Agenda
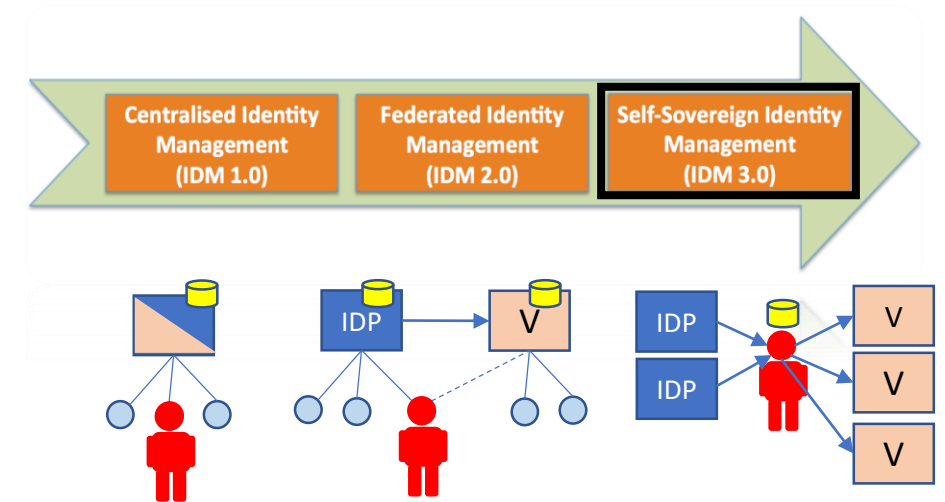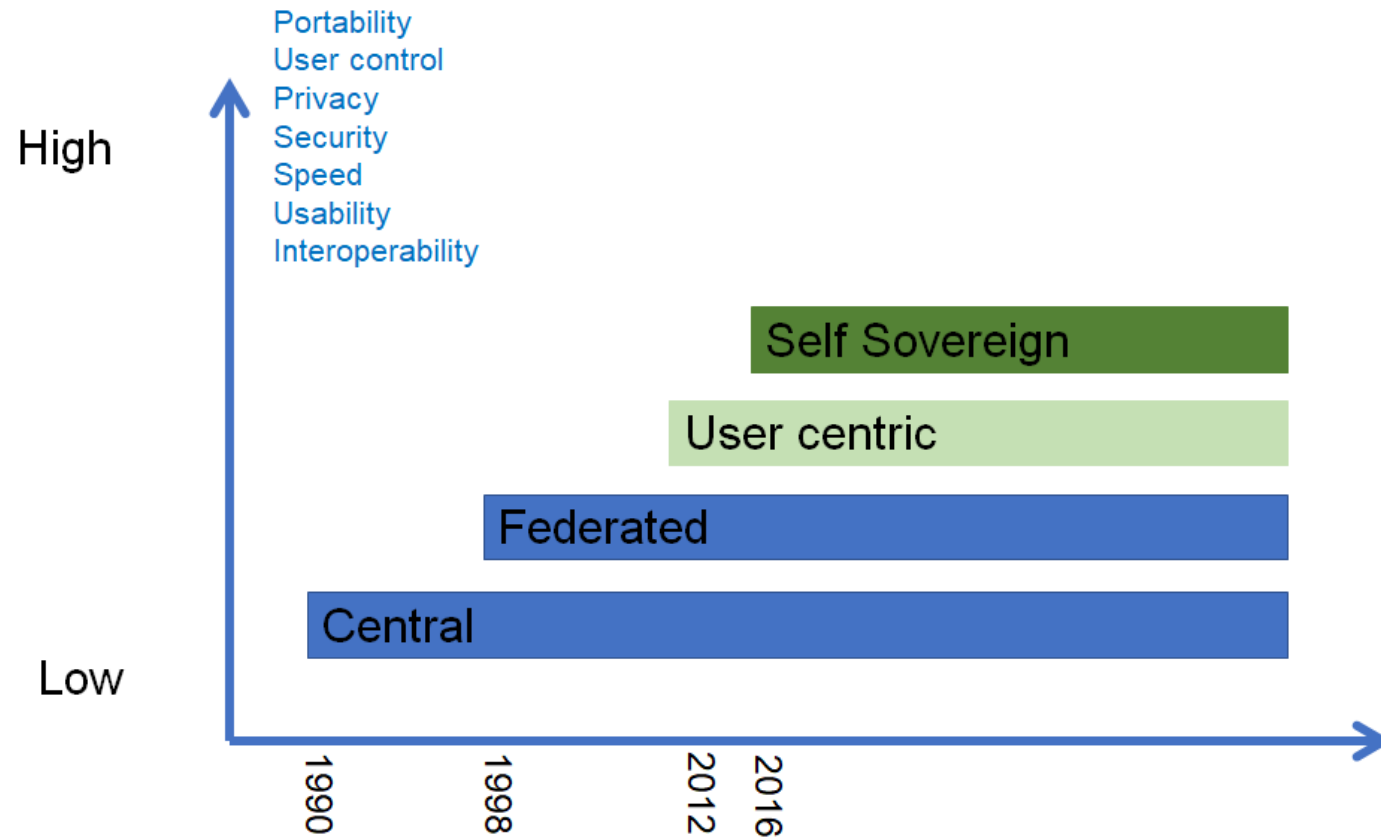
- Digital Identity concept
- Project samples
- Digital Türkiye

Digital Identity

Information used and interpreted by computer systems to represent an external agent – a person, organization, application, or device
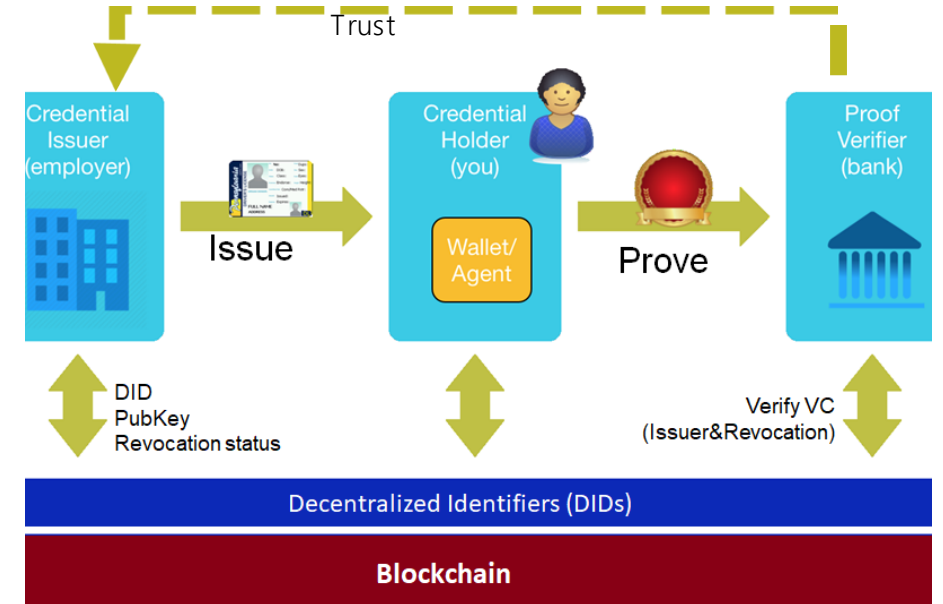
Digital Identity

Self Sovereign Identity (SSI)

- Open standards based identity framework with self-owned
  - Decentralized Identifiers (DID) + Verifiable Credentials (VC)
- Decentralized Identity Management Infrastructure
- Putting control back in the hands of users
- Greatly reduces threat of data breaches
- Increases trust and reduces fraud
- Interoperability and Portability between systems and sectors
- Compliance with PII protection regulations (GDP, KVKK)
- Advantages for enterprises
  - Faster verification process at a much lower cost
  - Prevents credential fraud
  - Improves data and identity security
  - Reduces risk of cyber attacks by storing less user data
  - Reduces compliance effort and cost
  - New business models with partners

Digital Identity

Realization approaches with DLT

- Off-chain
    - AnonymCredentials approach
    - On-chain anchored off-chain data (MIT diploma hash in Bitcoin Ledger)

- On-chain credentials
    - NFT based (Special NFT, Soulbound NFT)
    - Non-NFT token/data

- New trends
    - Decentralized Web Node for SSI

Digital ID Projects

EU
- eIDAS 2.0
- European Self-Sovereign Identity Framework (eSSIF) / EBSI
- Findy
- Pharmaledger

UK & Ireland
- NHS
- IATA
- Sellafield
- Emerald ID

Canada
- Known Traveller Digital Identity (KTDI)
- Verifiable Organizations Network (VON)

Germany
- IDunion
- Open Credentialing Initiative (OCI)

United States
- Velocity Network
- Excelsior
- Bonifii MemberPass
- US Department of Homeland Security

Spain
- Alastria

South Korea
- Initial DID consortium

Turkey
- UN Development Programme

Çin
- DIDA

Jordan
- World Food Programme

LATAM & Caribbean
- LACChain
- Copa Airlines - IATA

Singapore
- Affinidi

International
- International Air Transport Association (IATA)
- Sovrin Foundation
- Global Legal Entity Identity Foundation (GLEIF)
- cheqd.io

Sierra Leone
- Kiva

New Zealand
- Mattr

Australia
- Latest NSW activity

South Africa
- Absa - Sovrin
- Yoma

Image credit:
chead.io

Digital ID Projects
EU ID Wallet
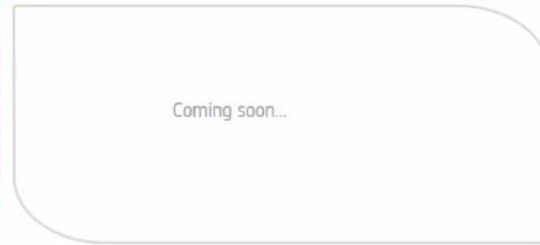
- Gov. issued wallet

- W3C compliant EBSI DID, DID Documents

- LEI and NP(Natural Person)

- EBSI DID Registry, permissioned, authorized institutions can write

TRACK AND TRACE
SMEs Financing
Document Traceability

VERIFIABLE CREDENTIALS
Self-sovereign Identity
Social Security
Diploma

TRUSTED DATA EXCHANGE
Asylum Process Management
Trusted Data Sharing

Coming soon...
IP MANAGEMENT

National eID
TSPs attestation attributes

EU eID Wallet
National eID
Driving License
Diploma
Insurance
Travel
Payment

SELECTIVE DISCLOSURE
proofs of identity / attributes

SERVICE PROVIDERS

BANK

Digital ID Projects
EU ID

	2023				**2024**				**2025**		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

Council Presidency
- 🇸🇪 Sweden
- 🇪🇸 Spain
- 🇧🇪 Belgium
- 🇭🇺 Hungary
- 🇵🇱 Poland
- 🇩🇰 Denmark

◆ Jun - Parliament Elections ◆ Dec – New Commission begins term of office

Legislative Process
Commission
Council
Parliament

◆ Mar: Parliament Vote
Trilog
◆ June 29 Political agreement on key elements
Nov 8 Final Trilog
Nov 28 ITRE Committee Vote
Early 2024 Plenary Vote
Prepare Implementing Acts
Implementing Acts

Large Scale Pilots (LSP) *
Contracts preparation
Development based on Ref. Wallet
Testing & feedback
Jun: 1st prototype

Architectural Reference Framework (ARF)
◆ Feb: V 1.0 ◆ Apr: V 1.1
not officially released: V 1.2
Nov? V 1.3
Ongoing updates – likely until 2027*
Adjustments – based on experiences in LSP

Reference Wallet (Open Source)
Development Reference Implementation
Nov? V 1.0
Piloting in Large Scale Pilots

Member States Wallets
Implementation in National Wallets
Start of National Wallets in DE & IT Mid 2026

* Timing Example for LSP POTENTIAL   ⟷ Interdependencies   Displayed dates are ◆ actual ◇ estimated

Digital ID Projects
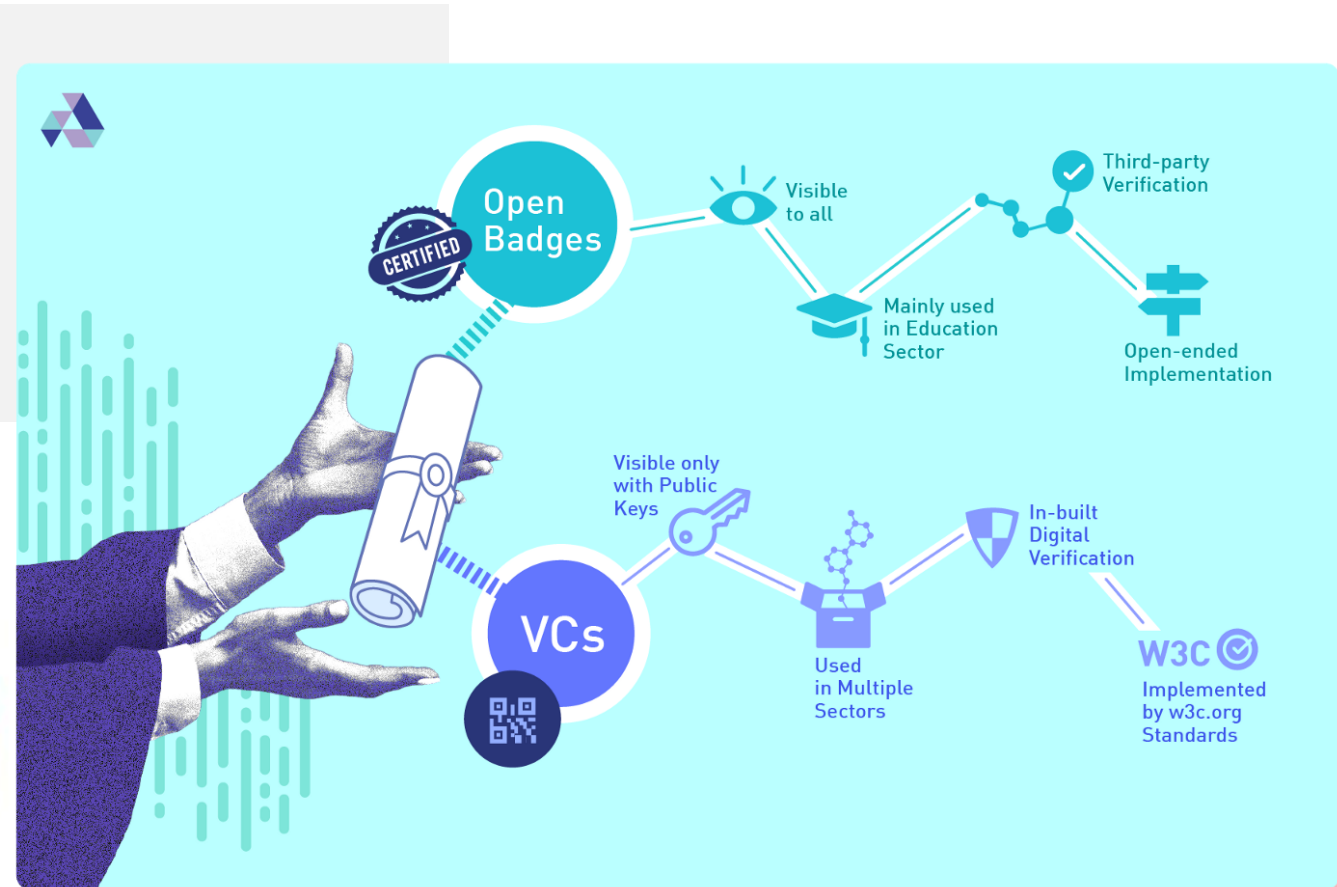## Legal Entity Identity
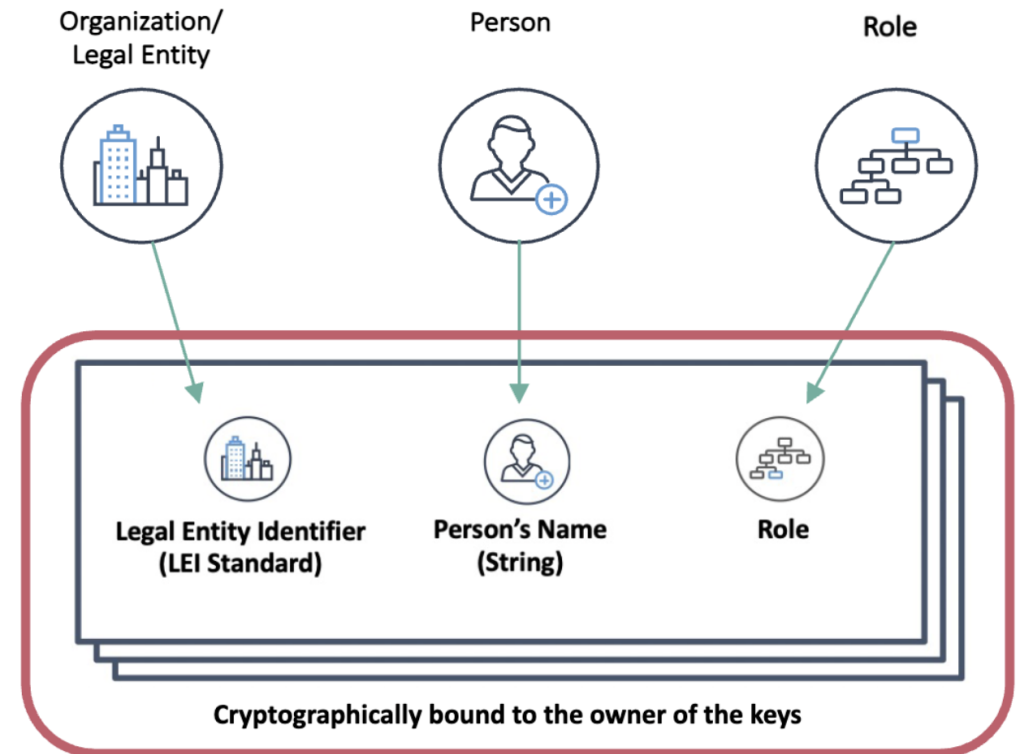
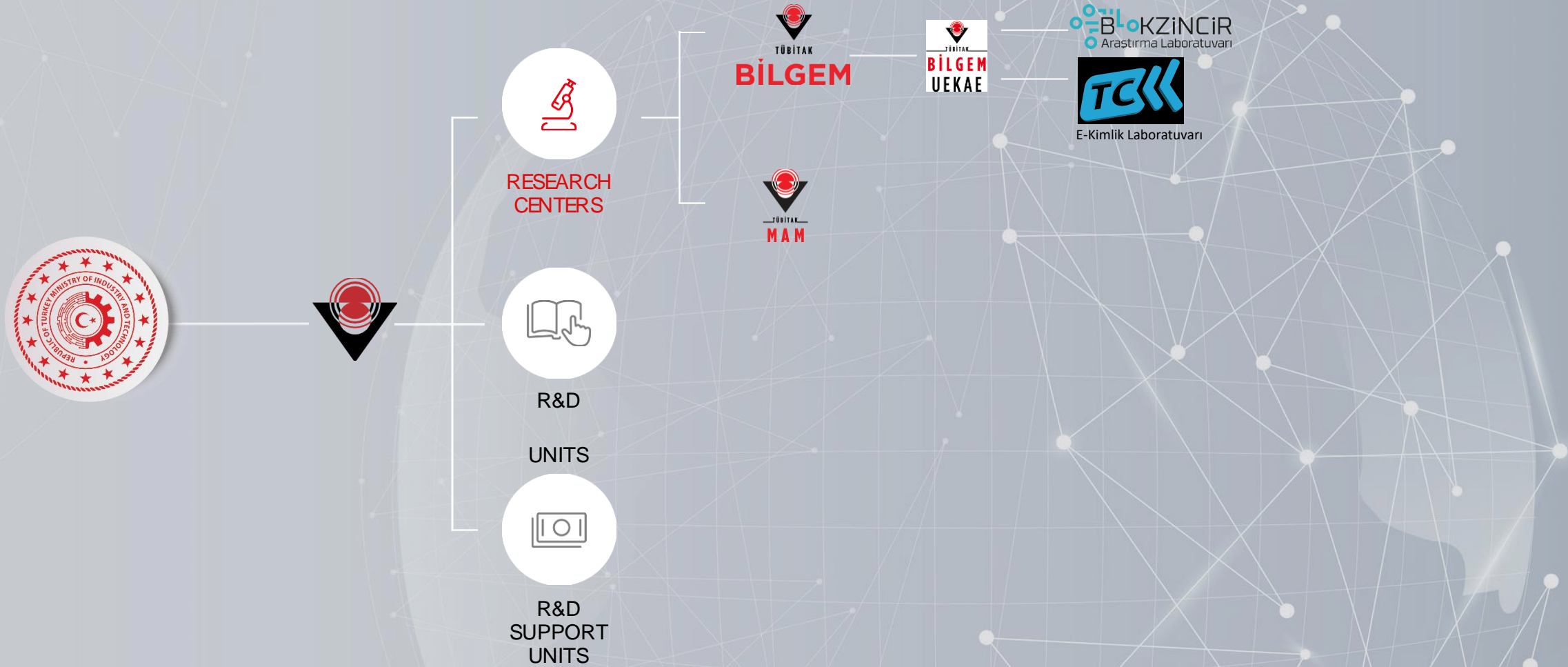

- First pilot June 2022

Digital ID Projects
Digital Bages

IMS Global Learning Consortium Open Badges Specification to conventions of **W3C Verifiable Credentials Data Model** for use cases of Defined Achievement Claim and a Skill Claim.

TUBITAK BILGEM

The largest research center in Türkiye, focusing on informatics and information security.

Digital Türkiye Project

- SSI based national system

- Individual, Organization, Smart Device identities

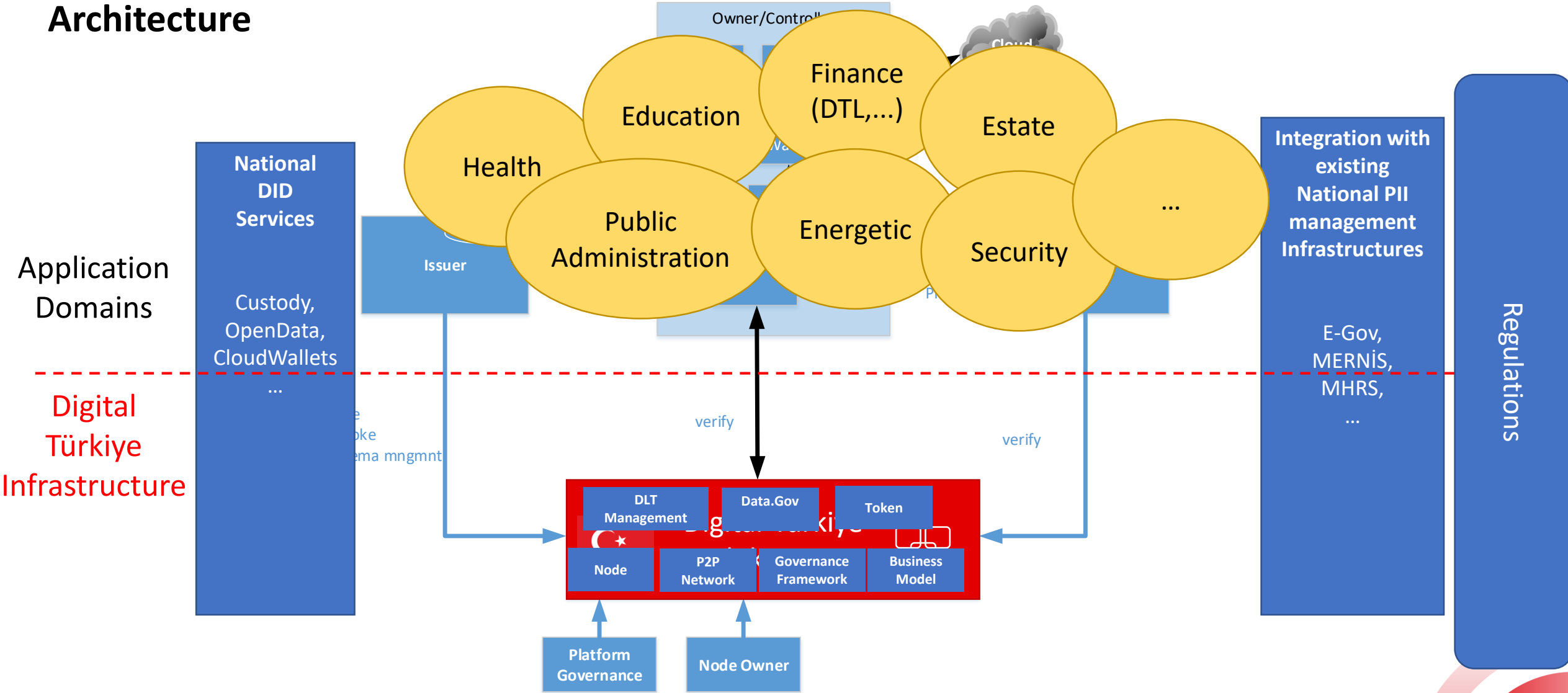- Authentication, Authorization, PII sharing, Data Economy

PRESIDENCY OF THE REPUBLIC OF TÜRKİYE
DIGITAL TRANSFORMATION OFFICE

Digital Türkiye Project
Architecture
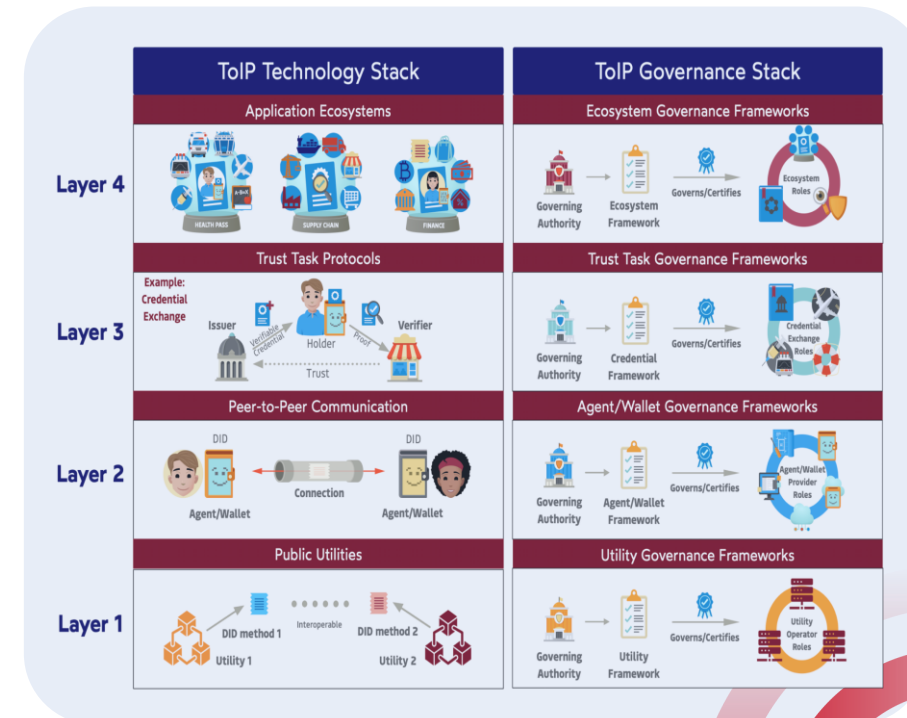
Digital Türkiye Project

- **SSI Infrastructure (Layer1)**
  - DID method (tur)
  - DLT based backbone
  - Business model (incentives, tokenomics)
  - Data economy (L1)
  - Governance frameworks
  - Global services (Digital ID Wallet Custody, OpenData)
  - SSITürkiye

- **Credential and Walllet Specifications (Layer2 & Layer3)**
  - DIDComm
  - Credential formats and exchange protocols
  - Data economy (L2, L3)
  - DID Agent SDK and APIs
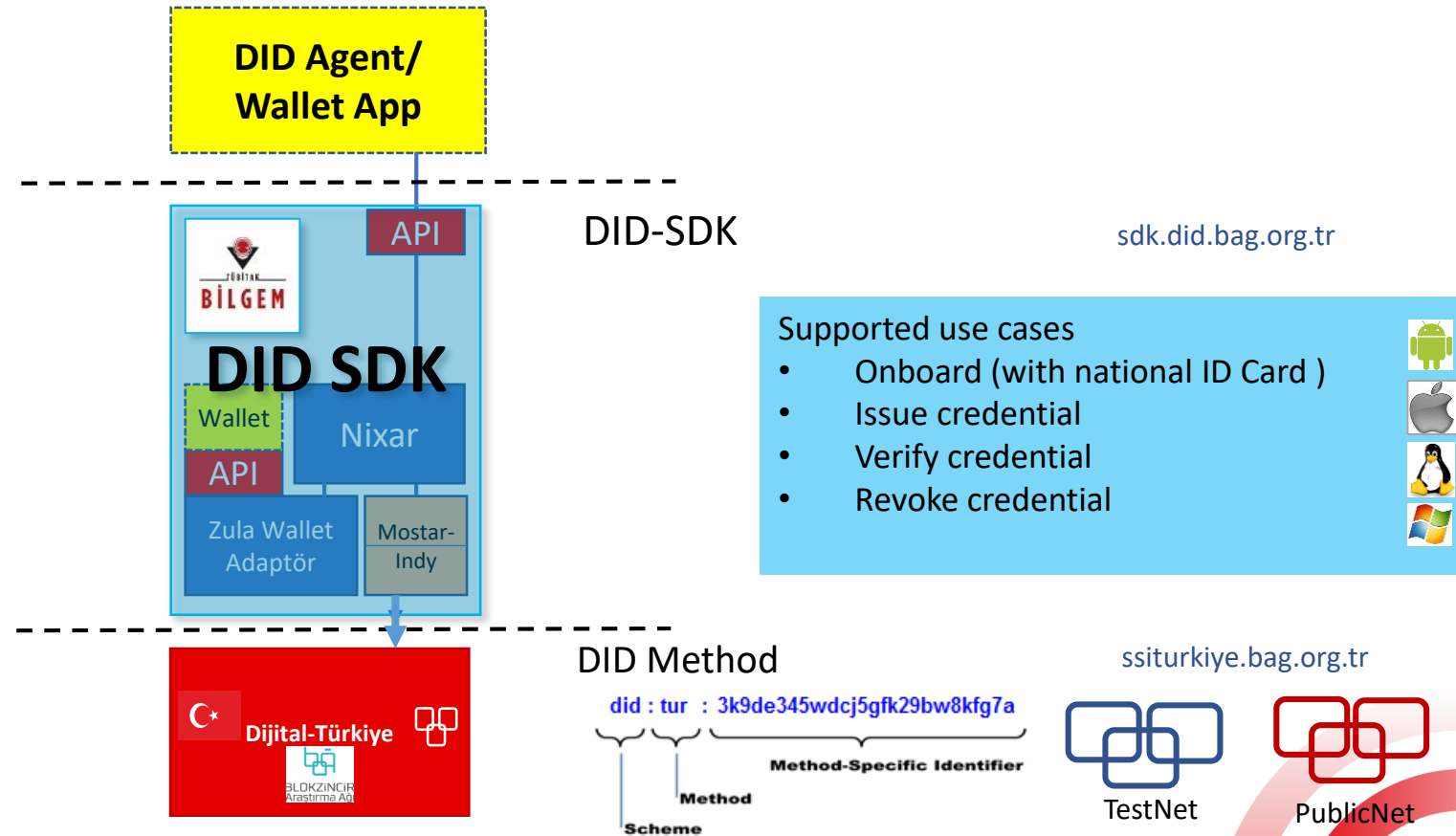 - Security leverage with eID card, eSIM and custom hardware

16
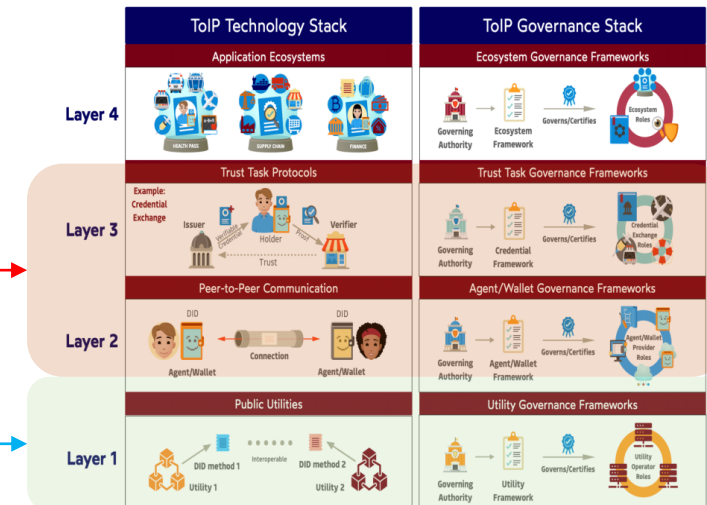
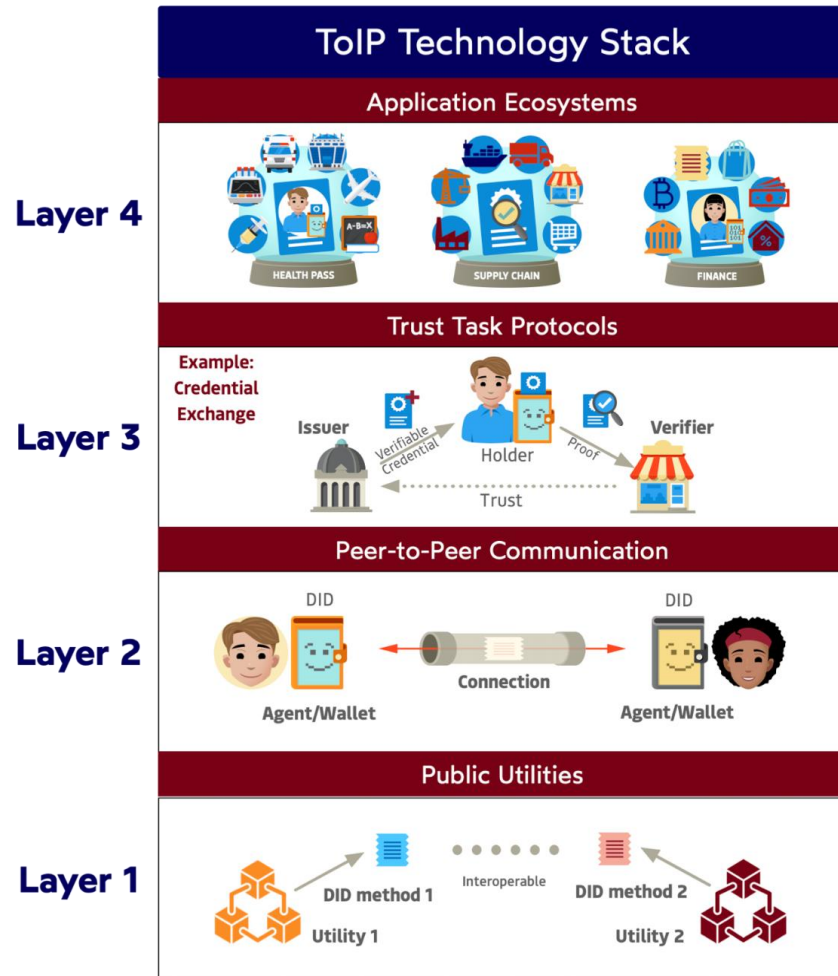# Digital Türkiye Project

- **Adoption (Layer1,2,3,4)**
  - Interoperability with global DID Methods
  - Reference Agent and Test Suite Implementations
  - Cloud wallet hosting
  - Hardware walletMeta governance framework
  - Application domain governance framework templates
  - Data economy Layer4
  - SafirChain BaaS
  - Adoption of existing systems (E-Gov, Mernis, e-IDcard, etc.)
    +
  - Regulations

Digital Türkiye Project
Technology Stack

ToIP Technology Stack

Application Ecosystems

Layer 4

HEALTH PASS · SUPPLY CHAIN · FINANCE

Trust Task Protocols

Example: Credential Exchange

Layer 3

Issuer · Verifiable Credential · Holder · Proof · Verifier · Trust

Peer-to-Peer Communication

Layer 2

DID — Agent/Wallet · Connection · DID — Agent/Wallet

Public Utilities

Layer 1

DID method 1 · Utility 1 · Interoperable · DID method 2 · Utility 2

DID Agent/ Wallet App

DID-SDK

sdk.did.bag.org.tr

BİLGEM

DID SDK

Wallet · Nixar · API

Zula Wallet Adaptör · Mostar-Indy

Supported use cases
- Onboard (with national ID Card)
- Issue credential
- Verify credential
- Revoke credential

DID Method

ssiturkiye.bag.org.tr

Dijital-Türkiye

BLOKZİNCİR Araştırma Ağı

did : tur : 3k9de345wdcj5gfk29bw8kfg7a

Scheme · Method · Method-Specific Identifier
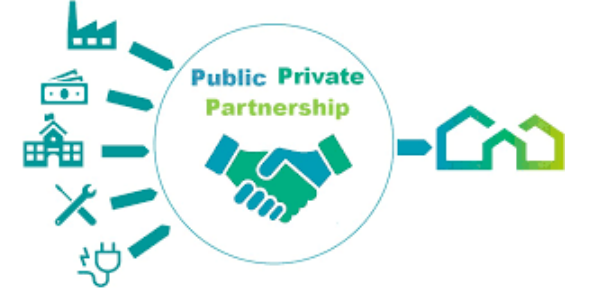
TestNet · PublicNet

Digital Türkiye Project
SSI Türkiye

- Blockchain based repository
- In the decentralized governance of private sector and public stakeholders
- Infrastructure for DID based transformation projects

Digital Türkiye Project
SSI Türkiye

V1.0 2023-Q3

- TestNet and PublicNet
- Hyperledger Indy based repository
  - Plenum pBFT consensus
  - Public permissioned (Public read- Permissioned write)
- <100 node
- AnonCreds schema
- No payment, Only Invited Organizations
- Terms of Reference ← Under Construction
  - Steward Agreement, Transaction Author Agreement,…
  - Governance structures
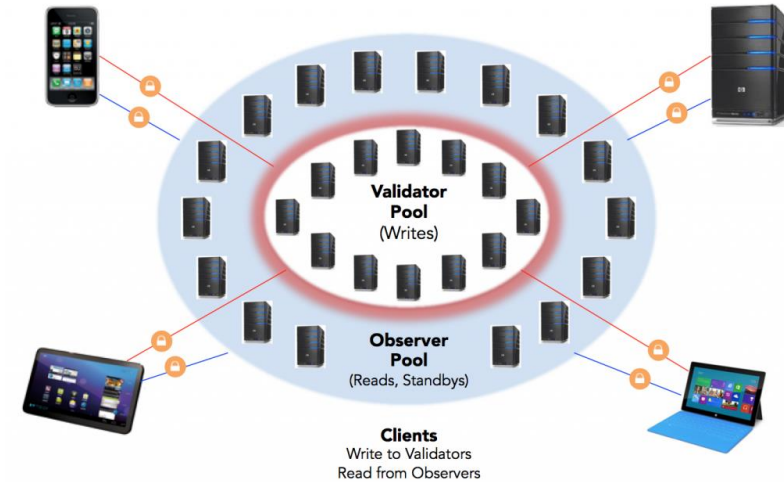
Typical Node computer for Validators
- MUST have adequate compute power (8+ cores).
- MUST have adequate RAM (>32 GB of RAM).
- MUST have at least 1 TB, with the ability to grow to 2 TB, of reliable (e.g., RAIDed) disk space, with an adequately sized boot partition.
- MUST have a high-speed Internet connection with highly available, redundant pipes (+100 Mbps).
- MUST have 2 NIC
  - at least one dedicated NIC for Validator Node consensus traffic and
  - a different NIC to process external requests.
  - Each NIC must have a stable, static IP address.

Digital Türkiye Project

SSI Türkiye Repository

V2.0 2024-Q4

- Custom blockchain development
- Permissioned PoS Node, public-read, public write
- Utility token
- +100 nodes
- On-chain governance
- Business model for Infrastructure Stakeholders
- Data economy for Node owner and Users (Validator, Issuer, Holder, Verifier)
- …

V3.0 2025-Q3

- Smart contract based governance frameworks
- Agent access control support
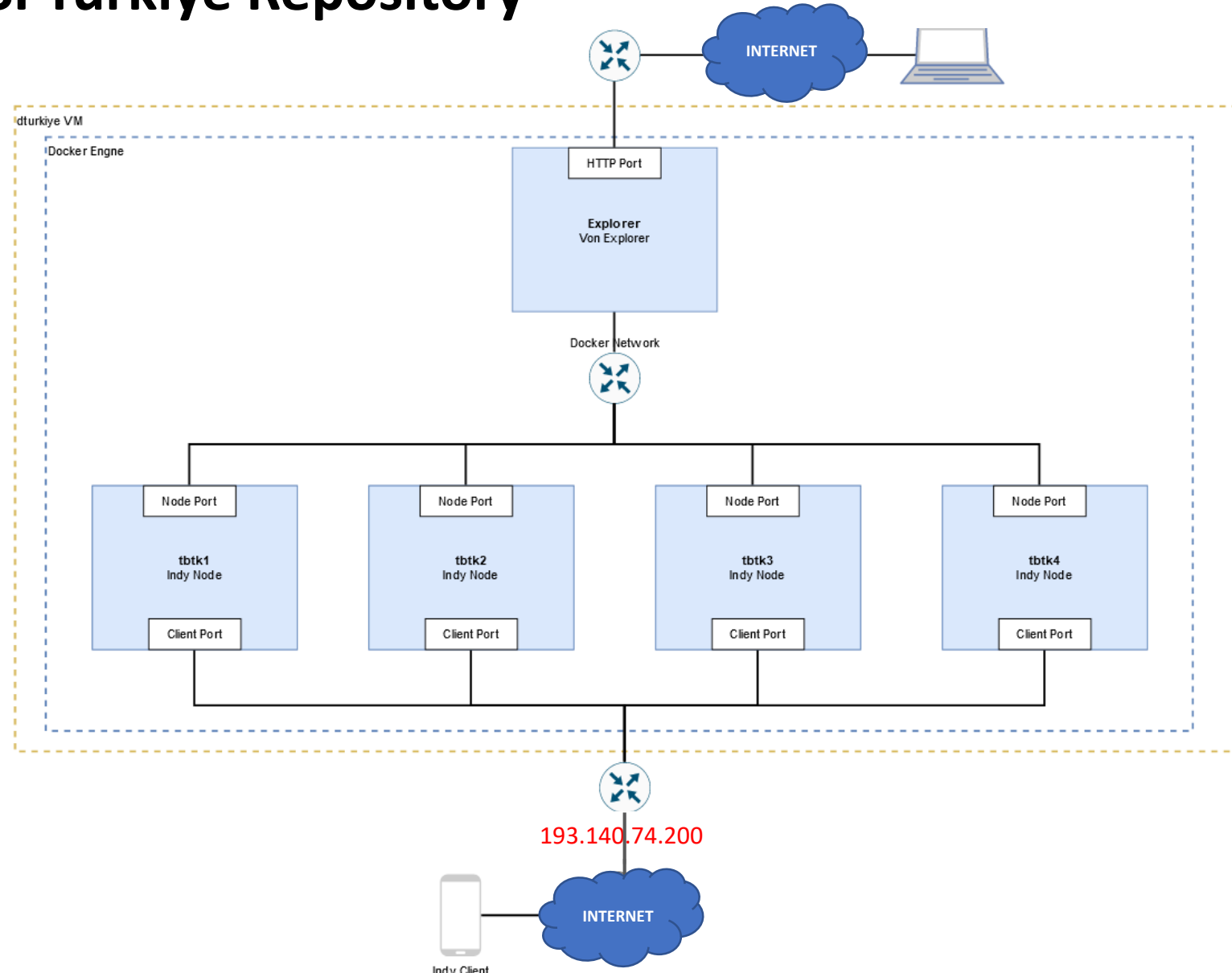- Additional credential formats (JWT, mDL, …)

Digital Türkiye Project
Technology Stack-SSI Türkiye Repository
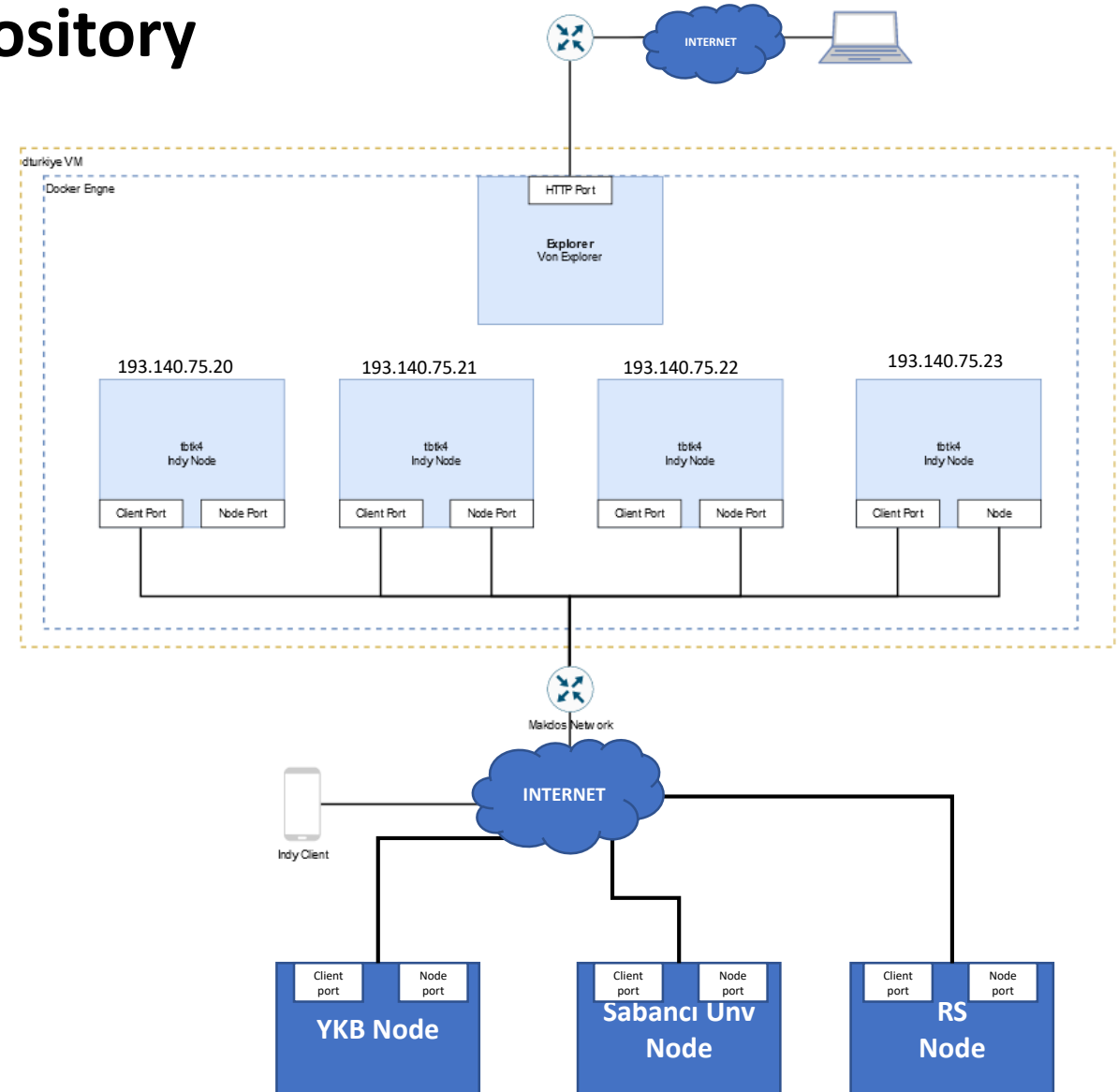
Test Network

INTERNET

dturkiye VM

Docker Engne

HTTP Port

Explorer
Von Explorer

Docker Network

Node Port	Node Port	Node Port	Node Port
tbtk1 Indy Node	tbtk2 Indy Node	tbtk3 Indy Node	tbtk4 Indy Node
Client Port	Client Port	Client Port	Client Port

193.140.74.200

INTERNET

Indy Client

Digital Türkiye Project
Technology Stack-SSI Türkiye Repository

Main Network (PublicNet)

ssiturkiye.bag.org.tr

poc: bagyonetici@tubitak.gov.tr

BİLGEM
TÜBİTAK

We are in the heart of the technology

Thank you

QA

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https://blockchain.tubitak.gov.tr