Hyperledger Identity Projects

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Agenda

- Aries
- Indy
- Ursa
- Future

Relevant Projects

HYPERLEDGER

THE LINUX FOUNDATION

HYPERLEDGER
IDENTITY
WORKING GROUP

HYPERLEDGER
ARIES

HYPERLEDGER
URSA

HYPERLEDGER
INDY

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Aries

What is Aries

Protocol and Tools for blockchain-rooted peer-to-peer interactions.

- Wallet infrastructure
- Blockchain client (resolvers)
- Secure Messaging
- Extensible API infrastructure

} “Identity Agent”

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Aries RFCs

Aries RFCs by Status

ADOPTED

ACCEPTED

- 0003: Protocols (2019-04-01, 9 impls — `concept`)
- 0004: Agents (2019-01-15, 9 impls — `concept`)
- 0006: SSI Notation (2018-09-01, 1 impl — `concept`)
- 0008: Message ID and Threading (2018-10-01, 5 impls — `concept`)
- 0017: Attachments (2019-01-31, 1 impl — `concept`)
- 0019: Encryption Envelope (2019-05-04, 7 impls — `feature`)
- 0020: Message Types (2019-05-24, 8 impls — `concept`)
- 0031: Discover Features Protocol 1.0 (2019-05-01, 1 impl — `feature` `protocol`)

Active Projects

Aries Cloud Agent - Python

Aries Framework - GO

Aries Framework - Ruby

Aries Static Agent - Python

Aries SDK Java

Aries SDK JavaScript

Aries Toolbox

Join the talk by Nemanja Patrnogic: “Tools for Building Your Identity Application”

Ways to Participate

Weekly Zoom Calls: https://wiki.hyperledger.org/display/ARIES/Aries+Working+Group

Rocket Chat #aries

RFC Process https://github.com/hyperledger/aries-rfcs

Source Code https://github.com/hyperledger/aries

Indy

Hyperledger Indy

Public Permissioned Blockchain

Custom built for Identity

RBFT Consensus

Join Alexander Shcherbakov's talk: "Understanding the Indy Distributed Ledger"

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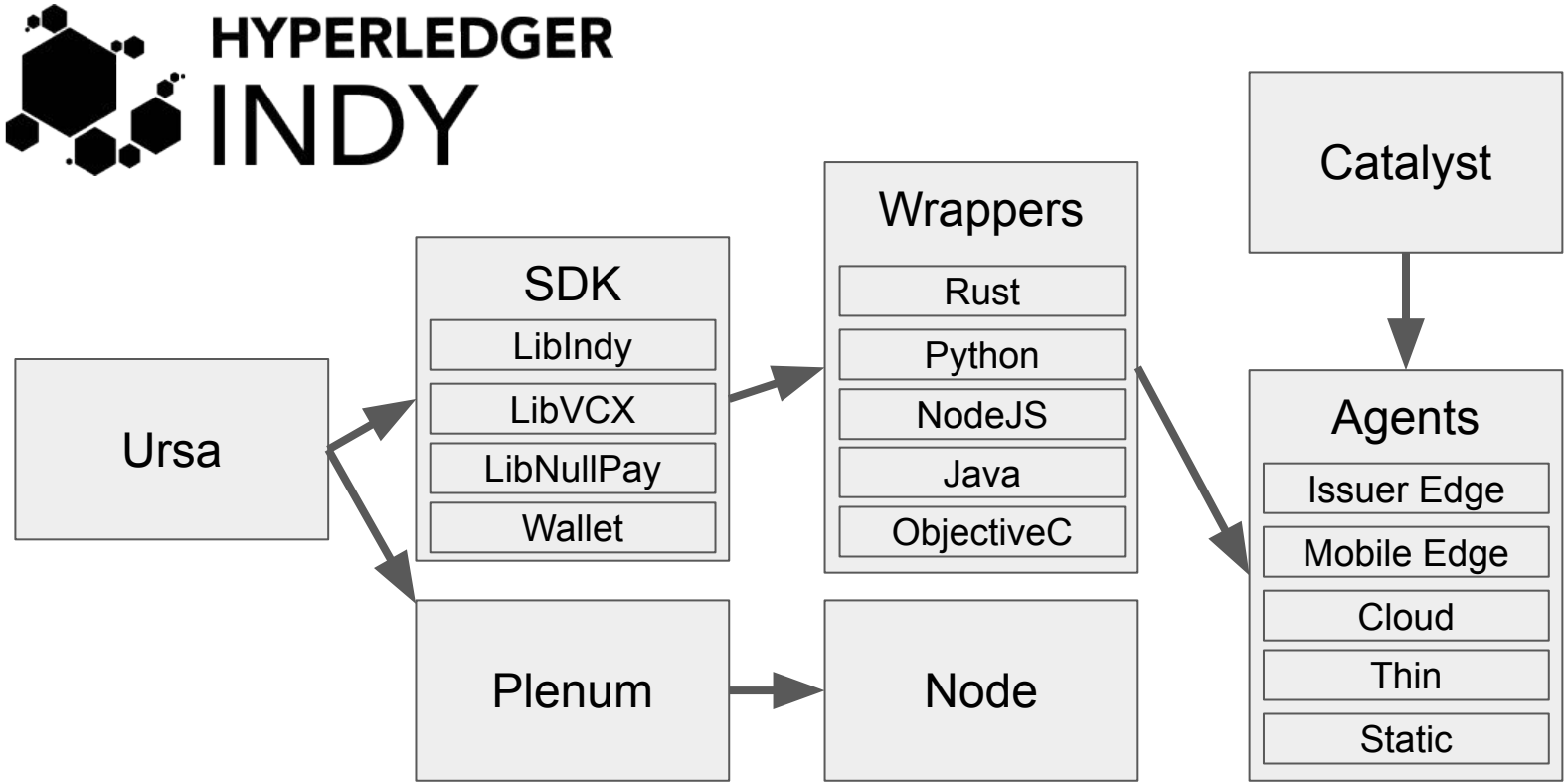
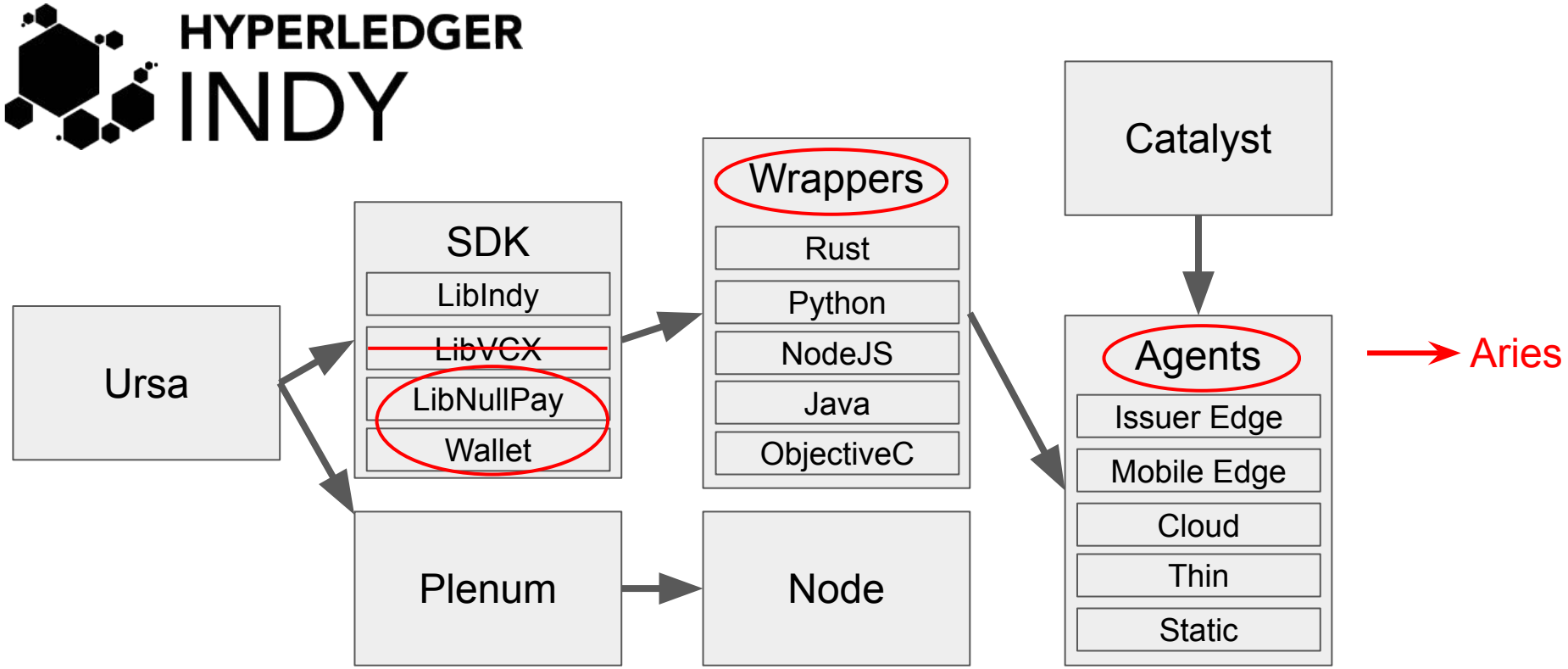
Hyperledger Indy



Hyperledger Indy



The Problem is Correlation

Correlation = Linkability

Attribute based correlation

Identifier-based Correlation

Signature or Hash-based Correlation

Timing Inferences

Including if Multiple Parties Share Information (Collusion)

Ensuring Privacy

The prover chooses when to disclose.

The prover selects what should be disclosed.

Don’t share more attributes than necessary

Don’t share with more precision than necessary

Ensuring Privacy

The verifier and the issue do not communicate.

The prover can present to any verifier.

A proof can hold multiple credentials from multiple issuers.

A credential is anonymously revocable.

You Don’t Have to Deploy Your Own

Engineered solely for privacy-enhancing self-sovereign identity

Global public utility that no single entity owns or controls

Open source, open standards, open governance

Fast, efficient—based on Hyperledger Indy

Ways to Participate

Weekly Zoom Calls: https://wiki.hyperledger.org/display/indy/Indy+Contributors+Meeting

Rocket Chat #indy

HIPE Process https://github.com/hyperledger/indy-hipe

Source Code https://github.com/hyperledger/indy-sdk
https://github.com/hyperledger/indy-node
https://github.com/hyperledger/indy-plenum

Ursa

Goal: general purpose crypto library shared by HL projects

Annoncreds 1.0 (CL Signatures)

BLS Multi-Signatures

DON’T ROLL YOUR OWN CRYPTO!

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Ways to Participate

Bi-Weekly Zoom Calls:
https://wiki.hyperledger.org/display/ursa/Meeting+Agendas

Rocket Chat #ursa

RFC Process https://github.com/hyperledger/ursa-rfcs

Source Code https://github.com/hyperledger/ursa

Documentation https://github.com/hyperledger/ursa-docs

Identity Working Group

Goals:

- Discuss use cases
- Establish best practices (white paper)
- Cross-project coordination

Rocket Chat #identity-wg

Calls:

- Main Working Group
  https://wiki.hyperledger.org/display/IWG/Identity+Working+Group
  Every-other Wednesday at 18H Central Europe
- Implementers
  https://wiki.hyperledger.org/display/IWG/Identity+WG+Implementers+Call
  Every-other Thursday at 17H Central Europe

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Other Hyperledger Projects

Fabric: W3C Verifiable Credentials

Iroha: Identity use cases

Sawtooth: Identity Transaction Family

Grid: Identity in Supply Chain

And integrations between projects.

The Future

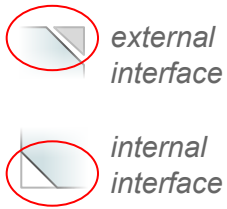
Aries

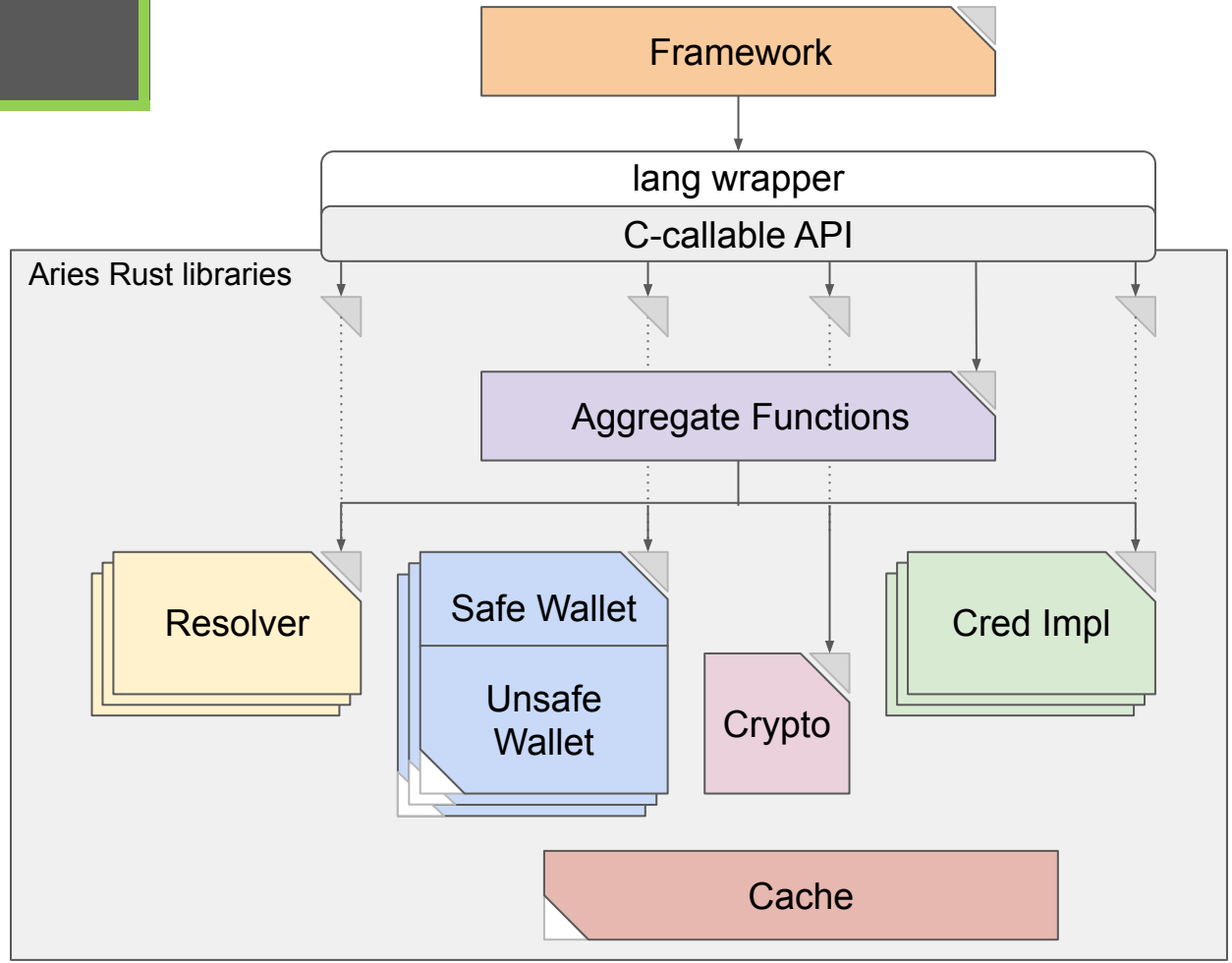
Test suite

Shared libraries

More libraries, frameworks, and agents

Aries


external
interface
internal
interface


Framework
lang wrapper
C-callable API
Aries Rust libraries
Aggregate Functions
Resolver
Safe Wallet
Unsafe
Wallet
Crypto
Cred Impl
Cache

Indy

PBFT View Change

Aardvark Consensus

Indy-DRI-Aries

Aries Migration

Ursa

Annoncreds 2.0

Support for additional predicates

Bullet Proofs for ZKPs

Support for hardware security modules

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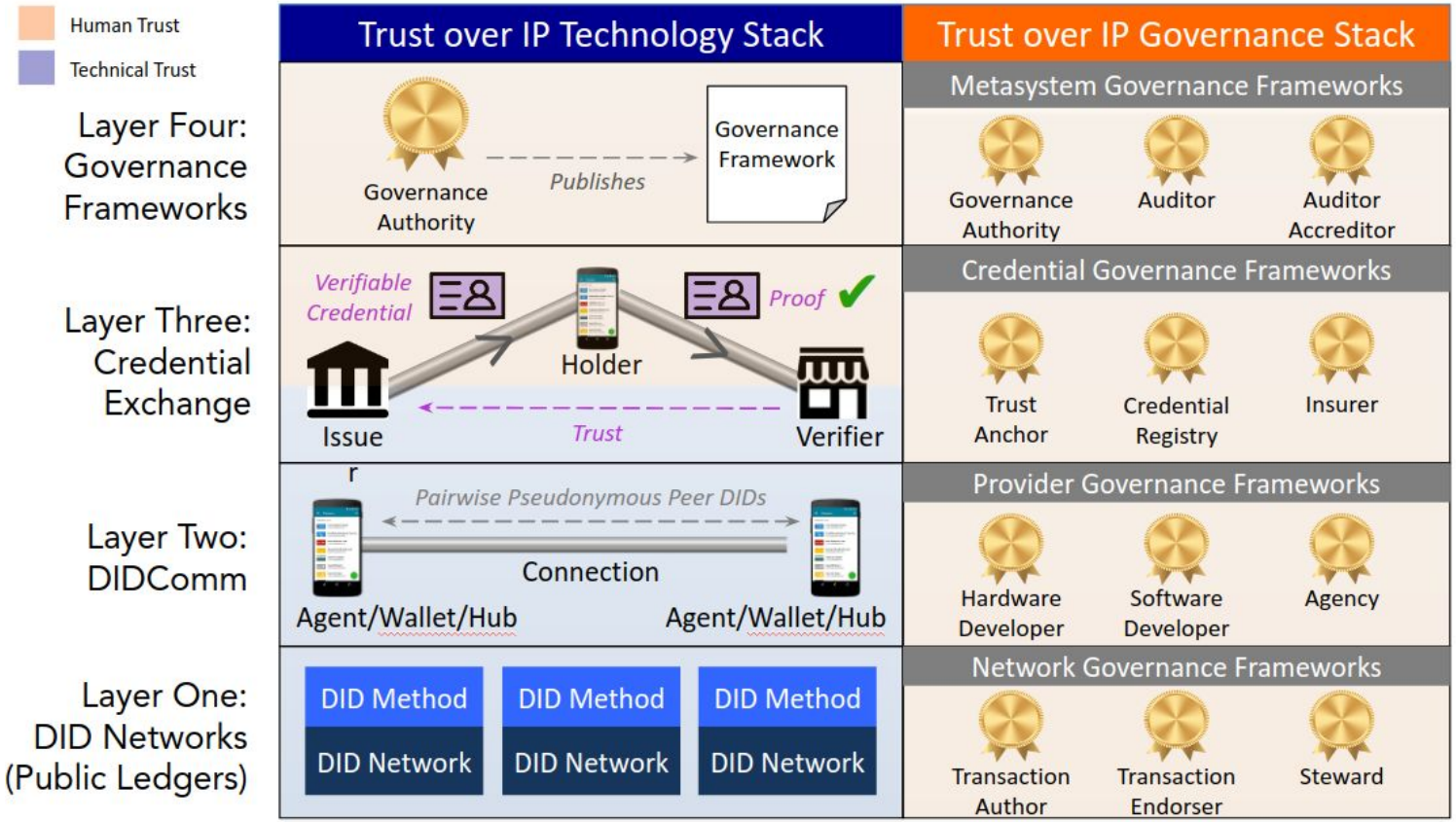
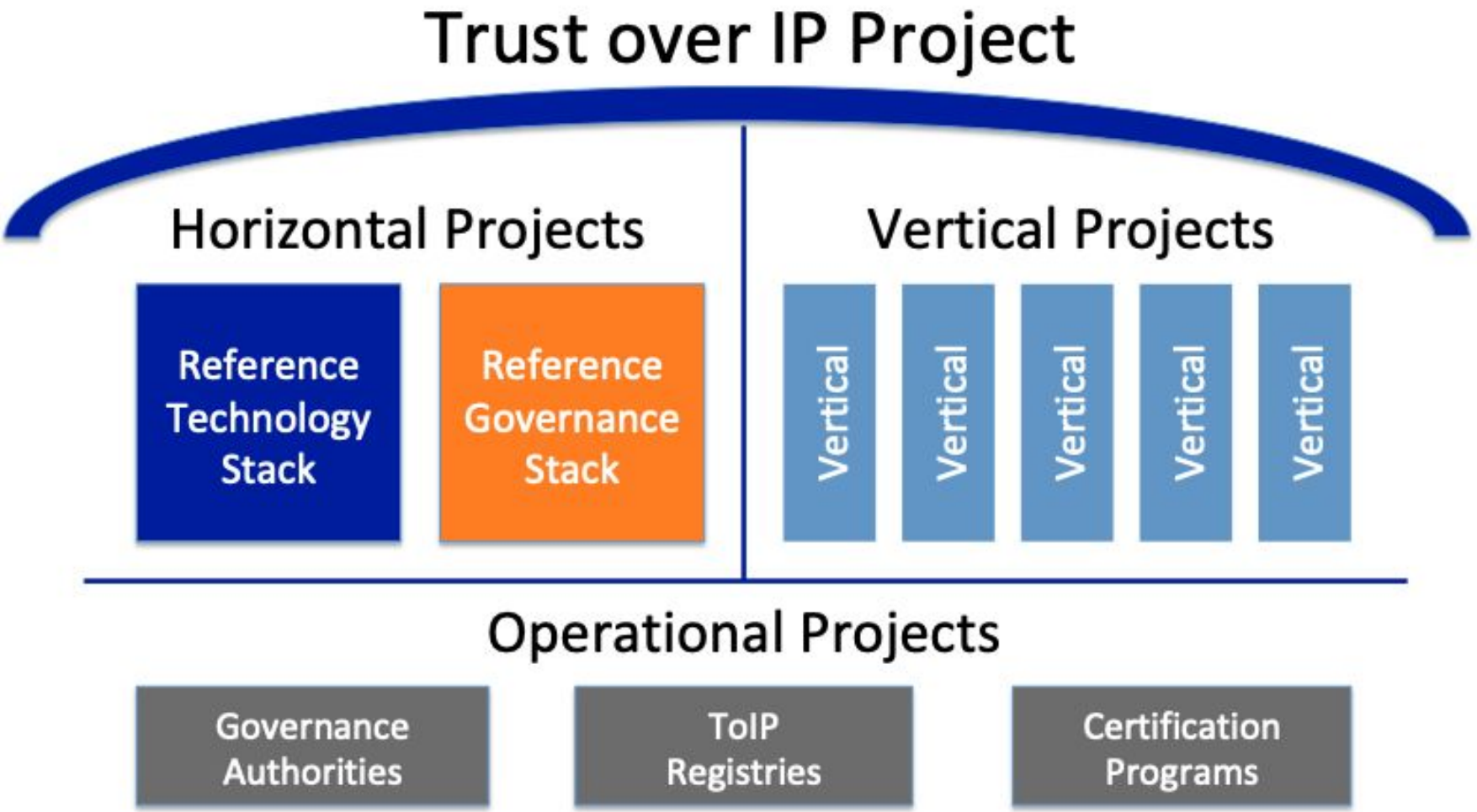
Annoncreds 2.0

Replace Tails Files and Accumulators with Merkle Trees

https://github.com/hyperledger/ursa-docs/tree/master/specs/anoncreds2

Governance Frameworks




Trust over IP Project
Horizontal Projects
Reference Technology Stack
Reference Governance Stack
Vertical Projects
Vertical
Vertical
Vertical
Vertical
Vertical
Operational Projects
Governance Authorities
ToIP Registries
Certification Programs

Discussion

Appendix

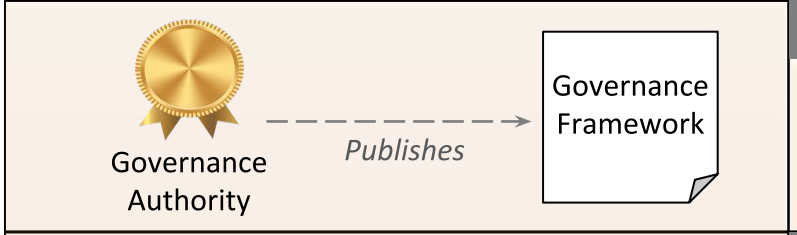
Human Trust

Technical Trust

Trust over IP Technology Stack

Trust over IP Governance Stack

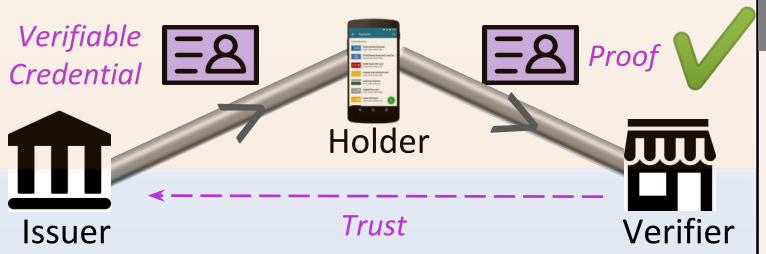
Layer Four: Governance Frameworks



Metasystem Governance Frameworks

Governance Authority | Auditor | Auditor Accreditor

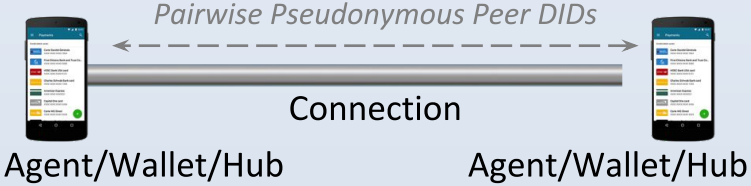
Layer Three: Credential Exchange



Credential Governance Frameworks

Trust Anchor | Credential Registry | Insurer

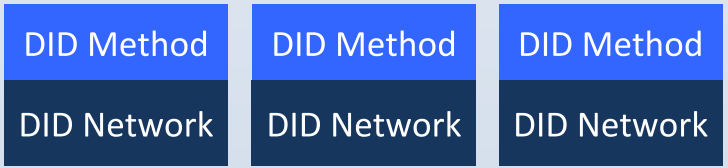
Layer Two: DIDComm



Provider Governance Frameworks

Hardware Developer | Software Developer | Agency

Layer One: DID Networks (Public Ledgers)



Network Governance Frameworks

Transaction Author | Transaction Endorser | Steward