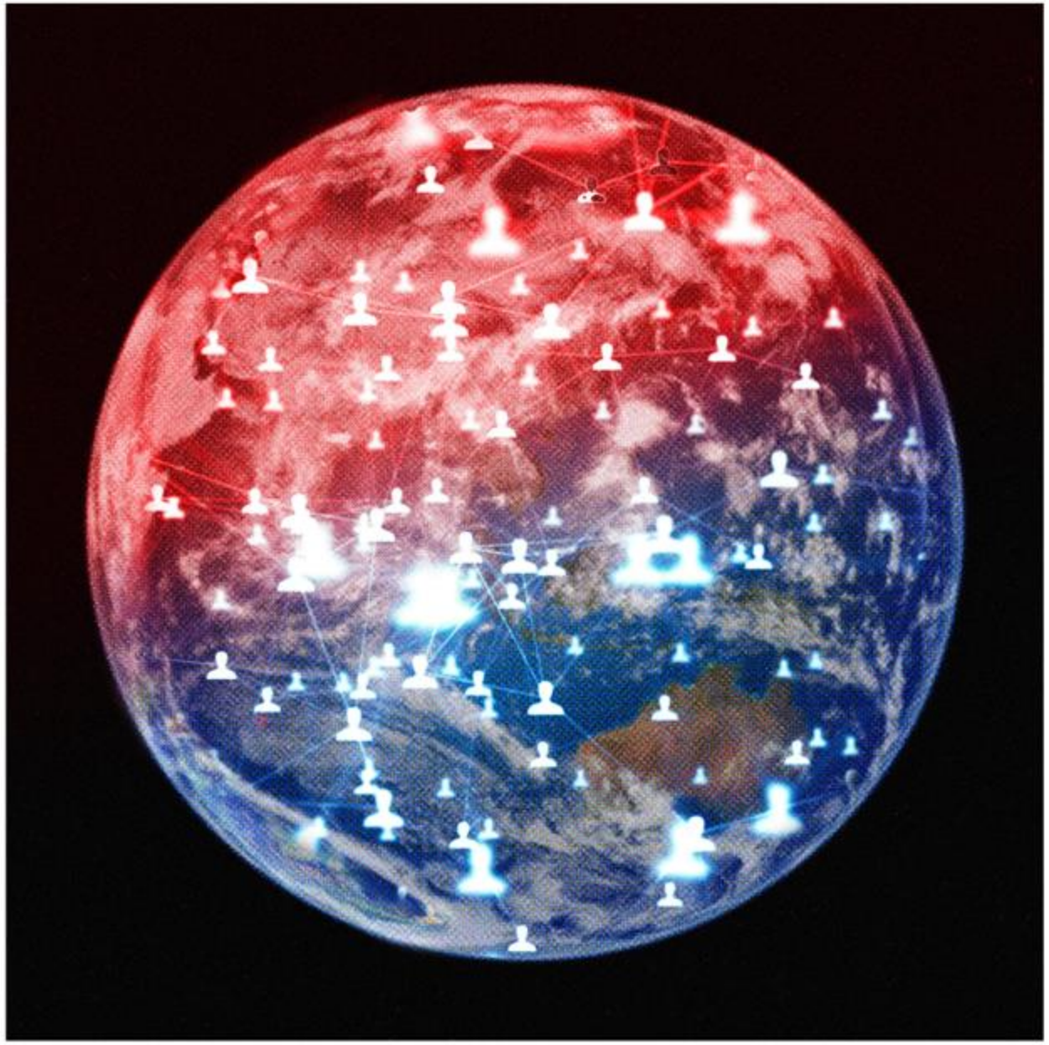
Build Consent-Based Systems

User control over personal data

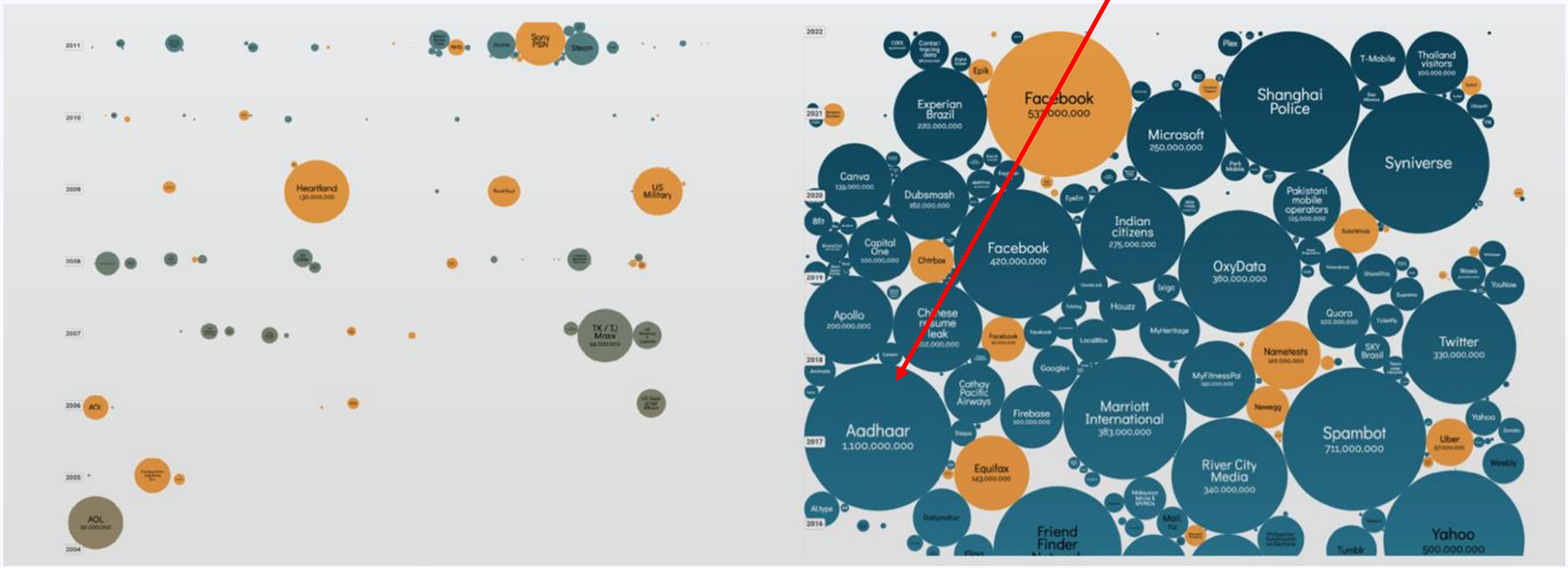
MATT BURGESS LILY HAY NEWMAN SECURITY MAY 22, 2025 6:00 AM

Mysterious Database of 184 Million Records Exposes Vast Array of Login Credentials

A trove of breached data, which has now been taken down, includes user logins for platforms including Apple, Google, and Meta. Among the exposed accounts are ones linked to dozens of governments.



World's biggest data breaches and hacks



In the **last decade**, data flow increased
at the same rate as data breaches and hacks.

https://informationisbeautiful.net/visualizations/worlds-biggest-data-breaches-hacks/

DPI & AI Interplay

Enhanced Services

AI improves fraud detection

Data Ecosystems

DPI enables national training datasets

Risk Management

Prevent algorithmic bias

DPI as Digital Public Good

Open-Source Systems

Replicable across nations

Local Capacity

Build technical expertise

Platform Examples

MOSIP, Mifos, OpenG2P

DPG Registry

All DPGs have been reviewed to ensure they meet the requirements of the DPG Standard. DPG status is valid for a period of one year from its approval, after which they must be reassessed to ensure they remain compliant with the DPG Standard.

The DPG Standard | Joining the Registry → | Integrate with Registry →

Case Studies

India

Inclusion at scale

Biometric challenges

Kenya

Huduma Namba paused

Legal protection gaps

Estonia

High trust model

Widespread adoption

Case Studies

Brazil

PIX payment system

scaled rapidly

Uruguay

Digital health & ID

leadership

Multilateral Support

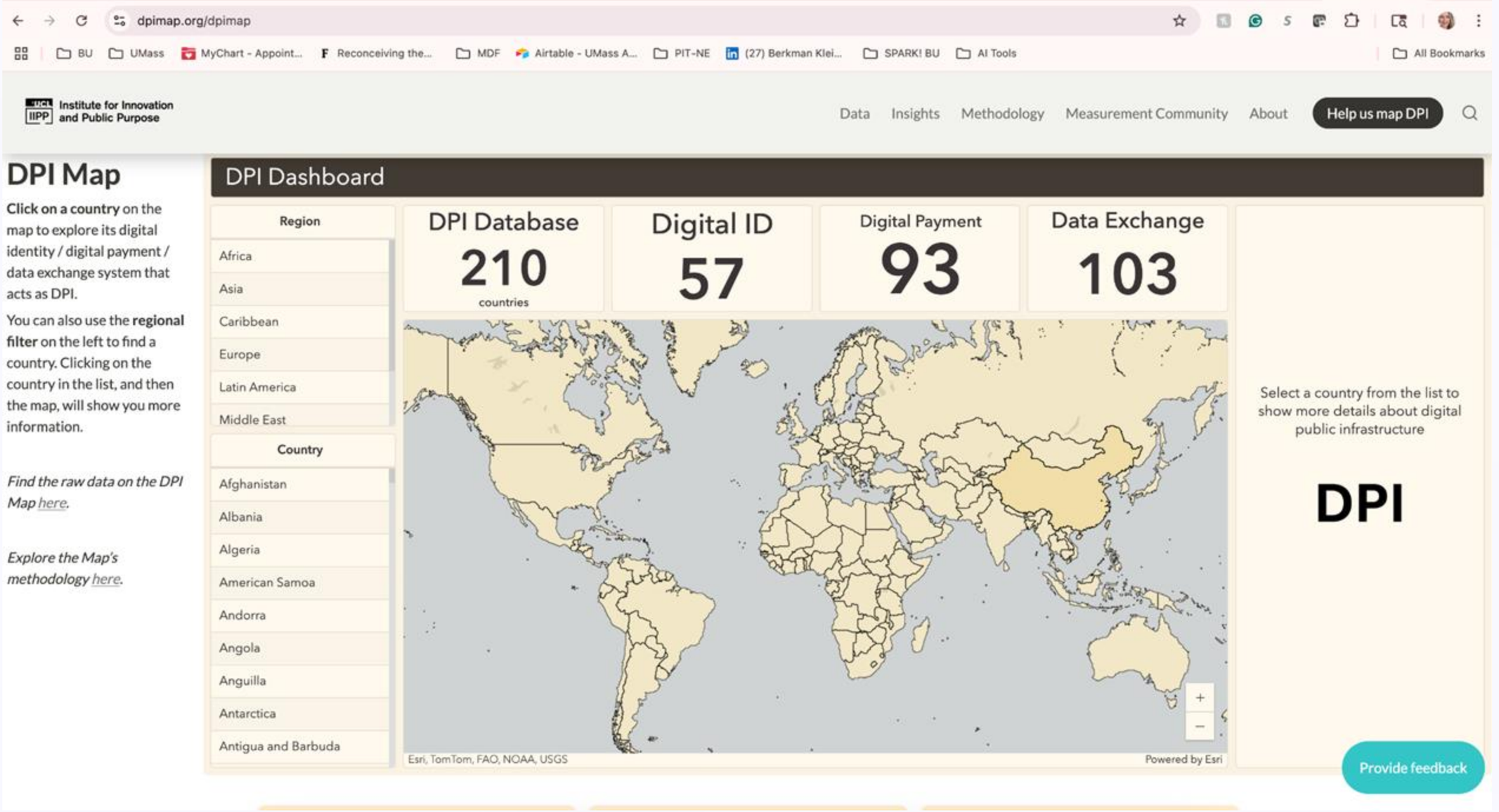
World Bank, CAF, IDB financing partnerships

Philanthropic Support

Gates Foundation and Co-Develop

Knowledge Support

UNDP, CDPI, Data Privacy Br, etc

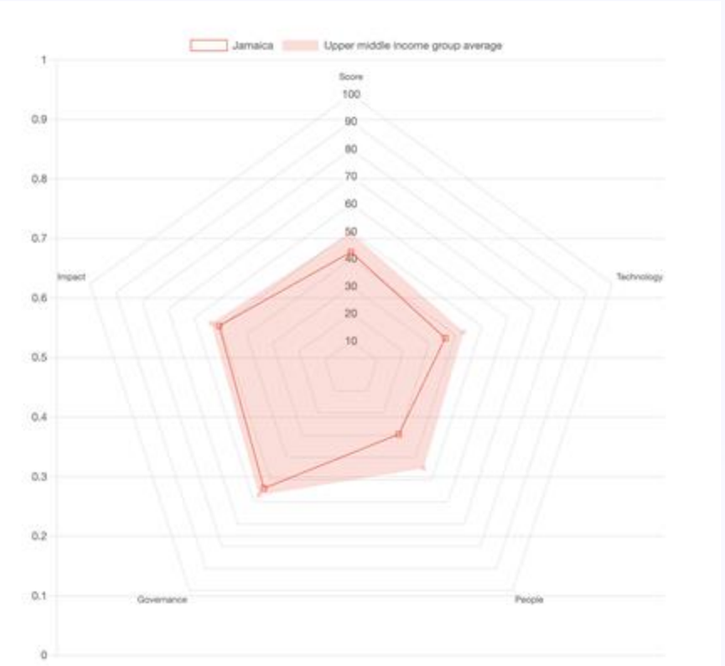


https://dpimap.org/dpimap

Thank you!

crossini@umass.edu

Jamaica

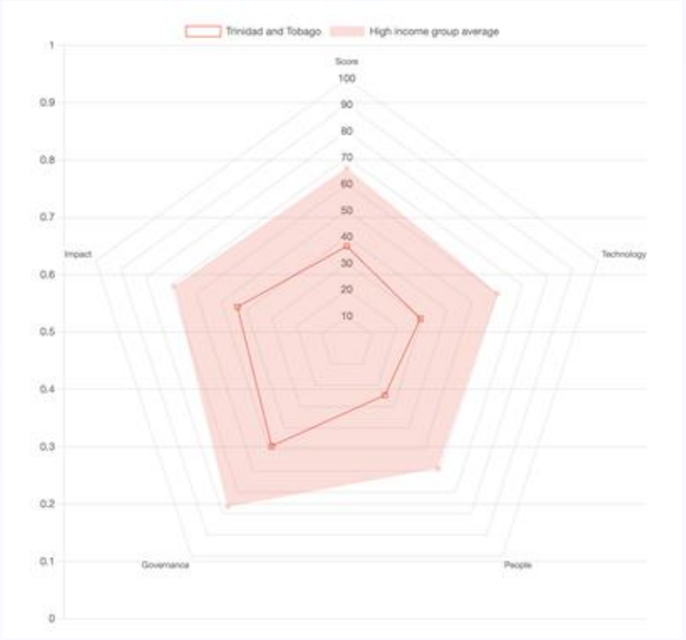


ISO3	Country	Score	Rank	Technology	People	Governance	Impact
JAM	Jamaica	42.50	93	36.06	29.56	53.92	50.48

Pillar: Technology	Score: 36.06	Rank: 86	SCORE	RANK
Pillar: People	Score: 29.56	Rank: 108	SCORE	RANK
Pillar: Governance	Score: 53.92	Rank: 75	SCORE	RANK
Pillar: Impact	Score: 50.48	Rank: 89	SCORE	RANK

https://networkreadinessindex.org/country/jamaica/

Trinidad & Tobago



ISO3	Country	Score	Rank	Technology	People	Governance	Impact
TTO	Trinidad and Tobago	36.48	106	29.31	24.58	48.44	43.59

Pillar: Technology	Score: 29.31	Rank: 103	SCORE RANK
Pillar: People	Score: 24.58	Rank: 120	SCORE RANK
Pillar: Governance	Score: 48.44	Rank: 93	SCORE RANK
Pillar: Impact	Score: 43.59	Rank: 110	SCORE RANK

https://networkreadinessindex.org/country/trinidad-and-tobago/