IPZS ISTITUTO POLIGRAFICO E ZECCA DELLO STATO

Monitoring and Compliance in OpenID Federation: from CIE to EUDI Wallet

Workshop GARR 2025

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Direzione Innovazione, Strategia di Ricerca e Prodotto - CLASSIFICAZIONE: PUBBLICO

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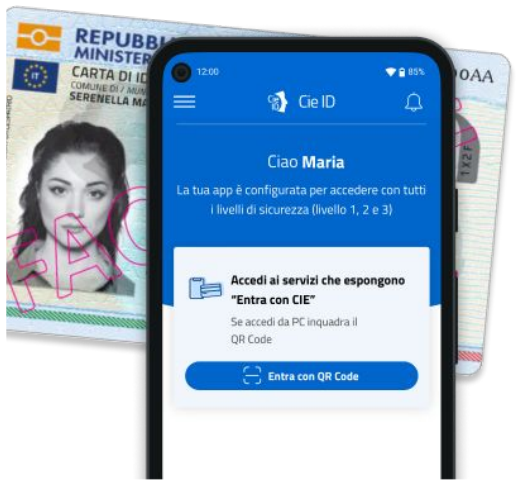
From Physical Documents to Digital Identity

Continuity of **trusted identity** provision across **physical** and **digital** domains

Physical Identity



Digital Identity CIE

Digital Identity Wallet

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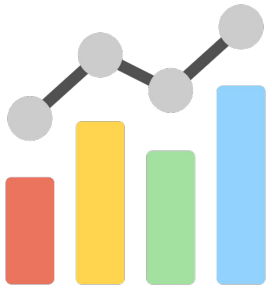
CIE eID Scheme

Governance by **Ministry of the Interior**

Go live in **2019** with **SAML2**

Go live in **2023** with **OpenID Connect**



- Over **55 million** of identity provided to citizens
- **+ 100 million** accesses during the 12 months
- Over **10 million** accesses in the last month
- **+18000** Service Providers

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Evolution: Learning from SAML Experience

SAML2 Federation: Operational Challenges

1. **Metadata Management** Complexity
2. Limited **Policy** Enforcement
3. **Static Trust** Model
4. **Scalability** Constraints

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Need for dynamic, scalable, policy-driven approach

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OpenID Federation: Dynamic Trust Framework

What is **OpenID Federation**

A modern **API-based** Trust framework for metadata exchange and **dynamic** trust chain establishment

DYNAMIC

Trust chains verified on-demand

SCALABLE

Native delegation, federation of federations by design

POLICY-DRIVEN

Central enforcement without entity updates

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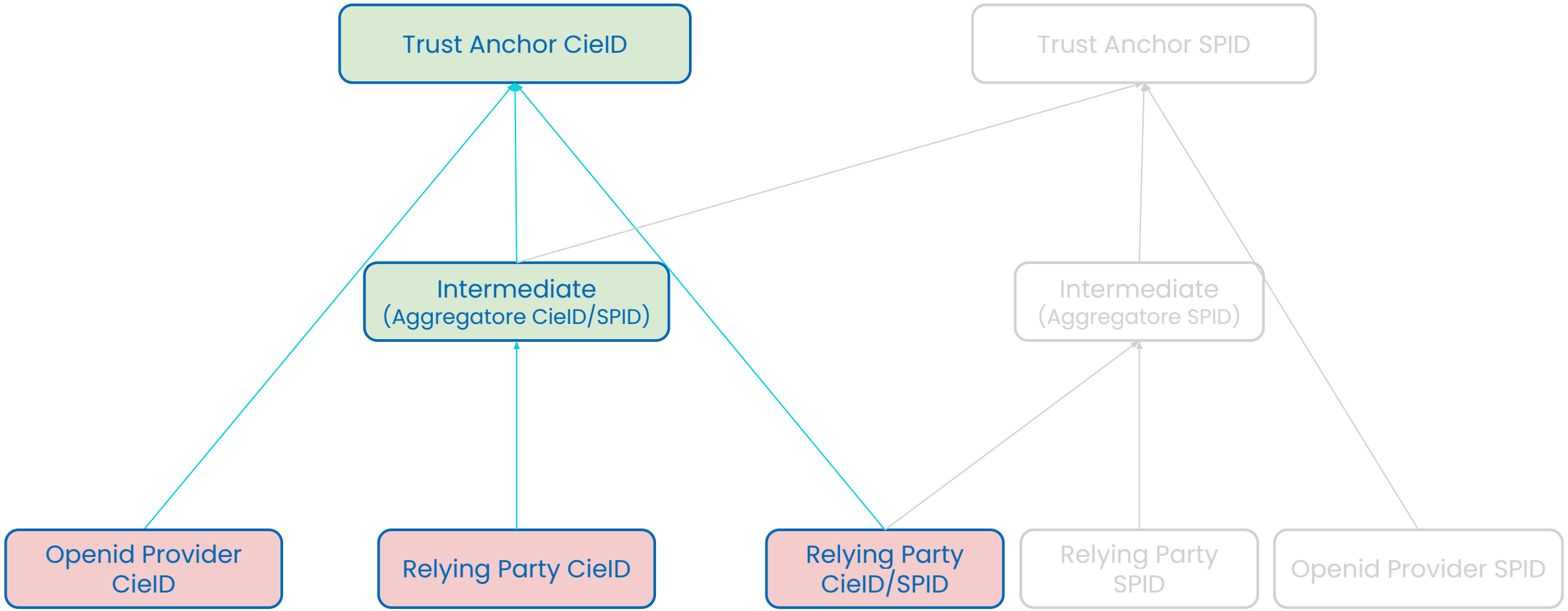
CieID Federation Ecosystem: Actors and Delegation



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Core Components

Entity Configuration:

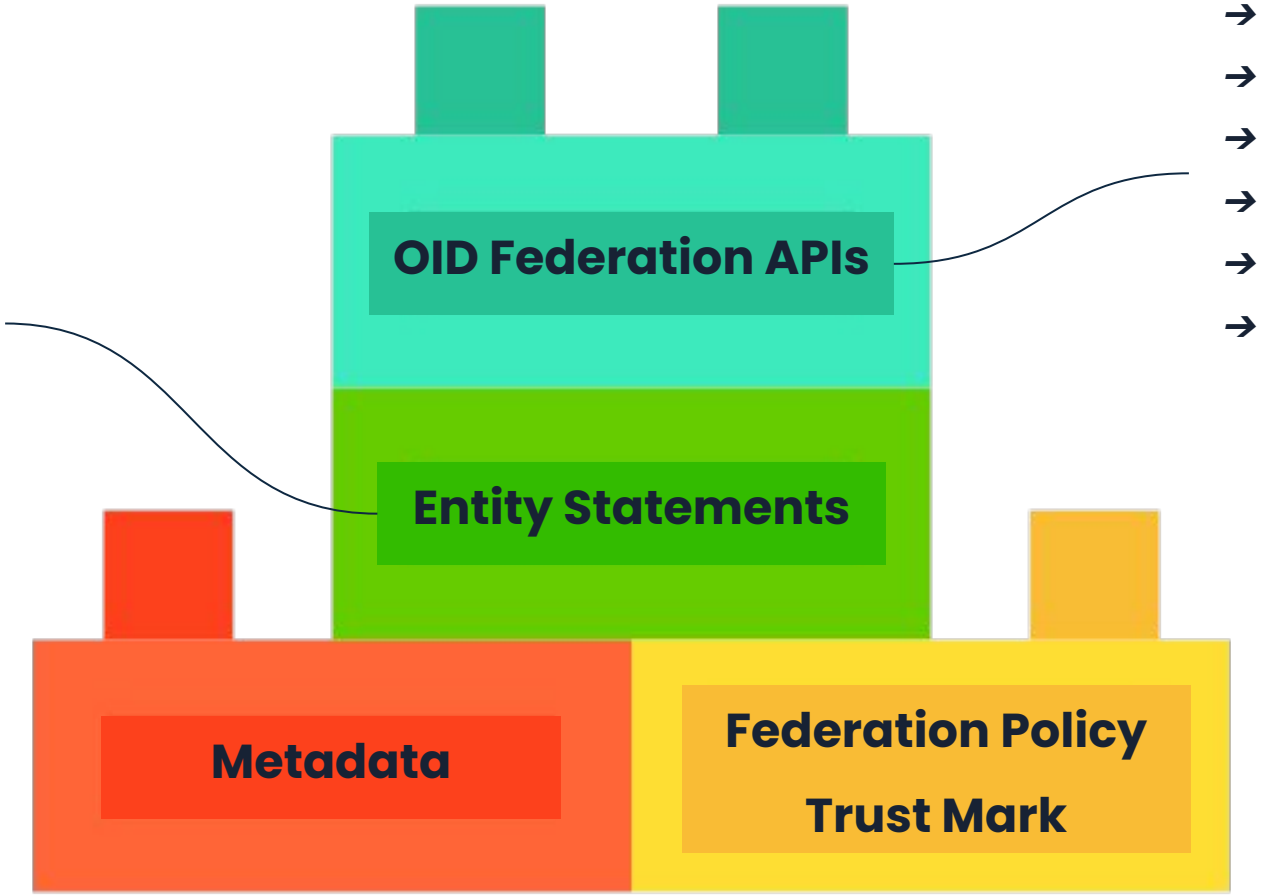
Self-signed JWT

Subordinate Statement:

JWT signed by TA or Intermediate issued to Leaf Entities

Available at:

.well-known/openid-federation



- *Fetch*
- *Listing*
- *Resolve*
- *Trust Mark*
- *Trust Mark Status*
- *Federation Historical Keys*

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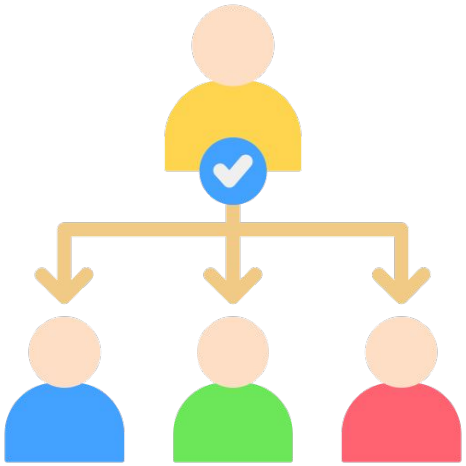
CieID Federation Ecosystem: Key Concepts



Onboarding Delegation

TA can delegates entity management to Intermediaries (Soggetti Aggregatori)

Trust Chain

Entities can establish the Trust using a verification path
(i.e. RP → SA → TA or OP → TA)

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Beyond onboarding
Ensuring trust over time

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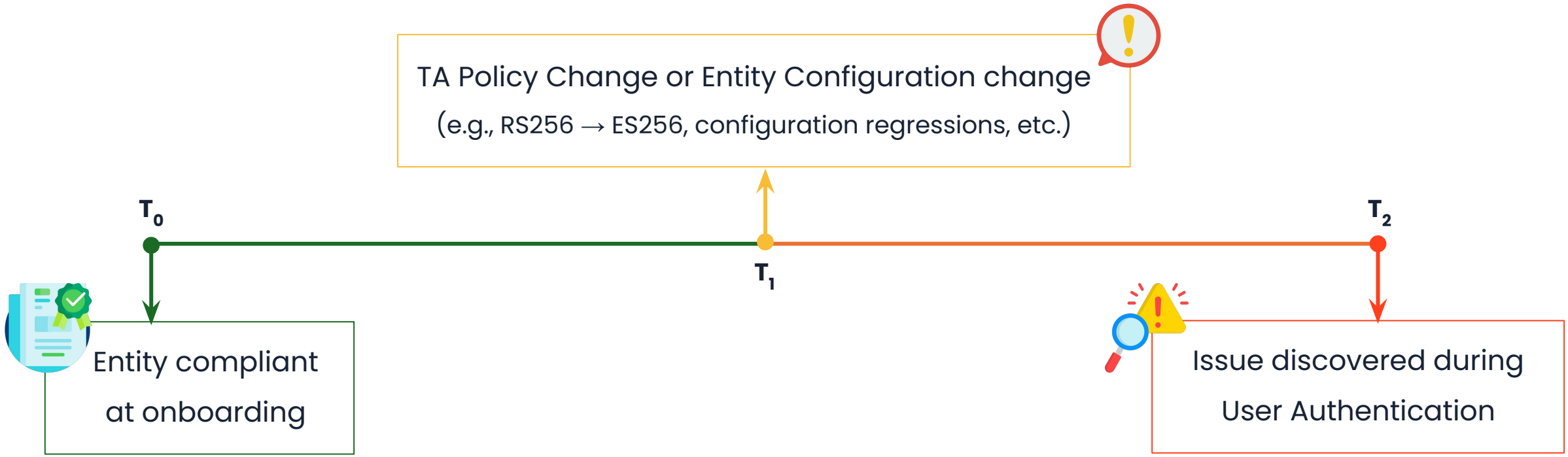
The Problem: Compliance Drift Over Time



OpenID Federation Framework enables continuous monitoring

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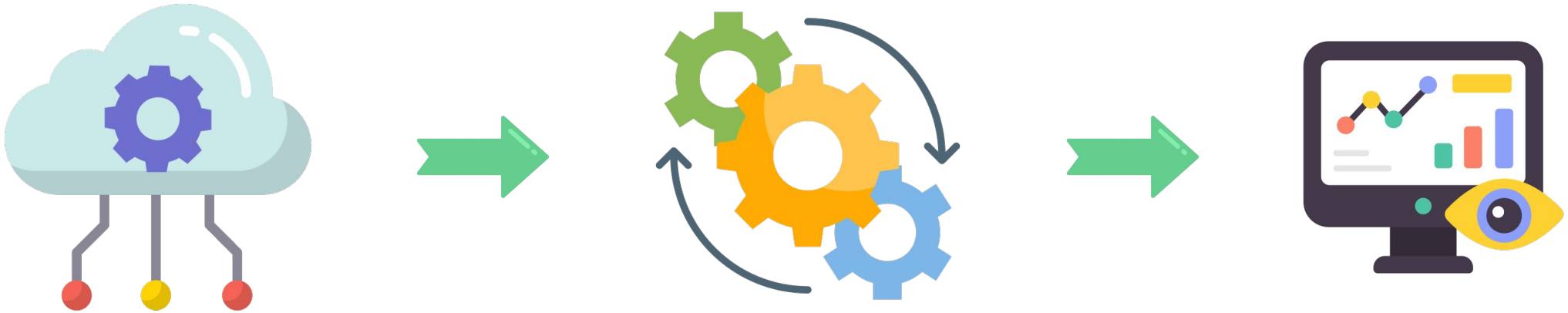
Monitoring Architecture: Layered Design



Layer 1

Federation APIs

API interface collecting all relevant Federation artifacts (Metadata, Entity Statements, Trust Marks, etc.)

Layer 2

Validation & Policy

Validation services handling trust chains, applying policies, verifying trust marks and signatures, and entity lifecycle

Layer 3

Monitoring & Observability

Continuous validation engines (at configuration and protocol level)

Health dashboards

Audit trail systems

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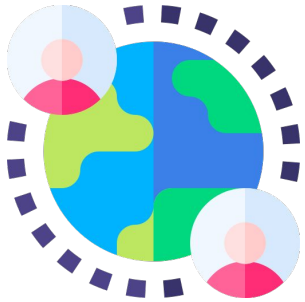
European Digital Identity Wallet (EUDIW)

allows users to be in control of their personal data

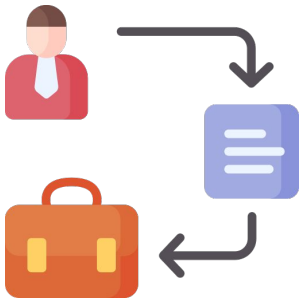
The European Wallet: Monitoring at Unprecedented Scale

Multi-Level Trust Architecture: Hierarchical trust model



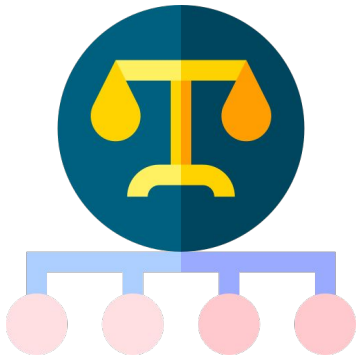
Interoperability

Many actors across borders (Wallet Providers, Credential Issuers, Relying Parties)



Cross Border Services

Diverse use cases (eGov, payments, education, health, travel, etc.)



Regulatory

Different Legal Framework

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How to ensure cross-border compliance?

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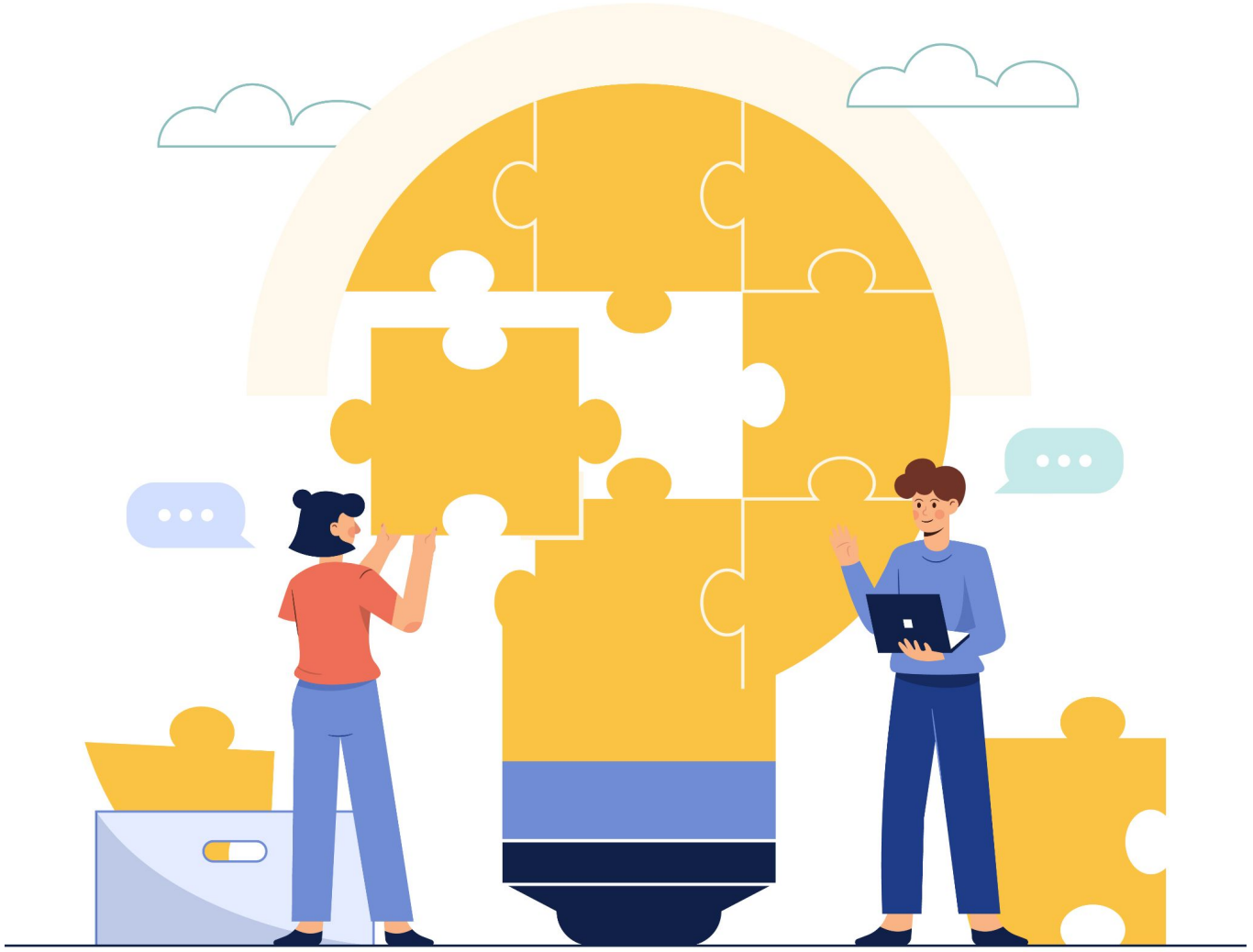
Monitoring based on Federation natively integrated in Trust Framework



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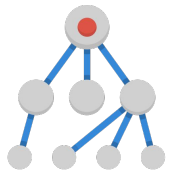
Why Federation Enables Monitoring

API-based

Programmatic access, automation-friendly

Declarative

Machine-readable JSON, parsable at scale



Distributed yet coordinated

Monitoring at each level (TA, SA)

Revocation built-in

Native to protocol, not bolt-on

Monitoring is not added to OpenID Federation

OpenID Federation IS the monitoring infrastructure

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Monitoring Tools Ecosystem: Open Source & Documentation

Tools

- **Micro-Id-Gym (MIG)**: Web authentication protocol compliance testing (https://github.com/stfbk/mig)
- **Federation Browser**: User-friendly interface for navigating Federation based ecosystems (https://github.com/italia/openid-federation-browser)
- **Federation Entity Validator** (COMING SOON)

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Documentation

- **OpenID Federation** (https://openid.net/specs/openid-federation-1_0.html)
- **Manuale Tecnico CieID** (https://docs.italia.it/italia/cie/cie-manuale-tecnico-docs/it/master/index.html)
- **Manuale Operativo CieID** (https://federazione.servizicie.interno.gov.it/docs/cie-manuale-operativo-docs)
- **Specifiche Tecniche IT-Wallet** (https://github.com/italia/eid-wallet-it-docs)

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