



# Digital transformation

## Current Trends of Digital Technology enabled socio-economic transformation in Developing Countries (Global South)

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@GRIPS

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\*Views expressed and information presented in this seminar are solely personal and do not express the views or opinions of Japan International Cooperation Agency



**Atsushi Yamanaka** is a senior advisor of DX at Japan International Cooperation Agency's Office for Science, Technology and Innovation, and Digital Transformation.

He is currently supporting various different JICA's projects to incorporate digital technologies to attain effective developmental results at JICA's client countries and facilitate client countries' digital transformations.

He is also a Professor and Advisor of Kobe Institute of Computing Graduate School (KIC); the only graduate school focused on nurturing ICT for Development Professionals in Japan. He has been teaching the topics of ICT for Development in the past 8 years from the inception of its signature "ICT innovator course."

Atsushi has more than 25 years of experiences in pursuing topics of ICT for Development with which he has provided various policy advisory services and supported and managed variety of ICTD projects globally. He has rendered his services in diverse organizations that include UN organizations (UNDP, PAHO/WHO), private sector, and civil societies.

## Introduction of JICA and JICA's DX Vision and Approach

1. JICA at Glance
2. JICA's DX Vision
3. Japan's Society 5.0 concept & Digital Architecture

## Current Status of global digital usage

1. Connected People - Global Statistics
2. Growth of Internet Users – Timeline
3. Digital Economy – Mobile industry contribution to GDP
4. Smart Phone Penetration – Global Data
5. Employment Generation – Mobile Ecosystem

## Case Studies of Reverse Innovations

1. Why disruptive innovations could emerge from developing countries?
2. What is reverse innovations? - cases of mobile money (Kenya) and interoperability framework (Estonia)
3. Babyl Rwanda -> UK -> US
4. Zipline Rwanda -> US
5. SORMAS Nigeria -> Germany -> France, etc.
6. DiiA Ukraine -> Estonia and beyond
7. India Stack India -> Global through DPI
8. Bhutan Health Project Bhutan -> Global
9. Rwanda Digital Innovation Strengthening Project Rwanda -> Global

# Introduction of JICA and JICA's DX Vision and Approach



**16 billion** USD

Operations extended globally in 2019, including ODA loans, PSIF, Technical Cooperation, and Grant \*

 **1,700 +** PROJECTS

ODA and JICA-related projects that are under implementation globally

 **13,217** People

Training participants and students from developing countries welcomed in Japan

 **9,163** People

Experts and JICA volunteers newly dispatched to developing countries from Japan

 **150** Countries & regions in operation

 **96** Overseas offices

 **14** Domestic offices

# 2. JICA DX Vision

JICA has set its DX Vision in March 2022 to drive the development in digital age.

## JICA Mission & Vision

**Leading the world with trust**

**Human Security**

Fostering societies where people can protect themselves from various threats and lead their lives in security and with dignity

**Quality Growth**

Promoting sustainable growth with less disparity and without harming environment.



## JICA DX Vision

Human Security

Diverse Well-being for All with Digital

**Creating a quality digital society where everyone can realize diverse Well-being**

Quality Growth

Quality Industrial & Societal Transformation with Digital

**ODA Business Transformation**

**Data&Tech**

Utilize data and technology to fullest for value creation

**Co-Creation**

Generate innovation and collective impact with digital partners

**HR Transformation**

**Mindset**

Change our mindset to be agile in a rapidly changing world

**Digital HR**

Reskill/Upskill ourselves on digital literacy and skillsets

**Institutional Transformation**

**BPR**

Reengineer efficient, effective business process/systems

**Data-Driven**

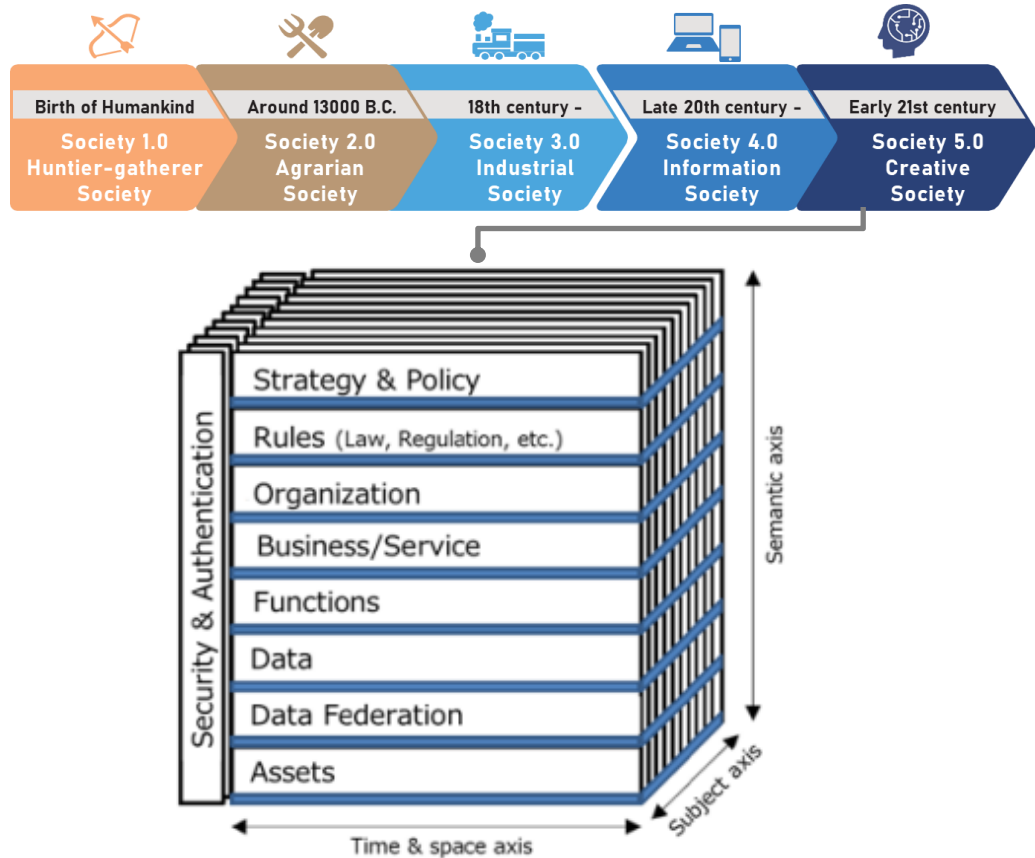
Realize data-driven institutional management

- ①
- ②
- ③ **HR Networks**  
Strengthen and activate human resource networks
- ④
- ⑤
- ⑥ **Workspace**  
Modernize flexible, positive working environment for diversity
- ⑦
- ⑧
- ⑨ **Digital Infra**  
Develop resilient, modern digital infrastructure

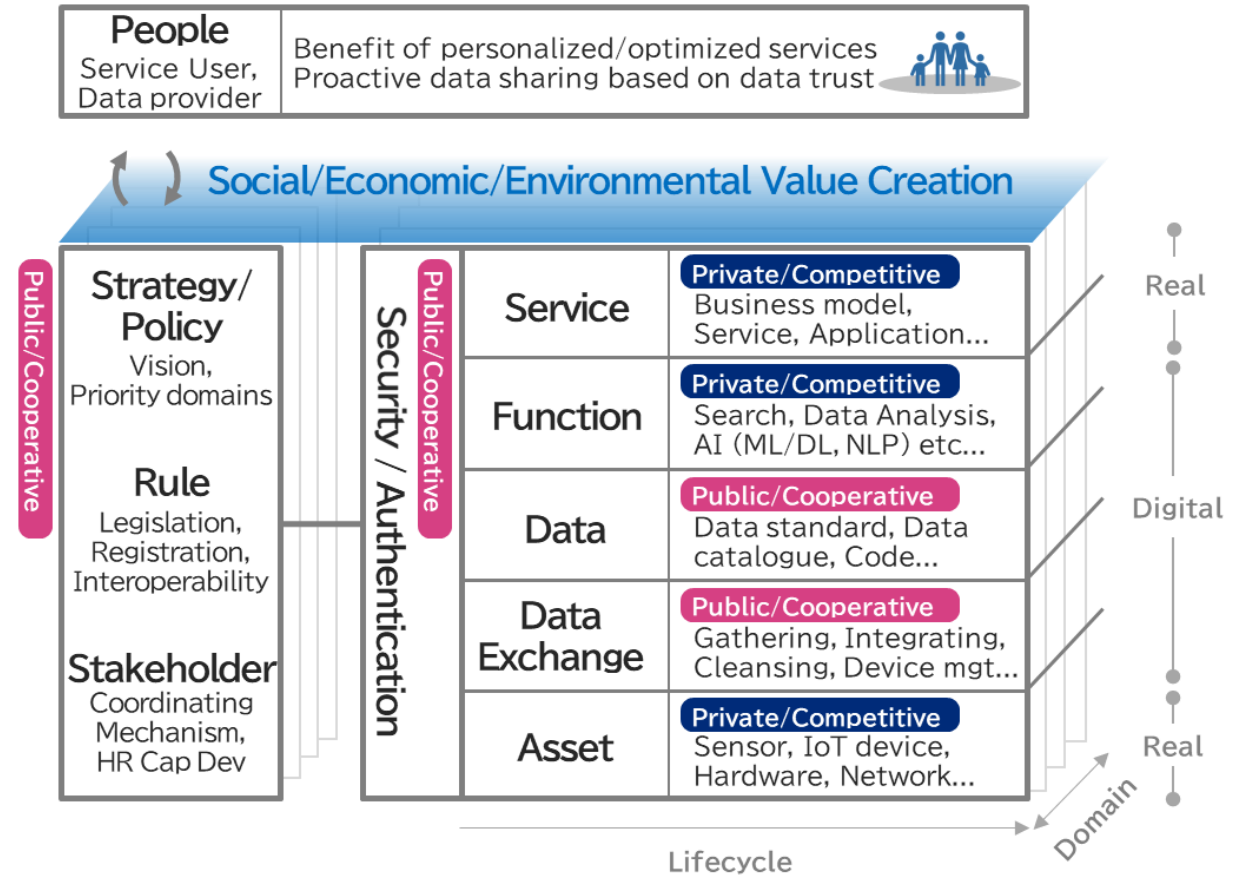
# 3. Society 5.0 and Digital Architecture

JICA has transformed itself to structure all the projects with a perspective of digital architecture which holds "cooperative" and "competitive" areas. This distinction informs appropriate government intervention that avoids excessive competition in the cooperative areas and encourages private innovation through fair competition.

## Society 5.0 and Reference Architecture



## JICA's Architecture View

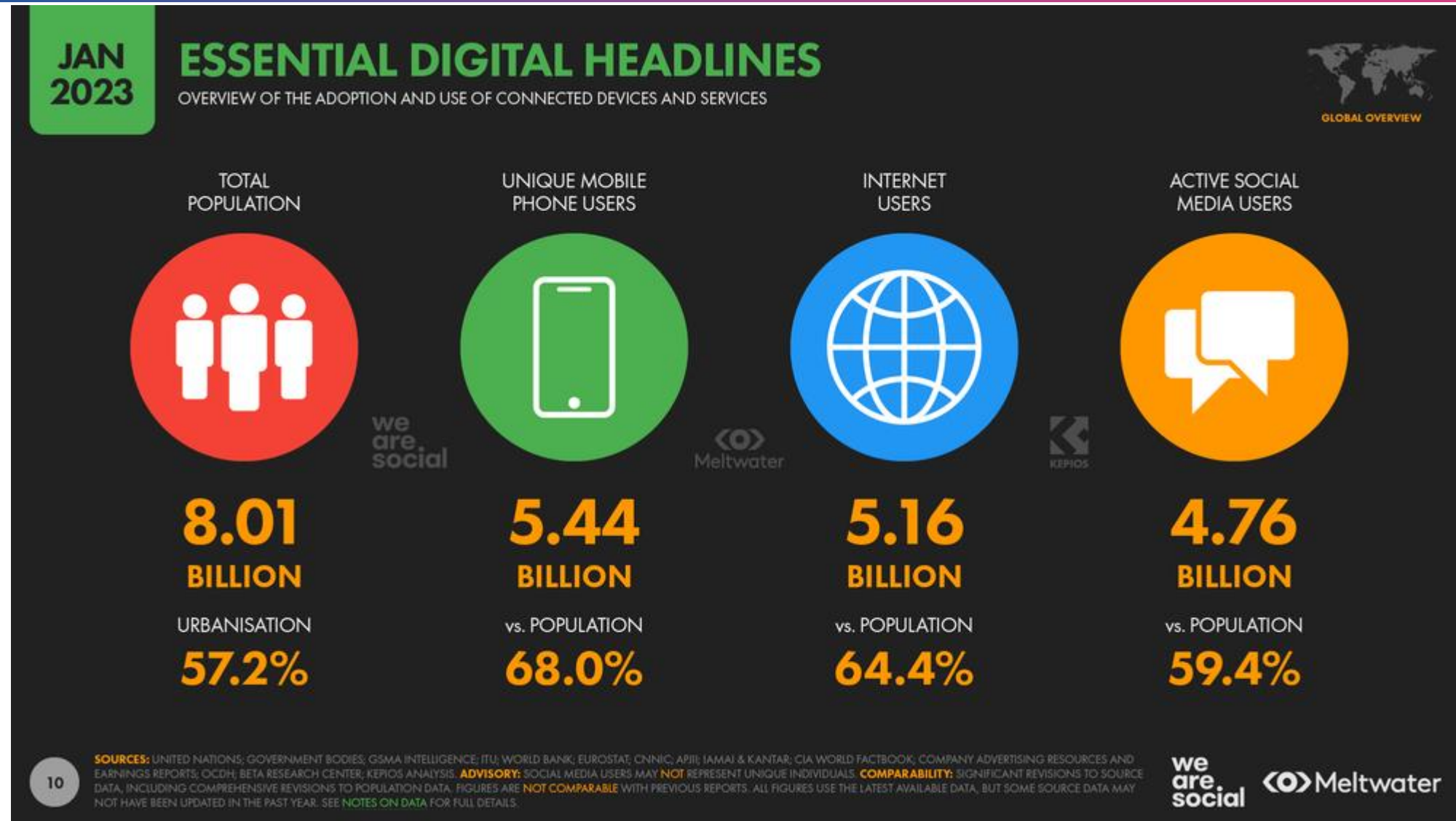


# Current Status of global digital usage



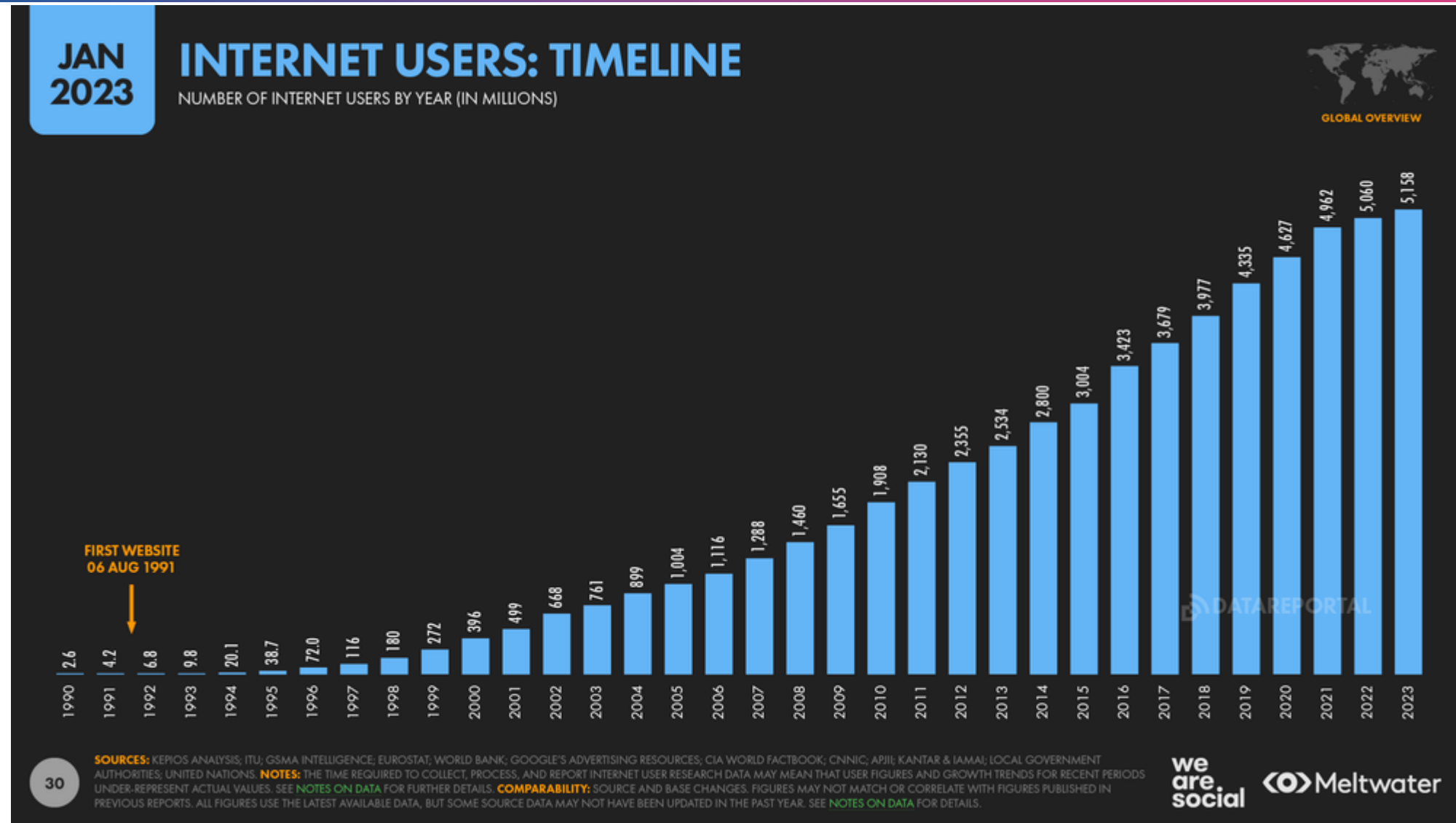


# 1. Connected people – Global Data



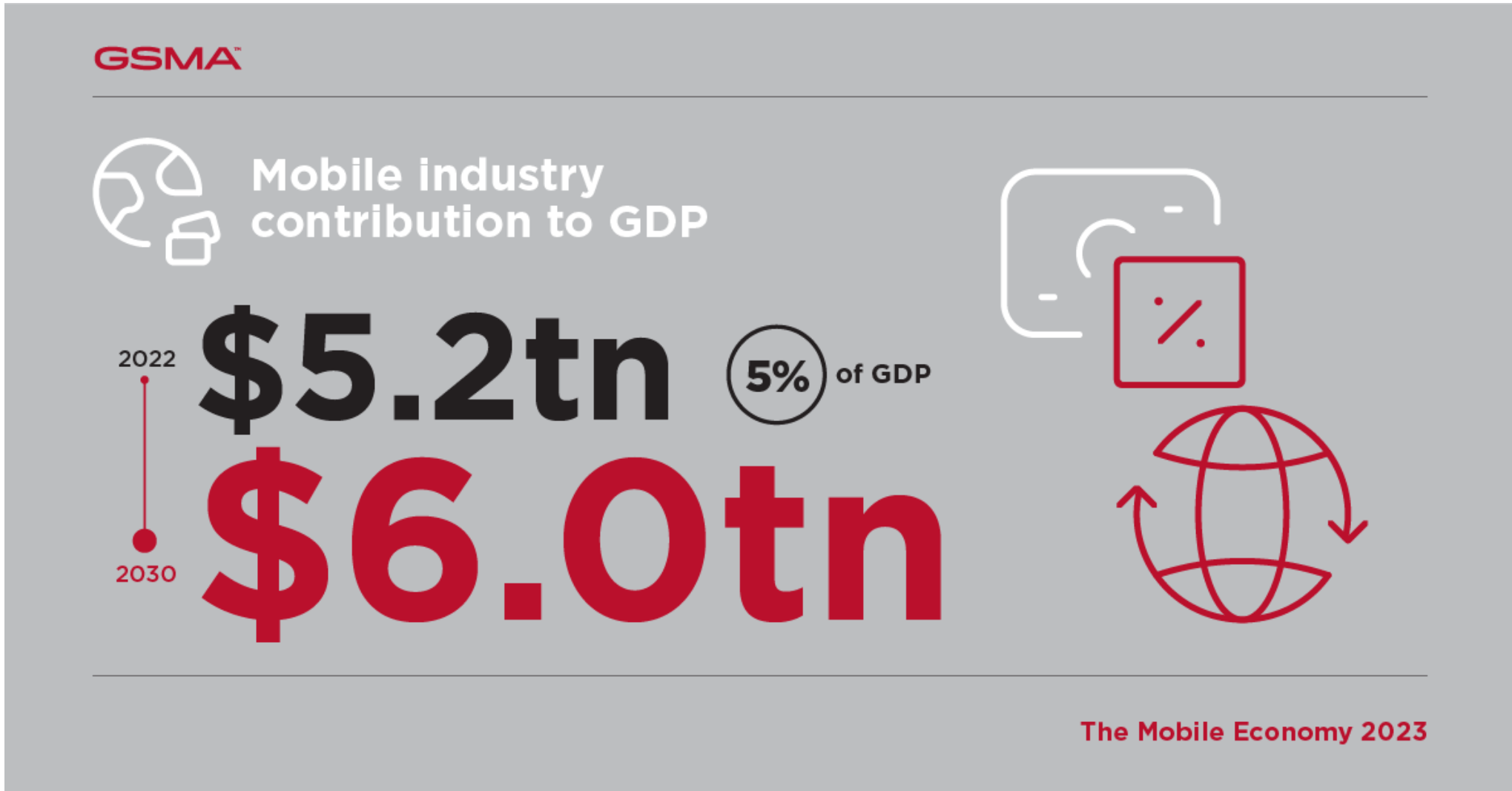
DataReportal Digital 2023 ([squarespace-cdn.com](https://squarespace-cdn.com))

## 2. Growth of Internet Users – Timeline



DataReportal Digital 2023 ([squarespace-cdn.com](https://www.datareportal.com/))

### 3. Digital Economy – Mobile industry contribution to GDP



Mobile Industry Contribution to GDP (The Mobile Economy 2023) (gsma.com)

## 4. Smart Phone Penetration – Global Data

GSMA™



Smartphones

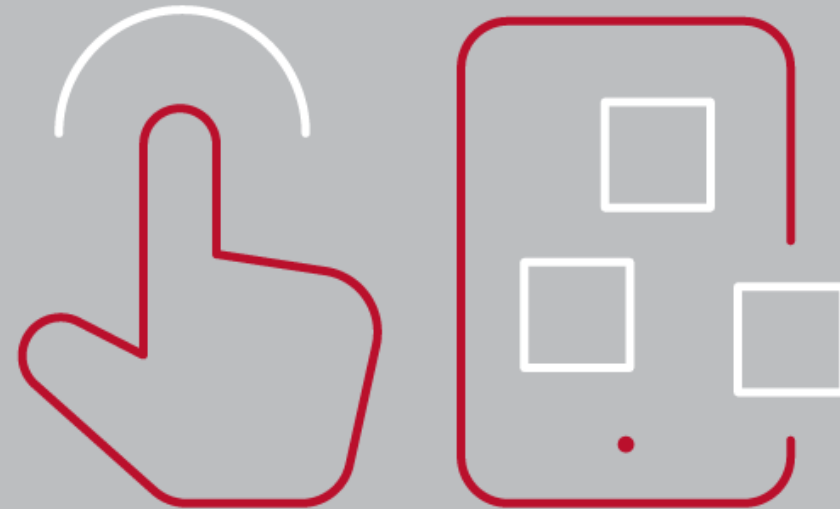
(percentage of connections\*)

2022

2030

76%

92%



The Mobile Economy 2023

Mobile Industry Contribution to GDP (The Mobile Economy 2023) (gsma.com)

GSMA™



Employment

**16 million jobs**



Directly supported by the mobile ecosystem in 2022



**12 million jobs**



supported indirectly

The Mobile Economy 2023

Mobile Industry Contribution to GDP (The Mobile Economy 2023) (gsma.com)

# Case Studies of Reverse Innovations and Co-Creation



- Often time, radical innovation happen at “Periphery” – where different mindset (out of box) exists without constraints of rigid structures which often exist at resource rich “Core”
- Developing Countries are treasure-trove of socio-economic-governance challenges which requires transformative solutions = possibilities of having innovations
- Policy/regulatory hurdles for new solutions are often low
- Barriers of new technology adaption are often low – fewer legacy systems/processes
- Incentive mechanisms for encouraging innovations are emerging in many countries (e.g.; Startups act, regulatory sandboxes/POC playground, financial/tax incentive mechanisms, etc.)

- Innovation in developing countries could be “disruptive” where services/products created by base of the market move up-market and replace existing established services/products (“disruptive innovation” as defined by Clayton Christensen)
- Disruptive Innovation has socio-economic-political transformational power which could propagated and adapted beyond national border. Reverse Innovation often refers to the adaption of disruptive innovations from developing countries to the developed countries (popularized by Vijay Govindarajan’s and Chris Trimble in their book “Reverse innovation”)
- “Core-Periphery dilemma” is much less in the case of digital technologies (legitimacy and associated resource requirements are much lower than traditional industries) which reduces barrier for reverse innovation
- Innovation stagnation in developed countries require new disruptive innovations to continue sustained development which fuels reverse innovation



## 2. What is reverse innovation? (Mobile Money and e-Gov solutions)



- Global Mobile Money solutions emerged from Kenya\* in 2005 as payment system for micro-credit
- Quickly became the benchmark for mobile money around the world
- Mobile money transactions in 2021 accounted for US\$ 1trillion and 70% of which is in Africa 1



- From its inception in 2001 (pilot started in 1998)X-Road revolutionalized public service delivery
- Quickly became the benchmark for personalized push-type public service deliveries around the world
- Many countries are now adapting X-Road as interoperability framework

\* Some hints that Ghana may have also should be recognized as birth-place of mobile money

1. Mobile Money: The \$1 trillion industry driving the financial inclusion of the world's poor, GSMA, Thursday 19 May, 2022, <https://www.gsma.com/mobilefordevelopment/blog/mobile-money-the-1-trillion-industry-driving-the-financial-inclusion-of-the-worlds-poor/>

Africa becomes a leader in digital payment transactions, Nanyang University 22 Jun 2022, <https://www.ntu.edu.sg/cas/news-events/news/details/africa-becomes-a-leader-in-digital-payment-transactions>

State of the Industry Report on Mobile Money 2021, GSMA 2022, [https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2021/03/GSMA\\_State-of-the-Industry-Report-on-Mobile-Money-2021\\_Full-report.pdf](https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2021/03/GSMA_State-of-the-Industry-Report-on-Mobile-Money-2021_Full-report.pdf)

### 3. Case 1: Babyl – AI based health consultation



Rwanda Pilot to -> UK Public Health -> US Covid-19 care assistant

- Innovative AI based health consultation tool to augment weak healthcare services – became largest digital health care provider with 2,500,000+ Registered Users (about 20% of population) and 2,900,000+ Consultations Performed
- Model worked and now utilized by NHS in UK
- Now moving toward AI based diagnostics as well. Could revolutionize healthcare services (Received 635 million investment as of 2019, their AI doctor has better diagnostics result than GP)



\*Rwanda will be the world's most advanced country for digital health, 05 March 2020, Picture excerpted from Babylon Health Website, <https://www.babylonhealth.com/en-gb/blog/business/rwanda-will-be-the-worlds-most-advanced-country-for-digital-health>



Rwanda Pilot to -> US, Ghana, Japan, Nigeria, Kenya, Cote d'Ivoire, and beyond

- Started as autonomous drone delivery of blood for transfusion in remote area in Rwanda in 2016.
- Model business case was successful with use of appropriate technology with streamlined value-chaine
- Now operational in 6 countries including Japan for delivery of medicine
- Investment from Toyota Tsusho and other Japanese companies as well

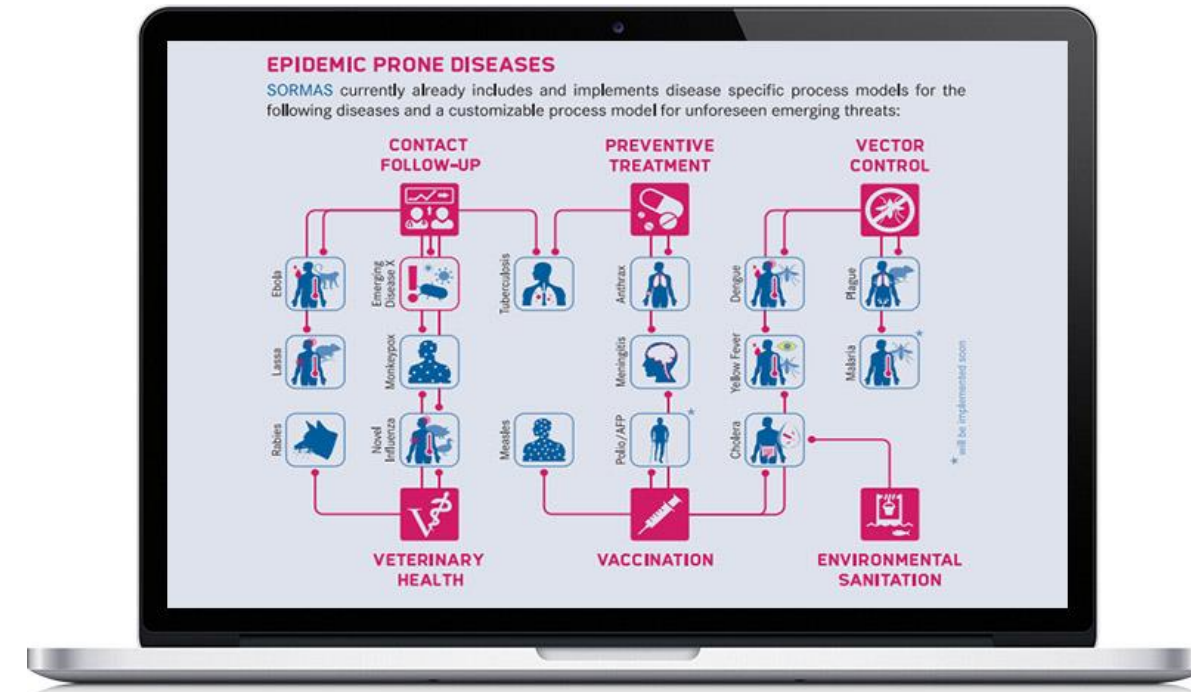


\*Photo excerpted from Zipline Company website, <https://www.flyzipline.com/company>



Nigeria -> Ghana, Germany, France, Switzerland, Fiji, Nepal, Burkina Faso and Ivory Coast

- Digital Surveillance for Ebola in 2015 used for other epidemic tracking
- Germany picked up and used for COVID-19 surveillance
- Deployed in Asia and Europe for COVID-19 tracking and other potential epidemic

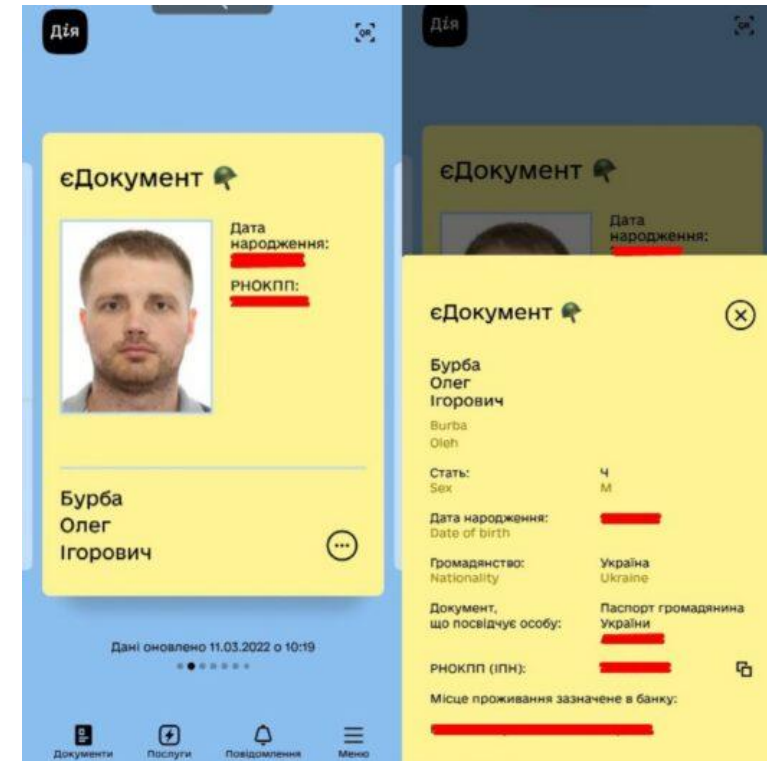


\*Photo excerpted from SORMAS Foundation website, <https://sormas.org/>



  Ukraine -> Estonia, and selling to other countries as part of Ukraine's post-war recovery as digital powerhouse

- Opensource E-Government public service delivery tool which was launched in 2020 and became core application for citizens service delivery mechanisms under Russian invasion
- Currently stores 11 documents into digital wallet and has capability of e-signature through face recognition
- USAID is partnering with Ukraine to expand DiiA to other countries.
- Estonia picked up the DiiA and integrated into their own e-Government services



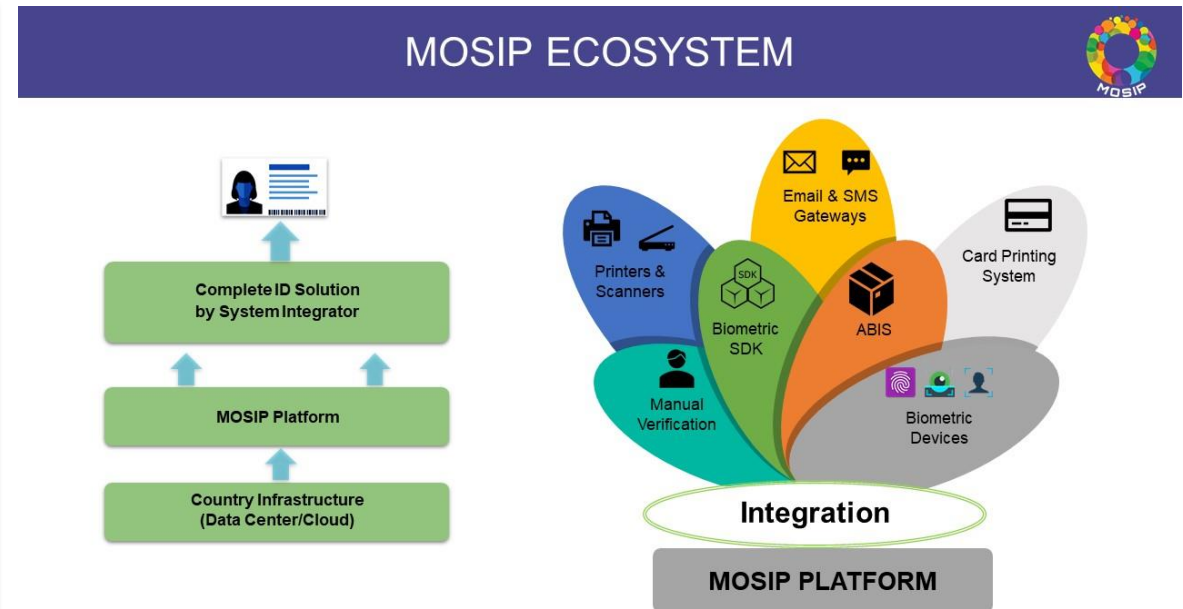
\*Photo excerpted from e-estonia website, [Ukrainian digital infrastructure prevails! - e-Estonia](#)

## 6. Case 5: MOSIP – India Stack (Aadhaar – biometrics National ID + Open API )



**MOSIP** India -> Sri Lanka, Morocco, Philippines, Guinea, Ethiopia, Togo, and beyond through DPI initiative

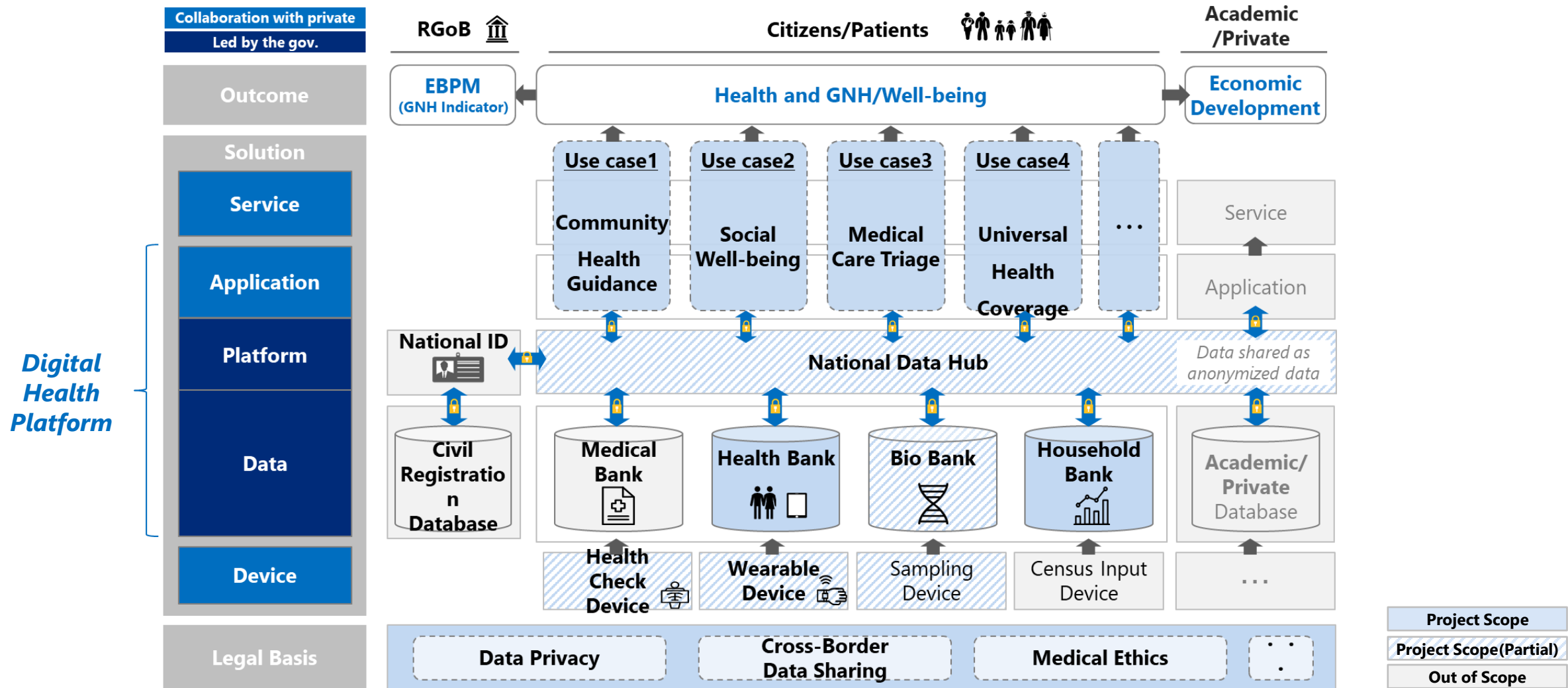
- Consist of set of open APIs, Aadhaar-National ID, and financial transaction mechanisms that allows Governments and businesses to utilize a unique digital Infrastructure to create different services
- Aadhaar initiative started in 2009 and now 99% of its citizens are registered and many services offered through India Stack infrastructure
- One of the successful case for relief payment distribution under COVID-19
- India promoting it as Digital Public Infrastructure under G-20 2023 agenda



\*Diagram excerpted from MOSIP DOC 1.2.0 , <https://docs.mosip.io/1.2.0/overview>

# 7. Case 6: Bhutan Digital Health Platform (JICA's support)

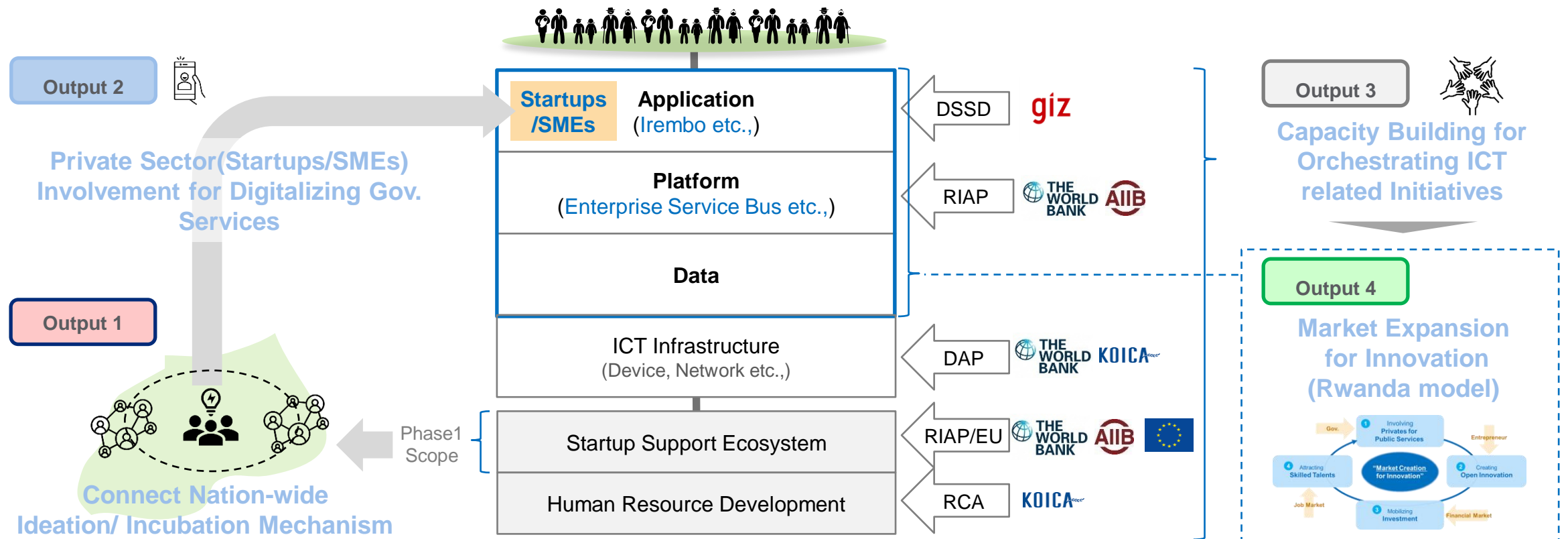
RGoB has an aspiration to develop digital health platform along with the digital ID to provide better, tailor-made medical services to citizens, and contribute to the GNH and well-being.



# 8. Case 7: Rwanda Digital Innovation Strengthening Project (JICA's support)

Creating innovative Govtech services through promoting innovations of startups/private sectors:

- 1) Strengthening an entrepreneur supply system by improving a nationwide ICT entrepreneur support environment
- 2) Strengthening the innovation ecosystem of Rwanda through market creation by PPP model
- 3) Capacity Building for orchestrating ICT related initiatives in Rwanda
- 4) Establishment of Rwanda model for market expansion for innovation

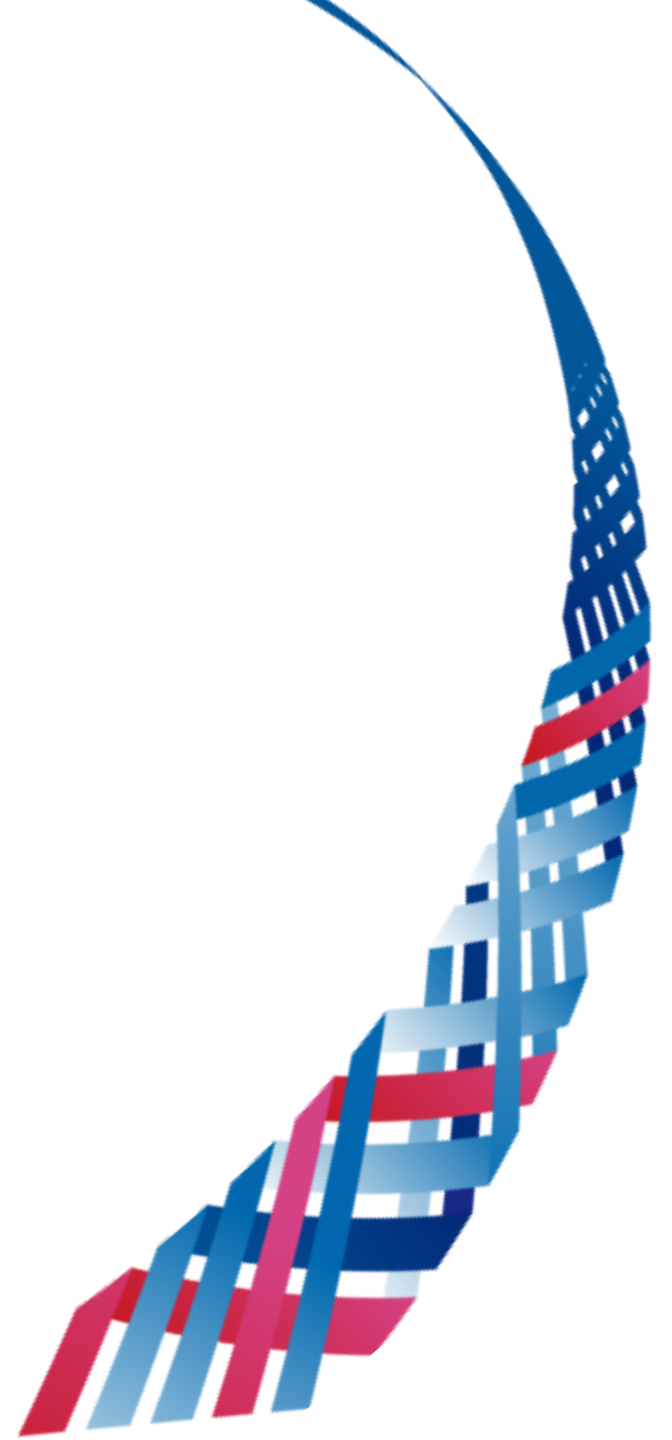




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Q & A and Discussions :

