Ministry of Health and Family Welfare
Government of India

Ministry of External Affairs
Government of India

national health authority

Co-WIN
GLOBAL CONCLAVE
Winning Over Covid

Addressing Societal Challenges at Scale

Using Digital Public Goods and Infrastructure

India Stack and Co-WIN

Dr. Pramod K. Varma

Chief Architect Aadhaar & India Stack
CTO EkStep Foundation, Co-Founder Beckn.org

@pramodkvarma

India is large and diverse

1.3 Billion people

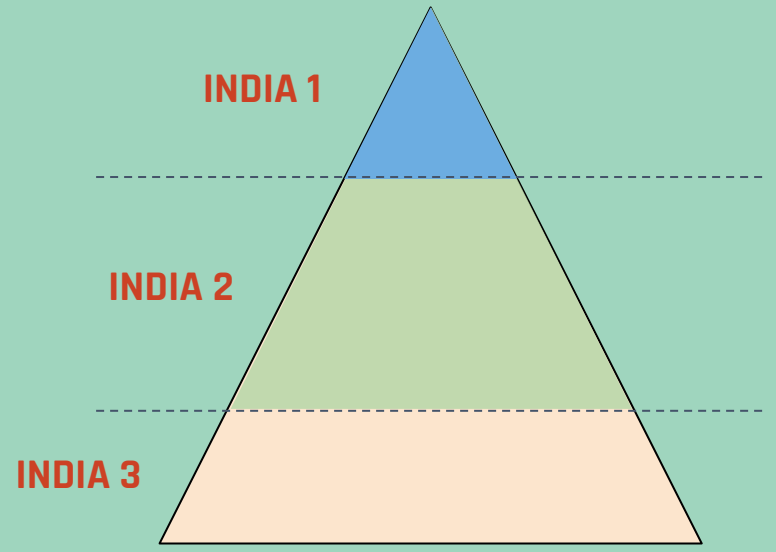
22 languages

<5% income tax payers

1 Billion mobile users

400 Million smartphones

600 Million Internet users



Access to

PRODUCTS, SERVICES, & CAPITAL

from formal systems and market

is limited to top 10-15%

Primary reasons being ...

Sales & KYC Cost

Cost of acquisition
(KYC, compliance)

Servicing Cost

Cost of engagement
(transactions and compliance)

No Credible Data

Cost of trust
(data and credentials)

Enabling

ACCESS,

AFFORDABILITY,

& AGENCY

at scale

Back in 2008...

17%

had bank accounts

Financial exclusion was rampant

Source : A Demirgüç-Kunt, L Klapper, D Singer, S Ansar, and J Hess, "The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution", World Bank, 2017

Back in 2008...

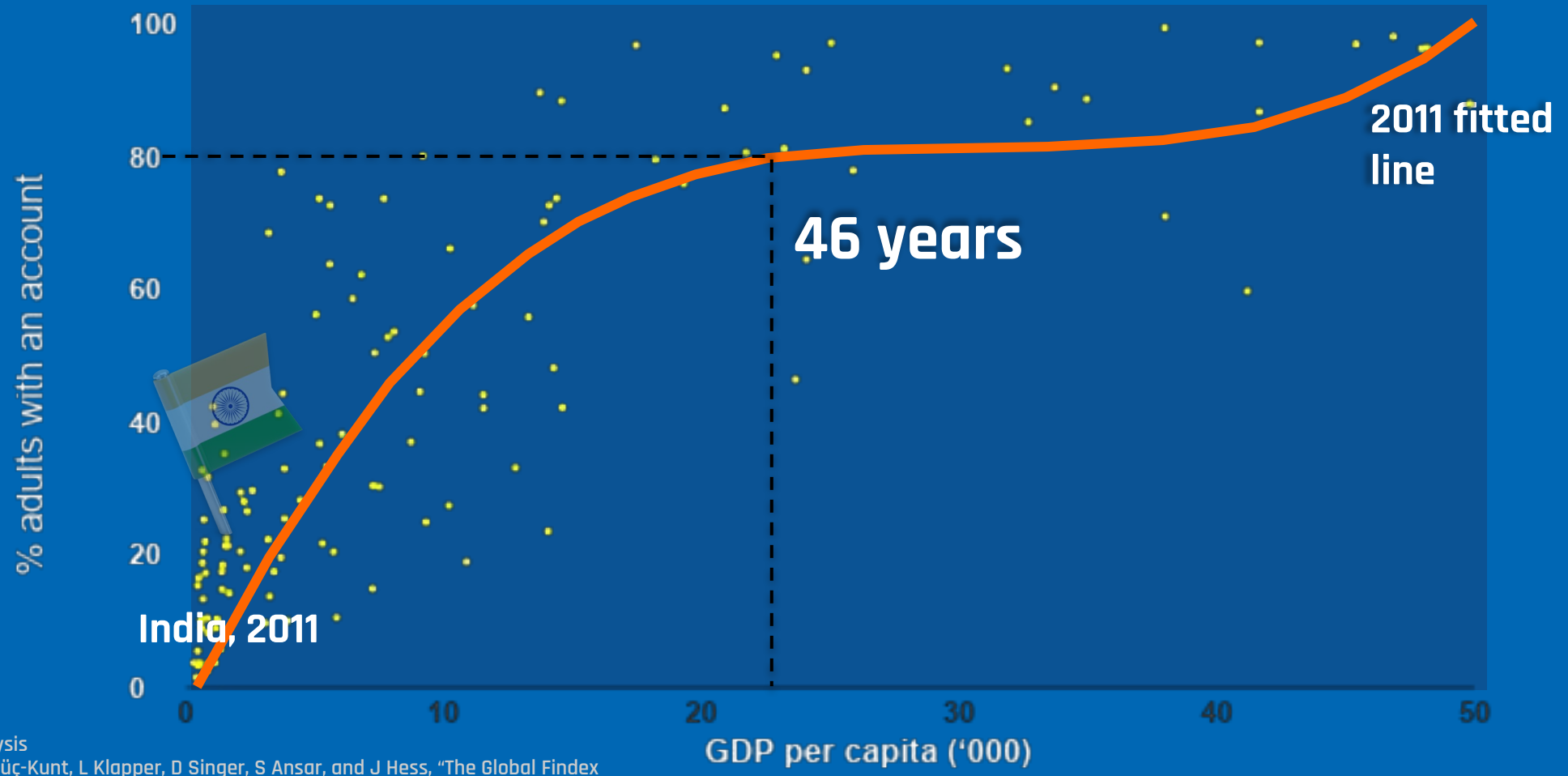
~$50 B

was spent on direct subsidy

Diversion and leakage
was rampant

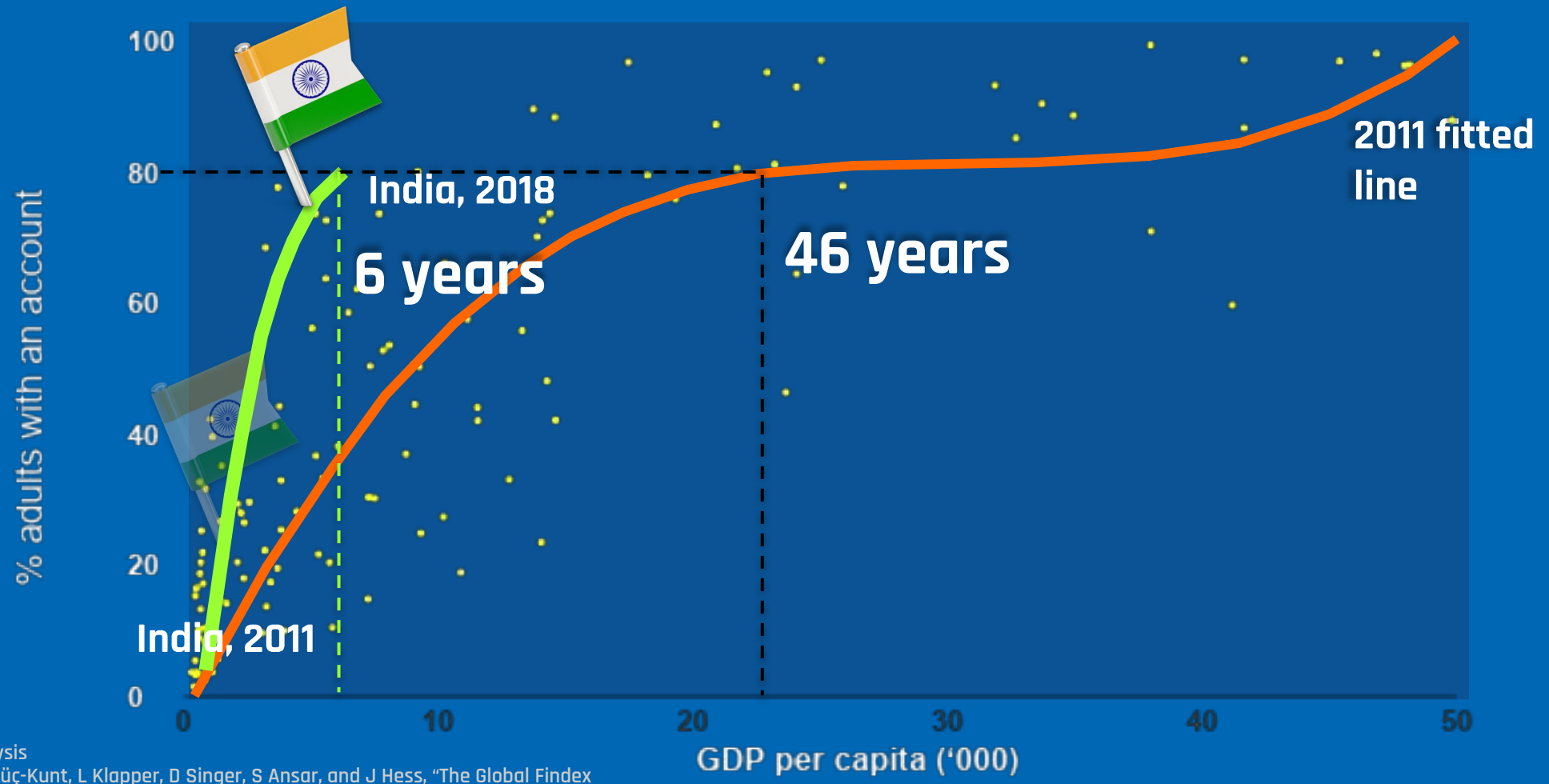
Source : A Demirgüç-Kunt, L Klapper, D Singer, S Ansar, and J Hess, "The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution", World Bank, 2017

India would have taken 46 years to achieve financial inclusion



Source : BIS Analysis
Source : A Demirgüç-Kunt, L Klapper, D Singer, S Ansar, and J Hess, "The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution", World Bank, 2017

But India only took 6 years!!!



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India now runs the world's largest direct cash transfer program

>$35 B

now directly being sent to bank account of the beneficiary

430+ schemes

Savings to the tune of several Billion

as per Govt estimates

647 Million

Unique Aadhaar holders have linked their bank accounts

This acceleration was due to 3 things

Political Will

World's largest benefits transfer, financial inclusion and digital India programs

Proactive Govt and Regulators

Innovation friendly regulators and Govt departments supporting ecosystem and market making

India's Digital Infra

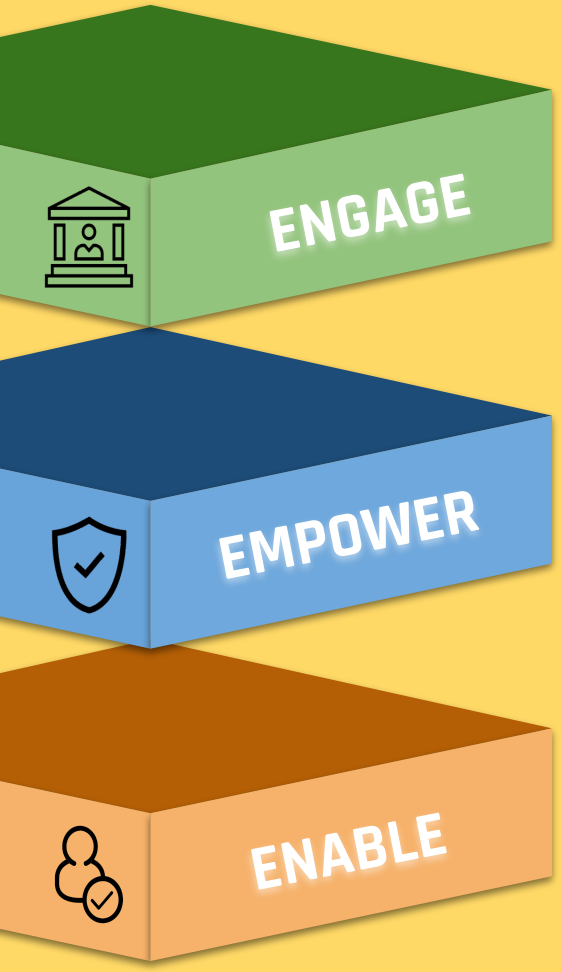
A set of foundational digital public infrastructure and digital public goods

India took a nonlinear path in the last decade

Public Digital Infrastructure

as a means to build
decentralized, interoperable, building blocks
to unleash inclusive innovation

Identity Infrastructure



Aadhaar, PAN, GSTN

1.27 Bn
Aadhaar IDs issued

1 in 25 had ID in 2008
$1 per ID, 1 Bn in <7 years

647 M
Aadhaar enabled accounts

PMJDY: Bank account for all
No frill savings account

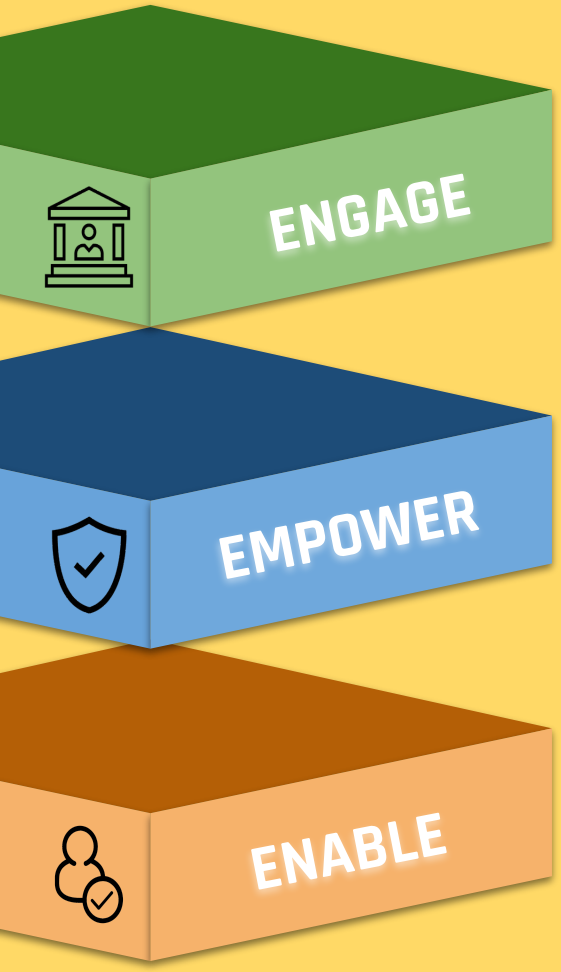
47 Bn
Aadhaar authentications

Inclusive, multi-channel
About 1 Bn a month

8.5 Bn
e-KYC transactions

Paperless and instant
Used beyond banking

Data & Credentialing Infrastructure



DEPA, Digilocker, AA, PHR, DIVOC

Aadhaar, PAN, GSTN

4.2 Bn
Verifiable Docs/Creds

School certificates, Driver Licenses, etc

62 Mn
Digital Locker Users

Digilocker users

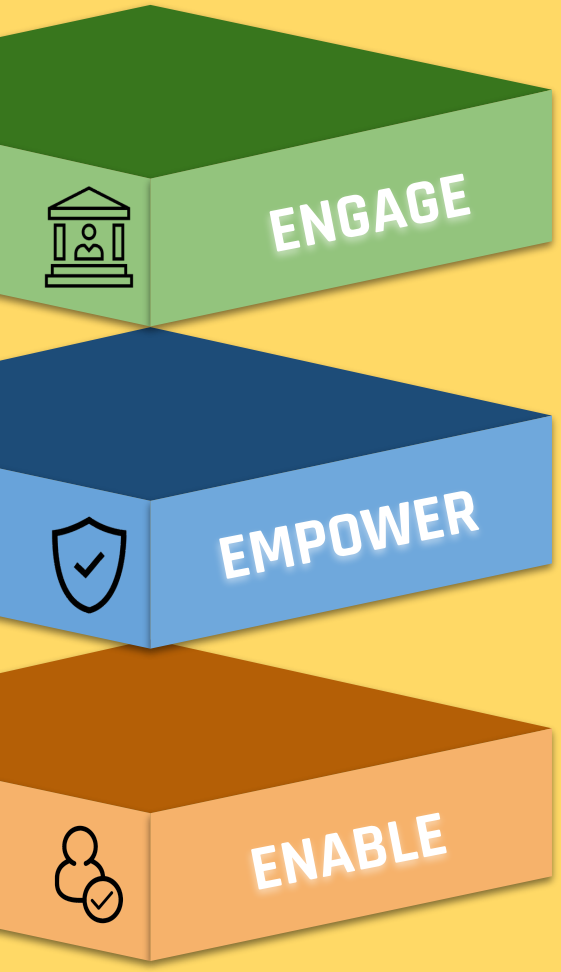
400+
Fintech Startups

Thriving innovation ecosystem

300 Mn
Vaccine Credentials

Verifiable, inclusive, multi-lingual certificates

Transaction/Engagement Infrastructure



eSign, APB, AEPS,
UPI, OCEN, UHI,
Co-WIN, DIKSHA, ...

DEPA, Digilocker,
AA, PHR, DIVOC

Aadhaar, PAN,
GSTN

$32.4 Bn
Direct Benefit Transfer

G2P payment
$5 Bn in savings (conservative)

$55 Bn
UPI txn value/month

From 0 to 55 Bn in 4 years

300 mn
Micro-ATM txn/month

$2Bn Micro ATM
transaction value per month

2.6 Bn
UPI txn/month

Higher than all cards put together

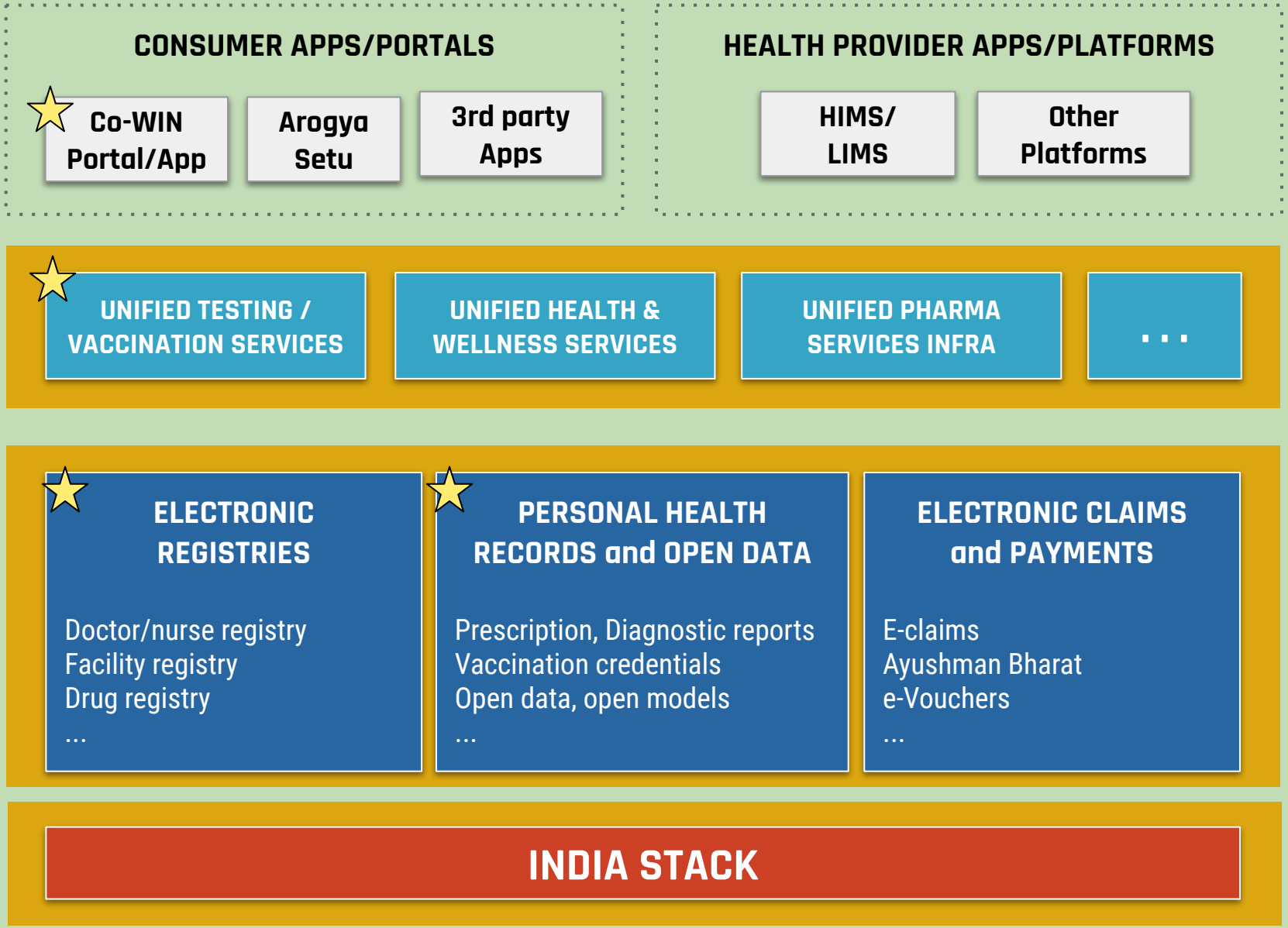
Laying digital foundation for National Digital Health Mission

GOVT & PRIVATE APPS & PLATFORMS
Diverse user experiences & innovative solutions

ENGAGEMENT / TRANSACTIONS LAYER
Unified, interoperable

DATA & PAYMENTS LAYER
Streamlining registries, health data, credentials, open data, and payments

JAM & INDIA STACK
Cross domain generic building blocks



Laying digital foundation for National Digital Health Mission

GOVT & PRIVATE APPS & PLATFORMS
Diverse user experiences & innovative solutions

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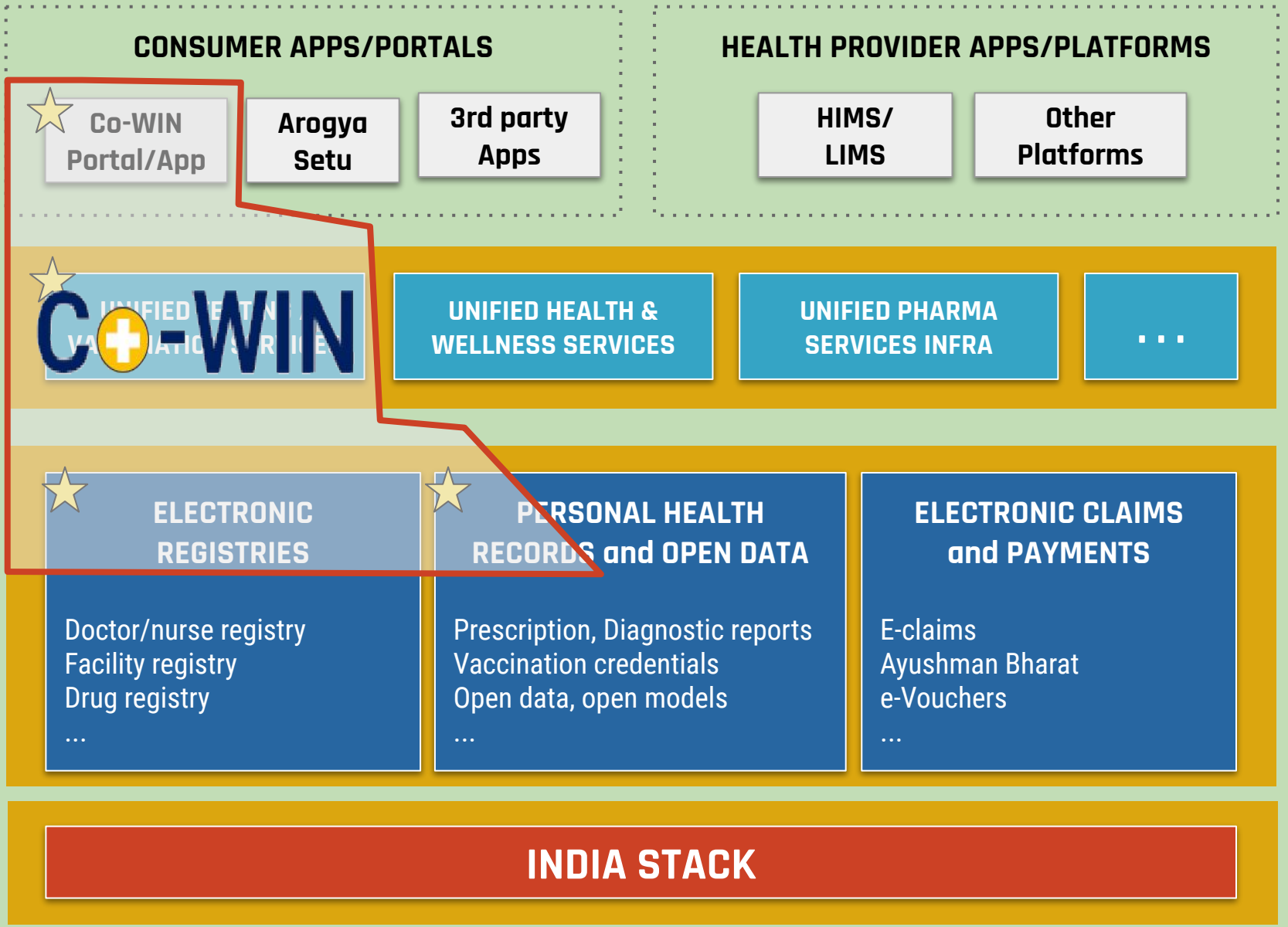
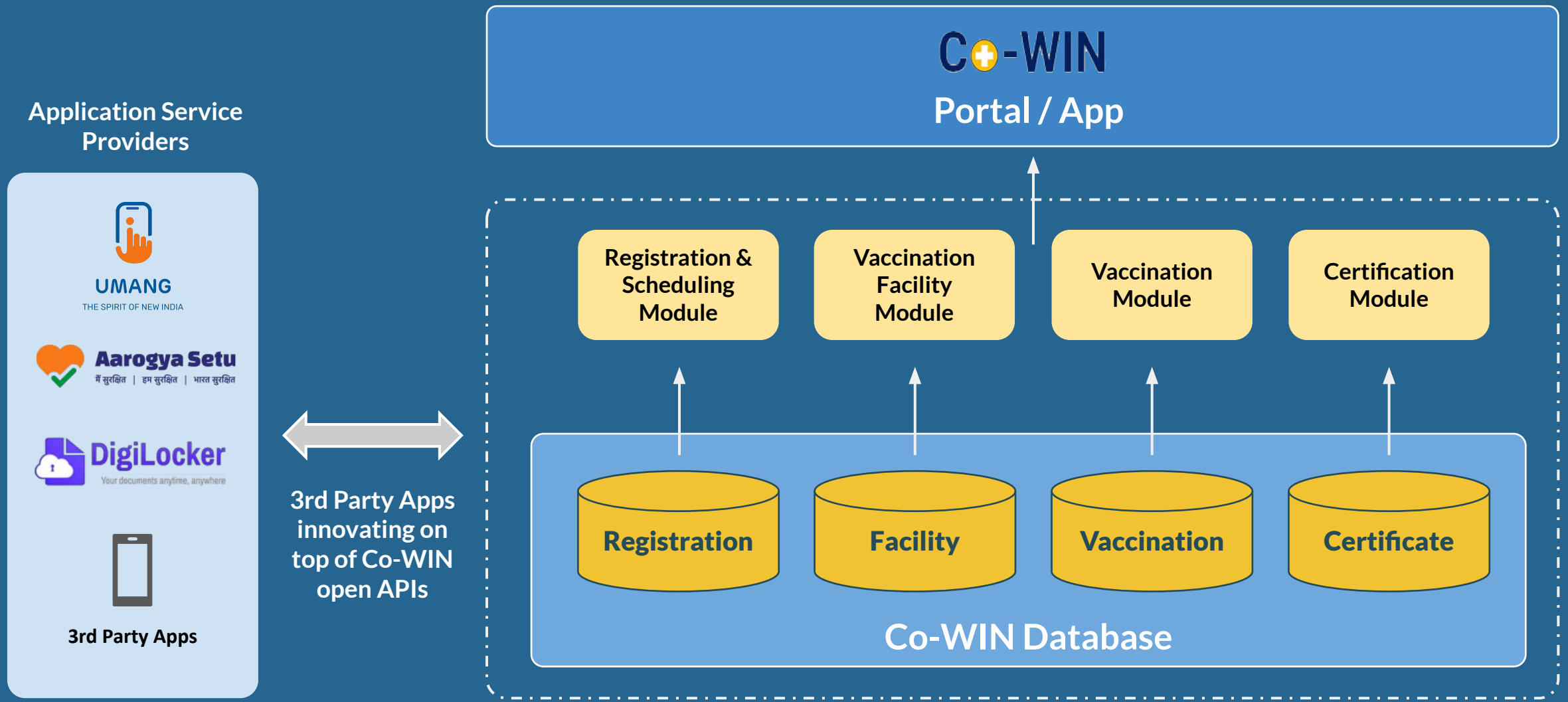


Co-WIN high level architecture

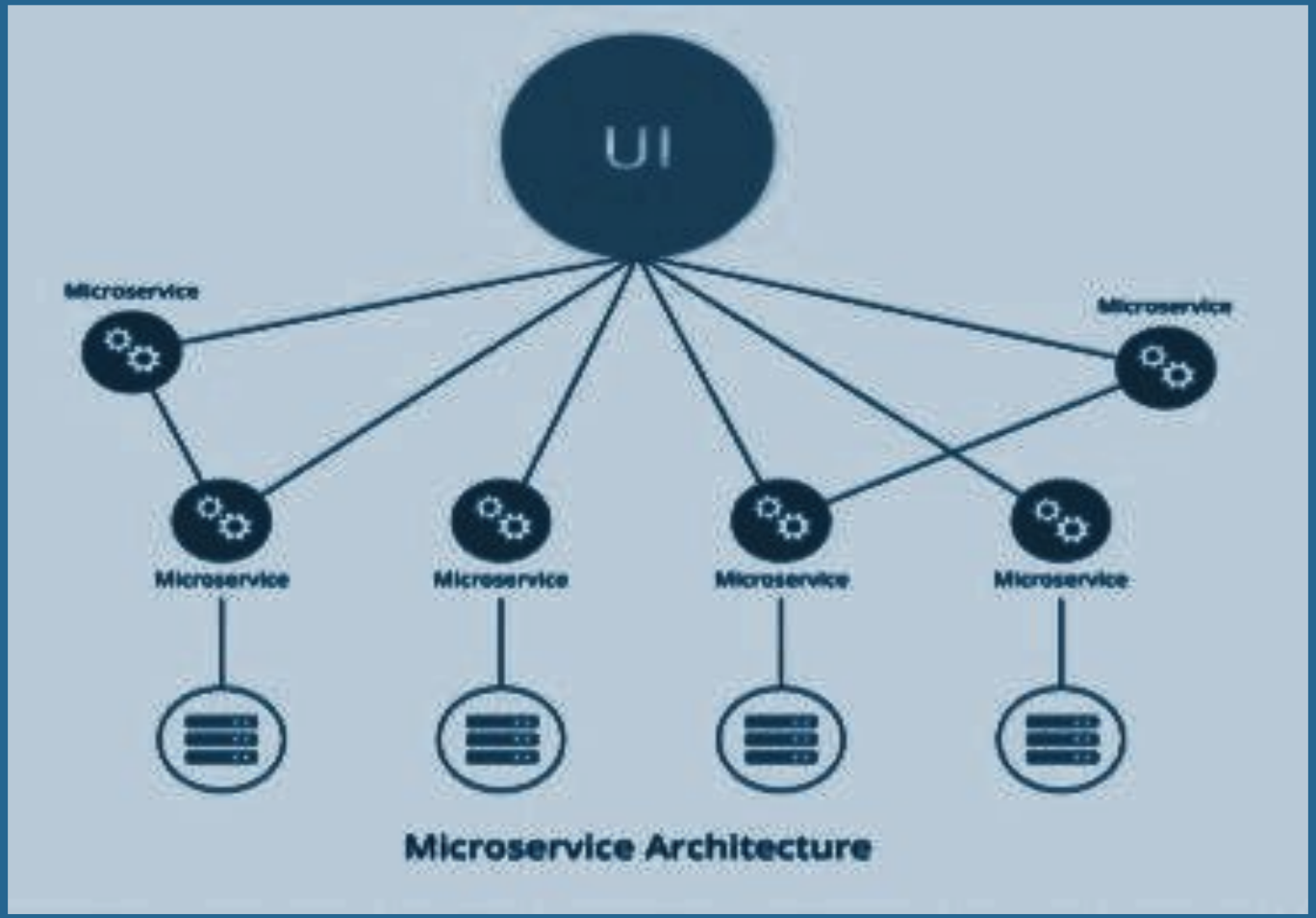


Co-WIN design principles

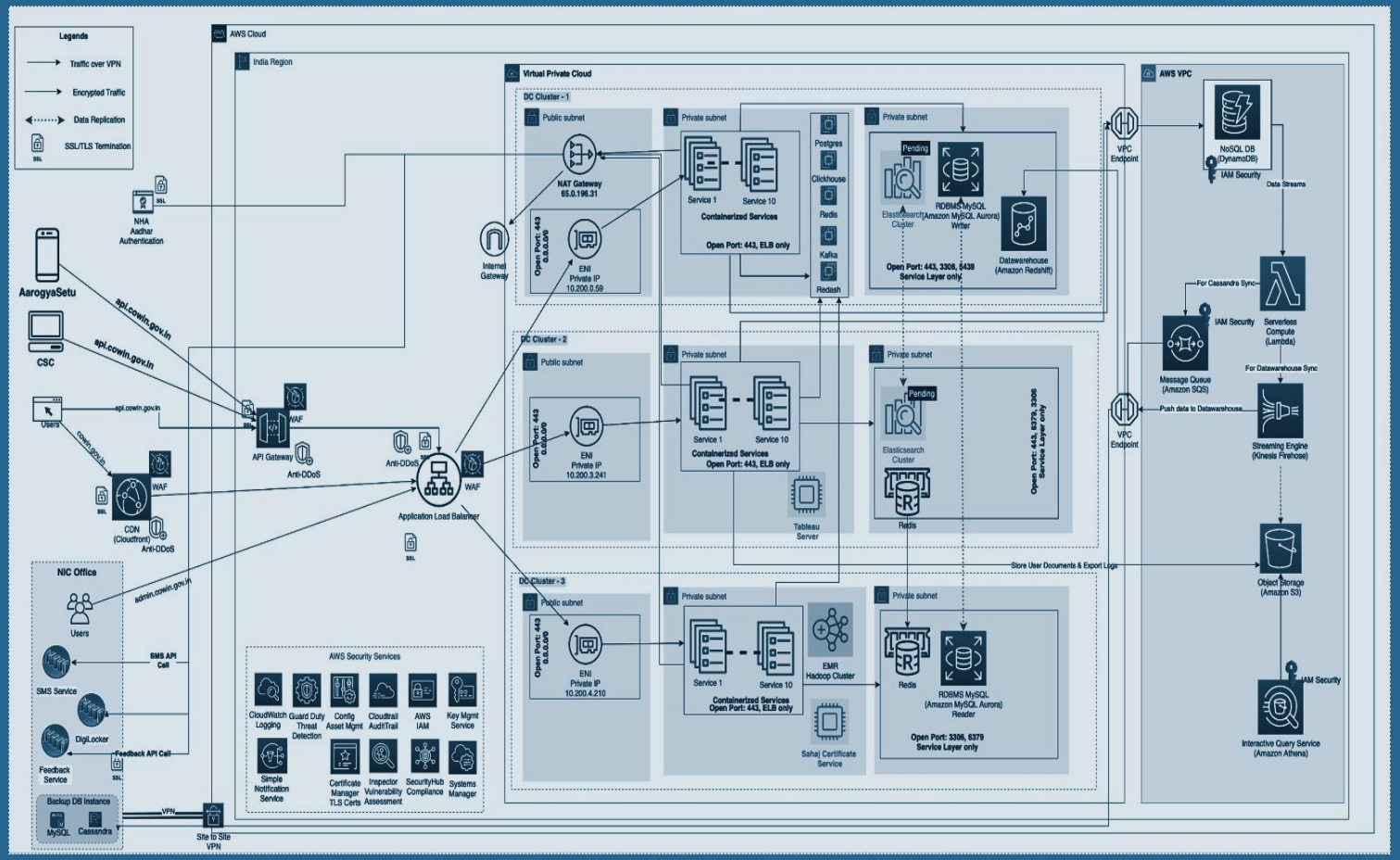
- Open
- Inclusive
- Ecosystem driven
- Data driven
- Phygital
- Secure
- Configurable
- Privacy by design

Built on open source and open standards

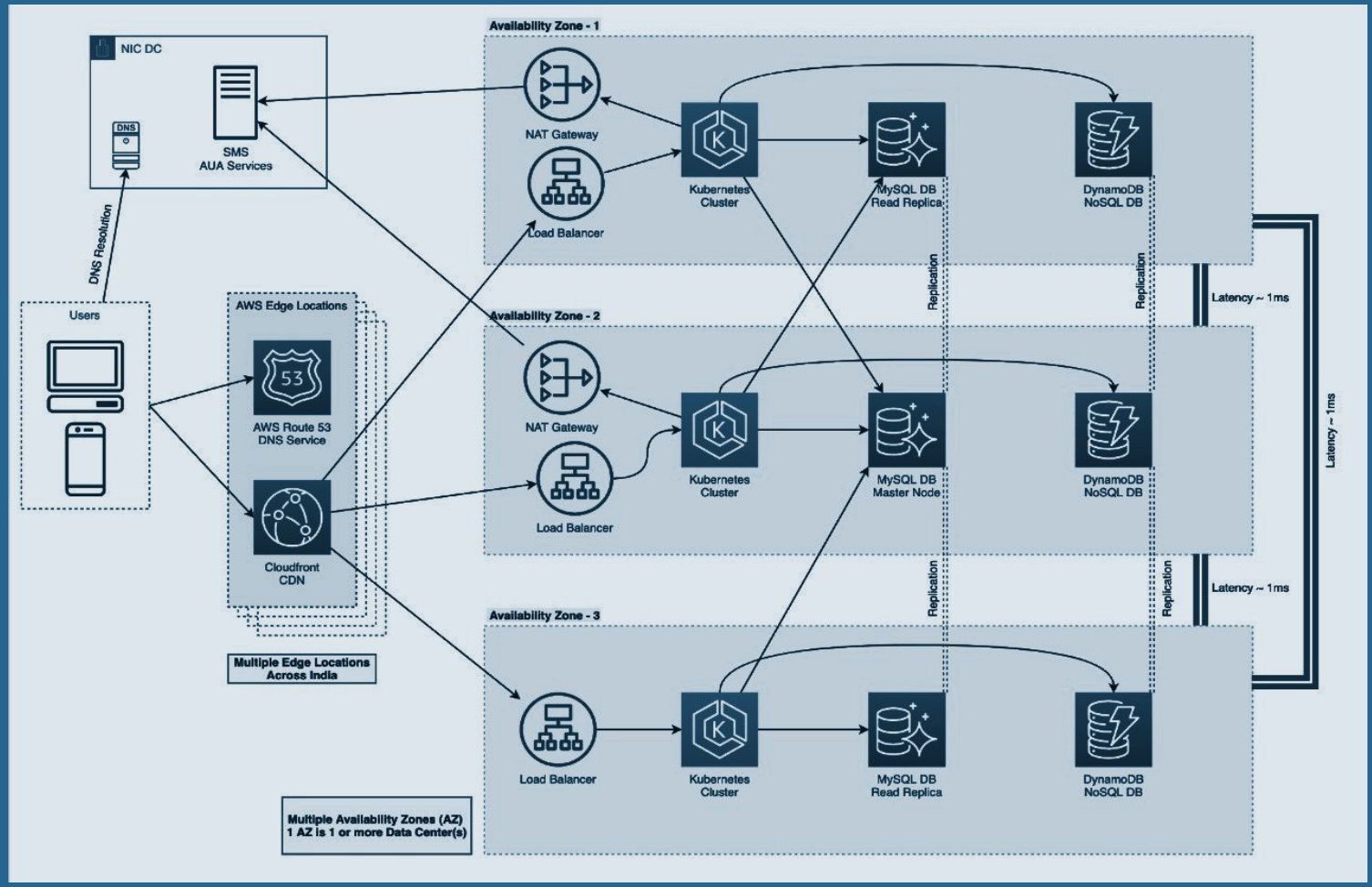
Microservices and API based



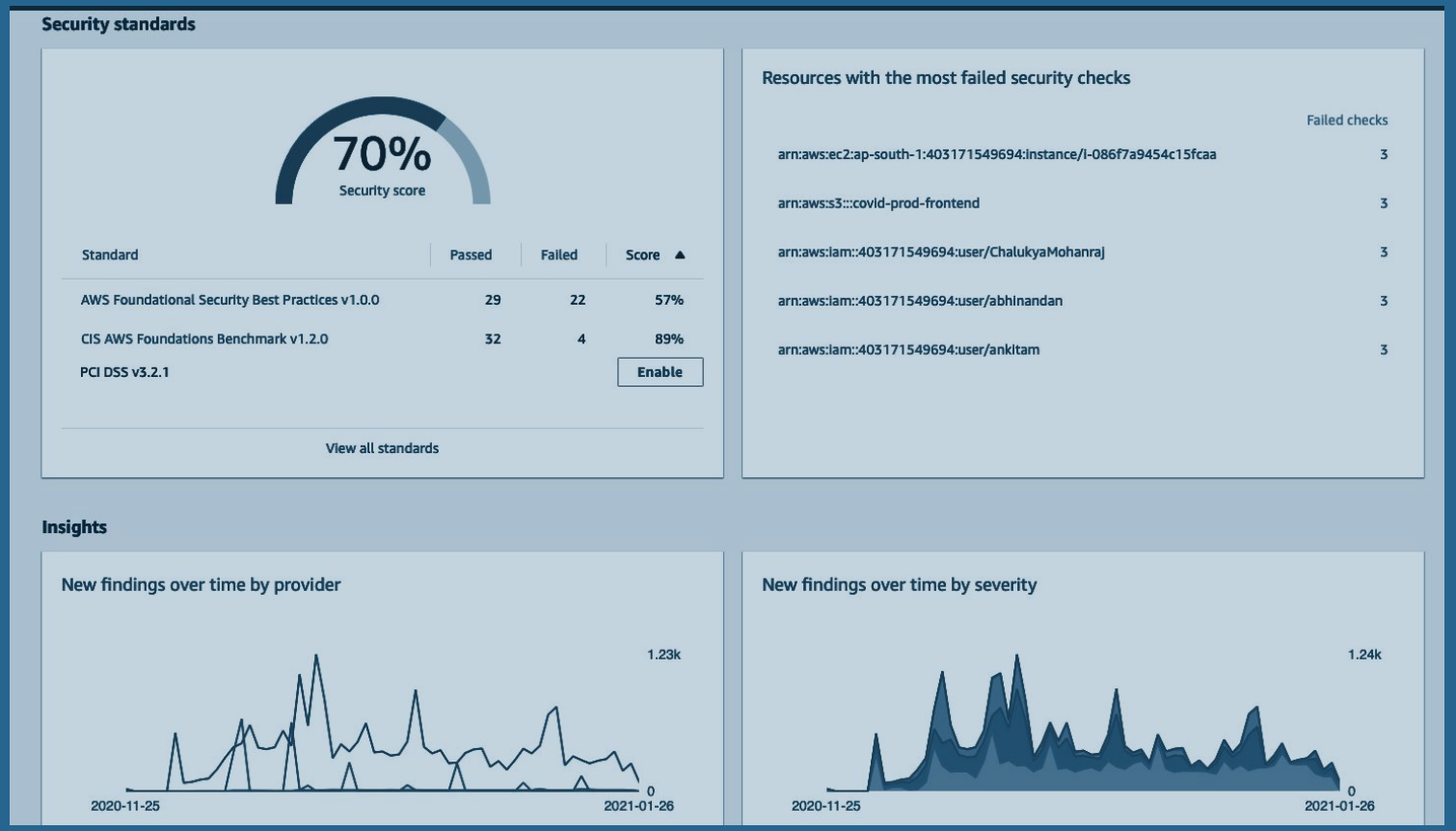
Massively scalable



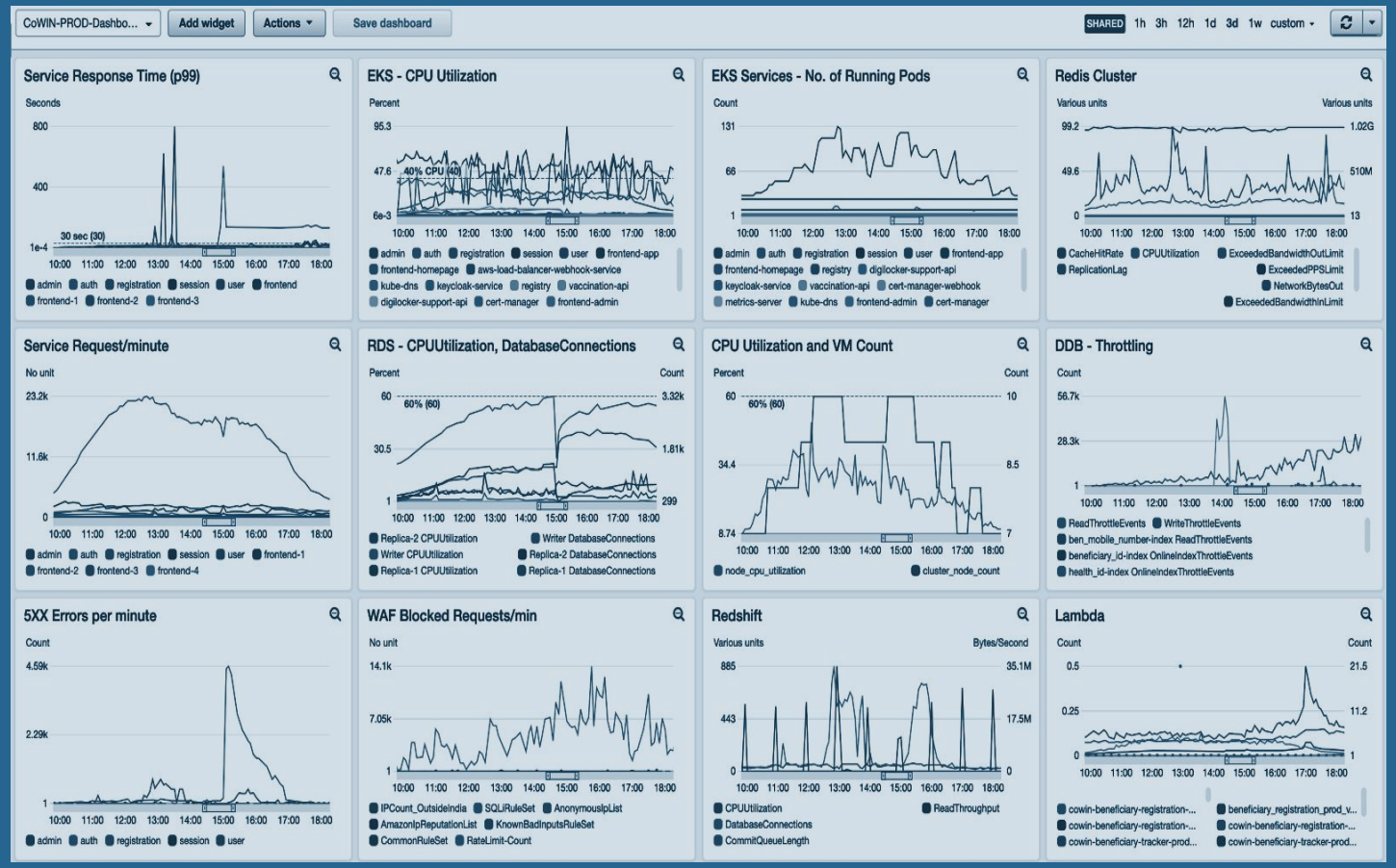
Cloud native and highly available



Security and privacy by design



Data driven monitoring and management

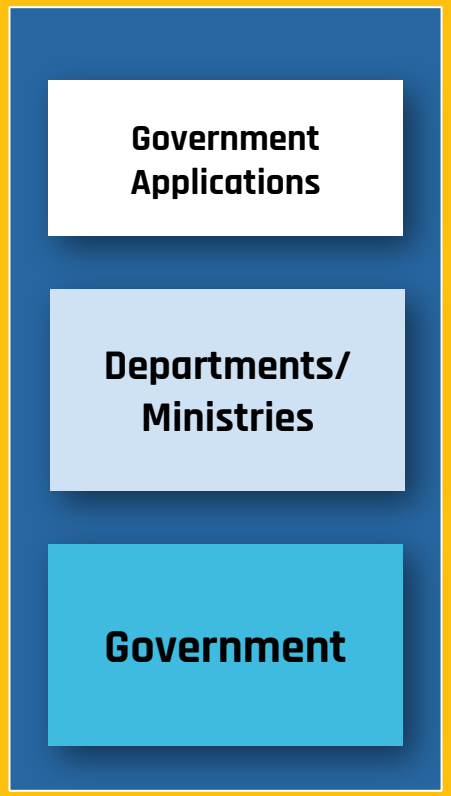


Old Approach

public System,
Slow Innovation

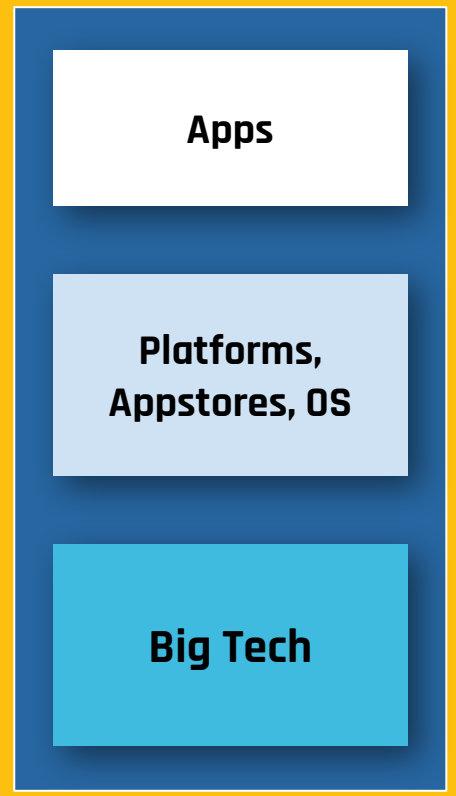
Old Approach

public System,
Slow Innovation



Big Tech Approach

Walled Garden,
Winner takes all



Old Approach

public System,
Slow Innovation

Government Applications

Departments/ Ministries

Government

India Approach

Addresses diversity
Ecosystem Friendly,
Layered Innovation

Reference solutions and market driven innovations to cater to diversity

Interoperable DPIs

(open APIs/protocols, enabling diverse innovation)

Government / Regulators

Big Tech Approach

Walled Garden,
Winner takes all

Apps

Platforms, Appstores, OS

Big Tech

DPGs and DPIs distribute the ability to solve!

Co-WIN

IndiaStack

UPI
UNIFIED PAYMENTS INTERFACE

DEPA

Sunbird

DIVOC

beckn

OCEN

DIGIT

MOSIP

India's latest contribution to the world as a Digital Public Good

C+-WIN
GLOBAL CONCLAVE
Winning Over Covid

Thank You

@pramodkvarma