

Digital Public Goods: Addressing Challenges to Realize Value

ID4Africa Plenary Session
Addis Ababa - May 21st, 2025



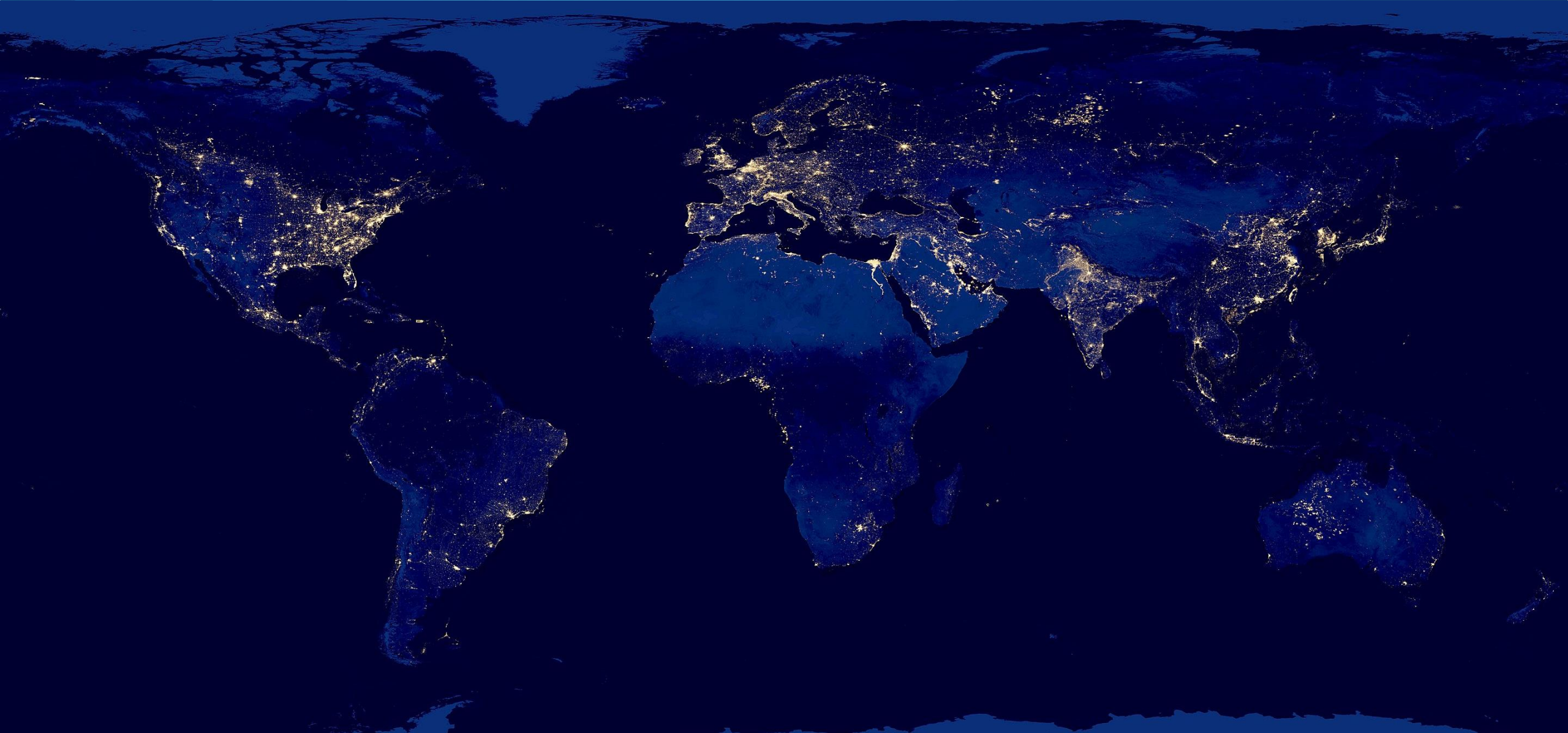
Keynote Presentation:

“Digital Public Goods: Why Code Isn’t Enough; And What We Must Build Instead”

Presented by: **Chahine Hamila**, e-Gov Senior Advisor & Technologist, UNDP

A Common Global Need

The Infrastructure Gap is Real



The Vision We All Share



OPEN

INTEROPERABLE

SCALABLE

DIGITAL

SOVEREIGN

PUBLIC

GOODS

NO LICENSE FEE

FREE

REUSABLE

Why Governments Believe

Savings, Flexibility, and Control



Proprietary Stack	DPG Stack
License fees	No license fee
Black box code	Source available
Customization Constrained	Full Customization Possible

Why Donors Believe

Reusability, Quick Impact, Shared Moral Frame



Product	Entity Type	Self-Reported Deployment Instances	Area of Focus	Funding Model
X-Road	National / Non-Profit	20 - 49	Govtech Interoperability	Government, Consulting
DHIS2	Academic Institution	100 - 500	Health	International Organization(s), Philanthropic Funding, Consulting
Somleng	Company	3-9	Health	International Organization(s), Consulting
FormSG	National / Federal Gov	3-9	Versatile	Government
Mojaloop	Non-Profit	3-9	Finance	Public Donations, Philanthropic Funding , Membership
Open Health Stack	Google, Collaborative/Initiative	3-9	Health	International Organization(s), Private Funds

But is this the whole story?

When high expectations meet an unforgiving reality



UN
DP



Myth #1: Open Source is Free (as in lunch)

Hint: it's as free as your time



VS

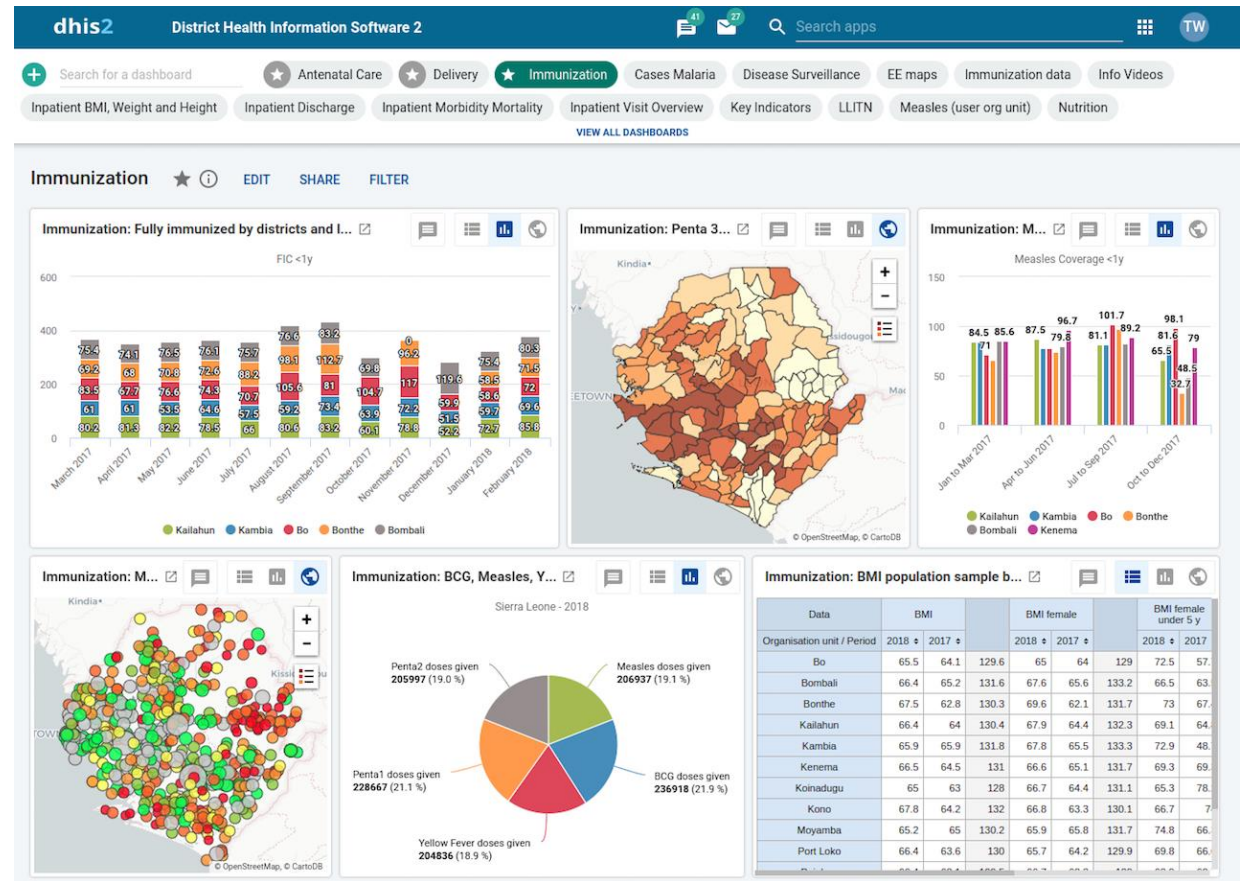


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5-year TCO sample project (summary)

Category	Initial CapEx (Build)	Annual OpEx (operate)	5-Year Total TCO
Data Centers & Infrastructure	\$4M-\$8M	\$0.5-\$1.5/year	\$6.5M-\$15.5M
Cybersecurity Systems	\$1M-\$2M	\$0.1M-\$0.5M/year	\$1.5M-\$4.5M
Human Resources	\$2M-\$4M	\$1M-\$2M/year (25-50 staff)	\$7M-\$14M
Software Tools & Updates	\$2M-\$3M	\$0.5M-\$1M/year	\$4.5M-\$8M
Training & Capacity Building	\$1M-\$1.5M	\$0.2M-\$0.4M/year	\$2M-\$3.5M
Total Investment	\$10M-\$18.5M	\$2.3M-\$5.4M/year	\$21.5M-\$45.5M

Myth #2: Open Source is Free (as in speech)

Hint: you may incur legal risks if you are reckless with your open-source licensing terms



- › IP (ownership) vs License (conditional use)
- › Proprietary (closed source or source available) vs Copyleft vs Permissive and Public Domain
- › **Virality:** Copyleft licenses may create barriers in the context of DPIs
 - ⇒ E.g.: no bank will open source its system to connect to an AGPL DPI service



- › **Artifex Software v. Hancorn, Inc.**
- › **Free Software Foundation v. Cisco Systems**
- › **Entr'Ouvert v. Orange S.A.**

Myth #3: With Enough Eyeballs All Bugs are Shallow

Hint: not all who discover vulnerabilities are benevolent



Security:
Transparent?

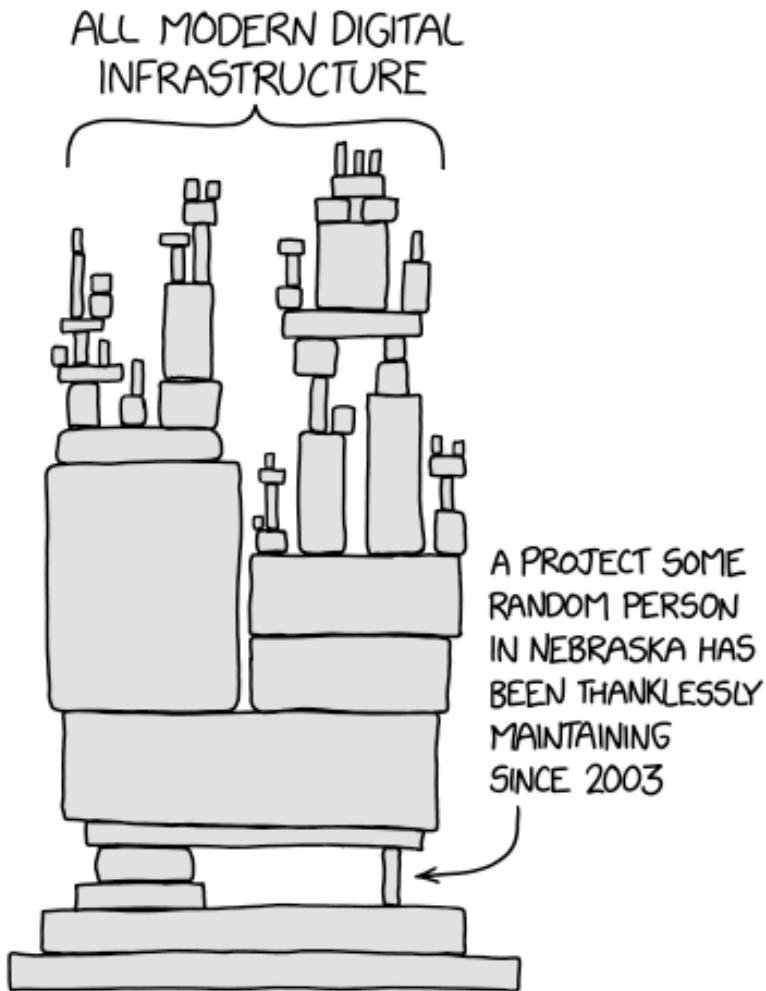
Zero day!



Not all eyeballs are desirable or benevolent

Myth #3: With Enough Eyeballs All Bugs are Shallow

Hint: Security is correlated with developer traction... and your ownership!



Repository	Contributors	Description
home-assistant/core	21,000	Home automation platform
microsoft/vscode	20,000	Source-code editor
ProvableHQ/leo	20,000	Programming language for zero-knowledge applications
firstcontributions/first-contributions	13,000	Beginner's guide to contributing to open source
flutter/flutter	10,000	UI toolkit for building natively compiled applications
NixOS/nixpkgs	9,000	Package collection for the Nix package manager
vercel/next.js	9,000	React framework for server-rendered applications
langchain-ai/langchain	8,000	Framework for developing applications powered by language models
godotengine/godot	7,000	2D and 3D game engine
ollama/ollama	7,000	Tooling for running large language models locally

Myth #4: Open Source is about Developer Benevolence

Hint: Open Source has its own economic logic



Illustrative OSS business models

- › SaaS
- › Cloud providers Infrastructure
- › Integrators
- › License based vendors



SOME SIMPLE ECONOMICS OF OPEN SOURCE*

JOSH LERNER[†] AND JEAN TIROLE[‡]

There has been a recent surge of interest in open source software development, which involves developers at many different locations and organizations sharing code to develop and refine programs. To an economist, the behavior of individual programmers and commercial companies engaged in open source projects is initially startling. This paper makes a preliminary exploration of the economics of open source software. We highlight the extent to which labor economics, especially the literature on ‘career concerns’, and industrial organization theory can explain many of these projects’ features. We conclude by listing interesting research questions related to open source software.

Beyond Myths: Pillars of Sustainability and Control



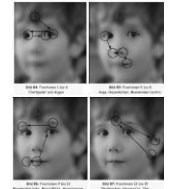
DPIs stimulate innovation ecosystems

Innovation ecosystems build DPGs (where they make economic sense)



Innovative, risk-taking engineers
(either entrepreneurial mindset or who thrive in the chaotic environment of young companies)

Favorable public sector and regulations (sponsor and drive innovation needs – e.g. tax incentives, lower barriers to sector, PPPs, SMB Act...)



Big companies
(sponsor and drive innovation needs, serve as major customer accounts, and provide exit routes through acquisitions)

Other “secondary” actors
(e.g. specialized lawyers and accountants)



Incubators / Accelerators
(mentors, offices and facilities, resource and experience sharing, cultural dynamics)



Engineering schools and centers of research



Financial channels
entrepreneurial investors:
3F, angels, VCs
Exit routes: stock market, M&A

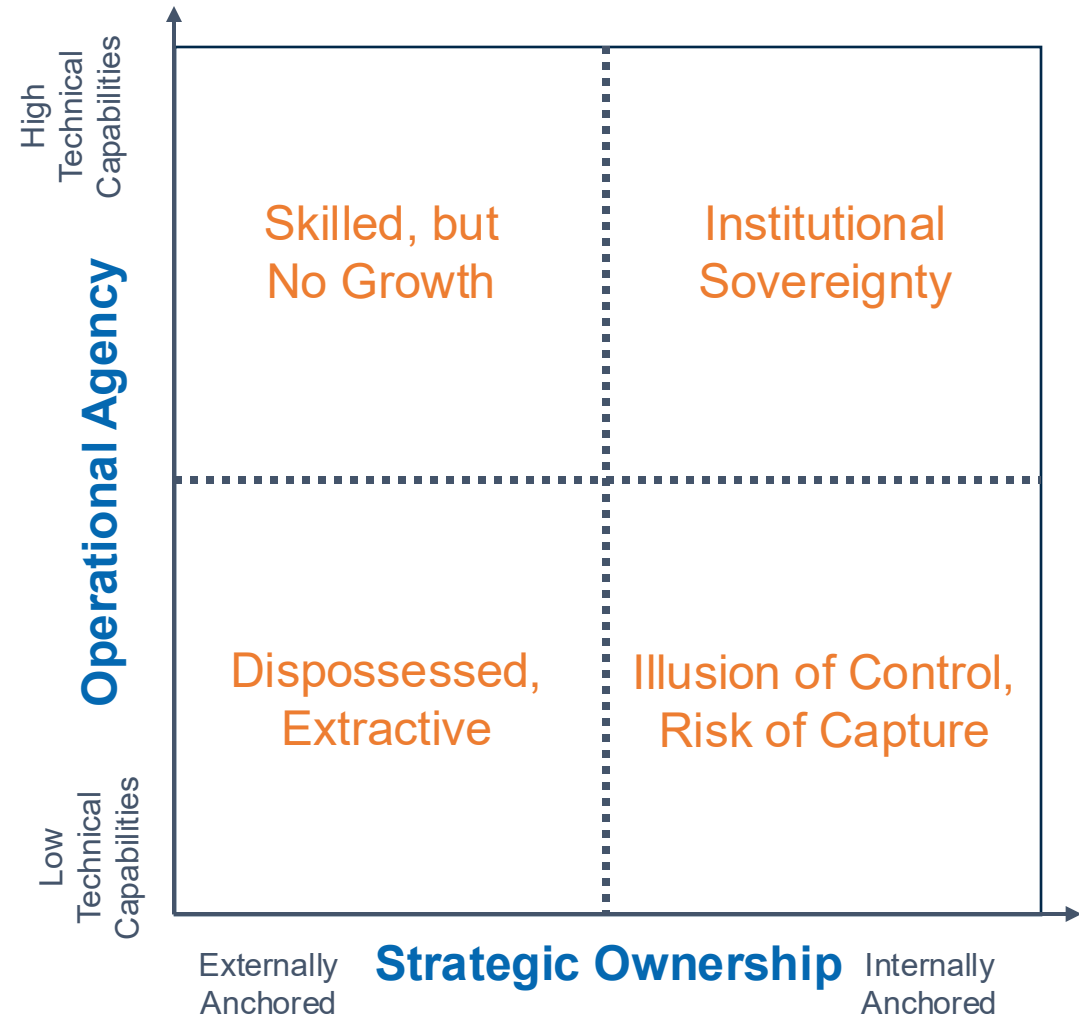


Governance: Who Owns the Future of your DPI?

Governance is not a license type. It's who owns your future

Vendors can entrench sovereignty, and DPGs can undermine it. It all depends on the power structure

The DPI roadmap is the most important political document nobody ever reads



Interoperability: turn your DPGs into infrastructure



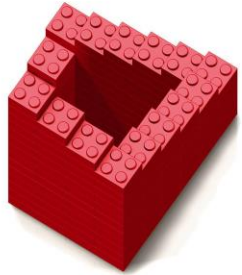
Imagine if your telcos couldn't call each other

DPGs without interoperability are just fragmented apps

Interoperability is a practical test of your governance at scale



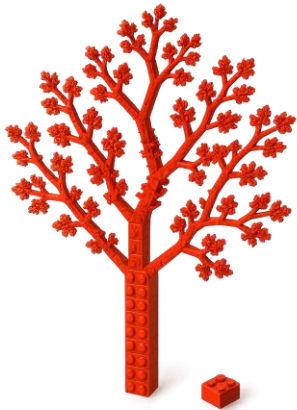
A balanced path forward: from utopian tools to beneficial reality



Avoid the Paradox

Open source is not free.

You still risk dependencies: on integrators, cloud providers, technical expertise you do not control...



Seize the Opportunity

With DPGs done right, you can:

- › Build local capacity
- › Invest in ecosystems
- › Foster open, competitive markets



Panel 1: Ecosystems: Scaling DPGs into DPIs

Moderated by: **Chahine Hamila**, e-Gov Senior Advisor & Technologist, UNDP

Objectives for the Panel



- › **MIFOS:** Financial inclusion and open-source financial services infrastructure.
- › **OpenMIS:** Adapting open-source health insurance systems for public services.
- › **MOSIP:** Modular approaches to foundational ID systems that integrate with broader DPGs.
- › **Margins ID Group:** Identity systems providers and integrators
- › **iDAKTO:** Identity systems providers and integrators

Participants



MODERATOR



Chahine HAMILA
e-Gov Senior Advisor & Technologist
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Vice President, DPI Go-to-Market
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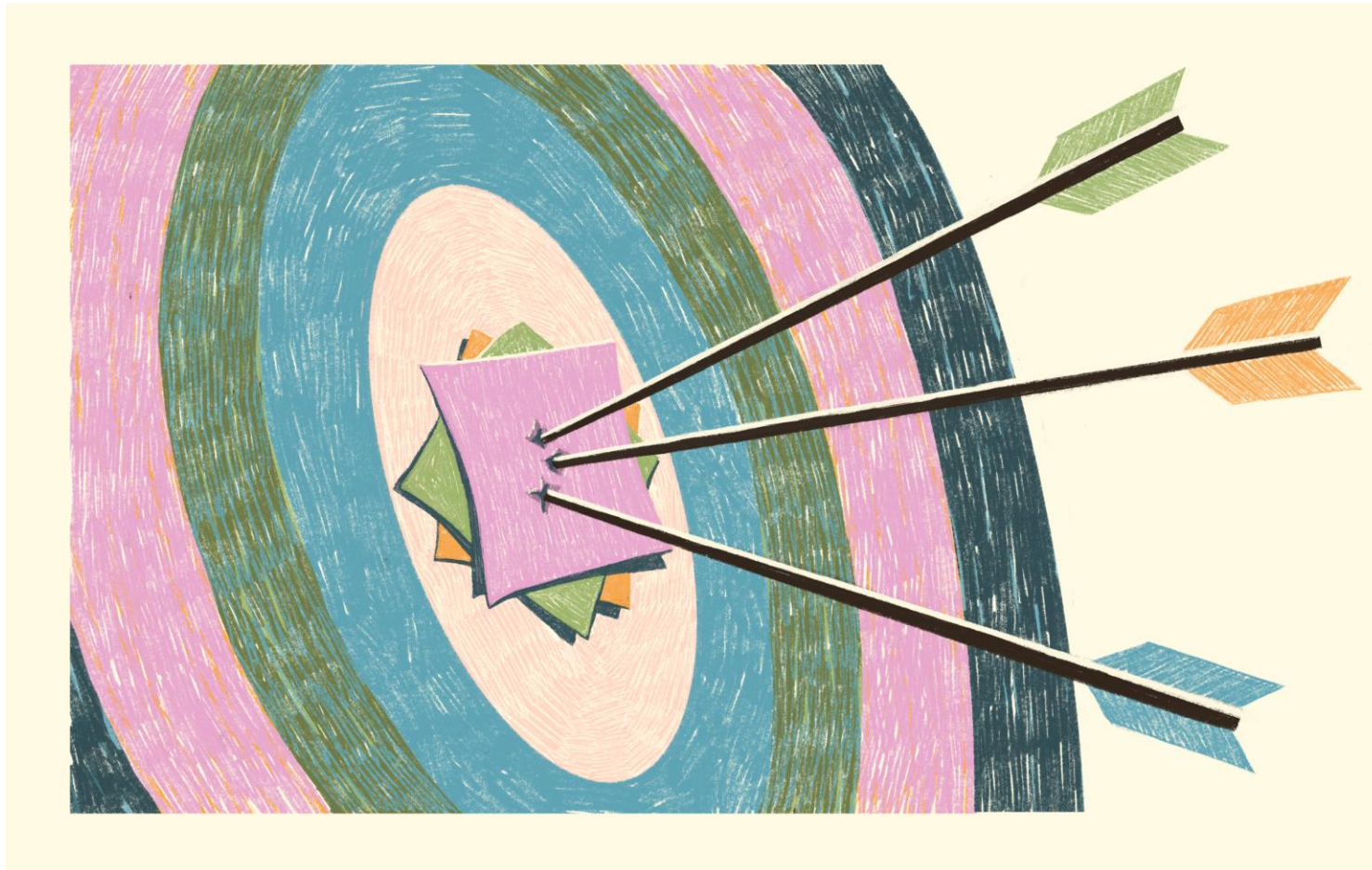


Andrew ASAMOAH
Executive Director, Software Development &
Systems Integration
Margins ID Group



Yann BOUAN
Chief Strategy Office & Identity Expert
iDAKTO

Key takeaways





Panel 2: Governance and Interoperability: un-siloing DPGs into DPIs

Moderated by: **Chahine Hamila**, e-Gov Senior Advisor & Technologist, UNDP

Objectives for the Panel



- › **OSIA (Open Standards Identity APIs):** The role of standards in enabling interoperability across identity systems.
- › **GIZ - DCI (Digital Convergence Initiative):** Multi-stakeholder ecosystems and governance for DPIs and DPGs.
- › **OpenID Foundation:** Expertise in open identity standards and authentication protocols.
- › **World Bank:** Funding DPI projects

Participants



MODERATOR



Chahine HAMILA
e-Gov Senior Advisor & Technologist
UNDP

PANELISTS



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The World Bank



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Gail HODGES
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Key takeaways

