Cheesecake Labs

Crafting Digital Excellence,
Byte by Byte.

Latin America's #1 software outsourcing & staffing company.
With 300+ products delivered, we lead in Mobile, Web, and Blockchain innovations.

MoneyGram   Stellar   PEPSICO   tapcart   Singularity UNIVERSITY

01 Interoperability

02 Hyperledger Cacti

03 Stellar Connector

04 RWA Use Case

05 Q&A Session

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Doug and Fifo,
from Cheesecake Labs.

For over a decade we help scale up startups and enterprises in the US, accelerate digital innovation, with nearshore software design & development for Web2 and Web3, without compromising quality and cost-effective.

We are Stellar Integration Partner and Hyperledger Foundation Member.

We have delivered for:

- Hyperledger
- Stellar
- Cardano
- Ethereum
- Polygon
- Solana

And are experienced with:

- Blockchain Consulting & Development
- Asset Tokenization
- Smart Contracts
- Decentralized Finance (DeFi)
- Digital Wallets

EXCLUSIVE ACCESS

MoneyGram.

NON-CUSTODIAL WALLET

Meridian 2023 participants have exclusive access to a beta version of MoneyGram's non-custodial wallet.

The blockchain ecosystem is **FRAGMENTED**.
And on a user perspective is **LIMITING** its potential.

Each network have its <u>ETHOS</u> to handle security, privacy, and governance.

Each network have its <u>ETHOS</u> to handle security, privacy, and governance.

~~"a single chain to rule them all"~~

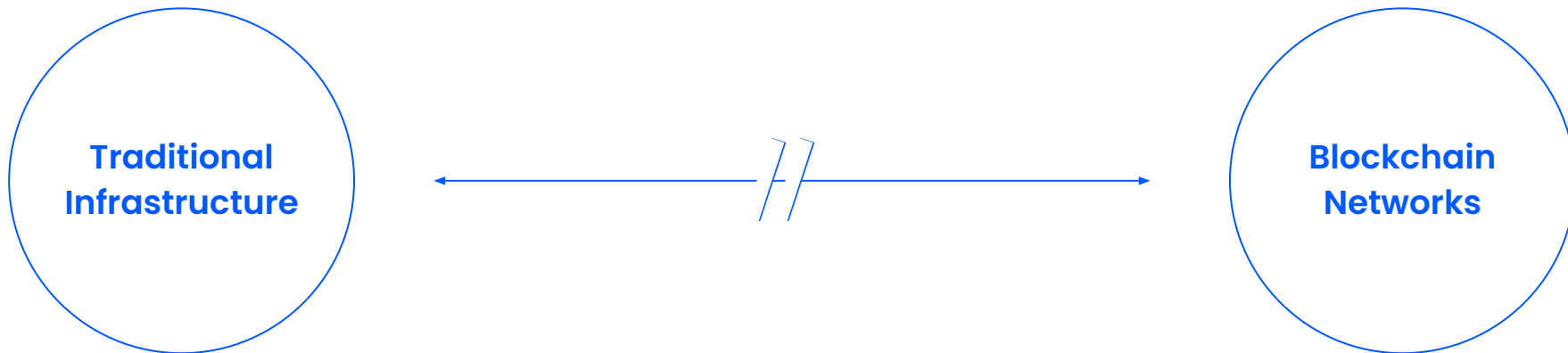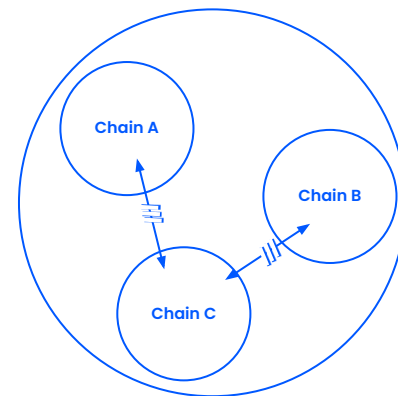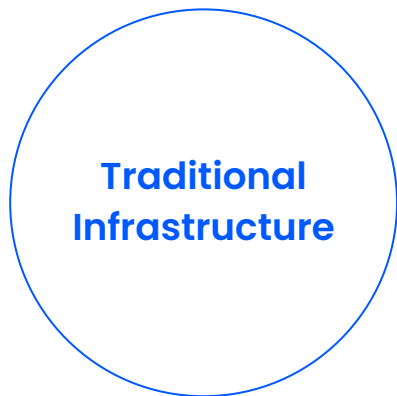**We believe that the ecosystem should continue with its <u>DIVERSITY</u>.**

SILOS

~~SILOS~~

CONNECTIONS

~~SILOS~~

CONNECTIONS

EXPANDING CAPABILITIES

It's hard enough that in many cases there is no way to INTEGRATE to the traditional world.
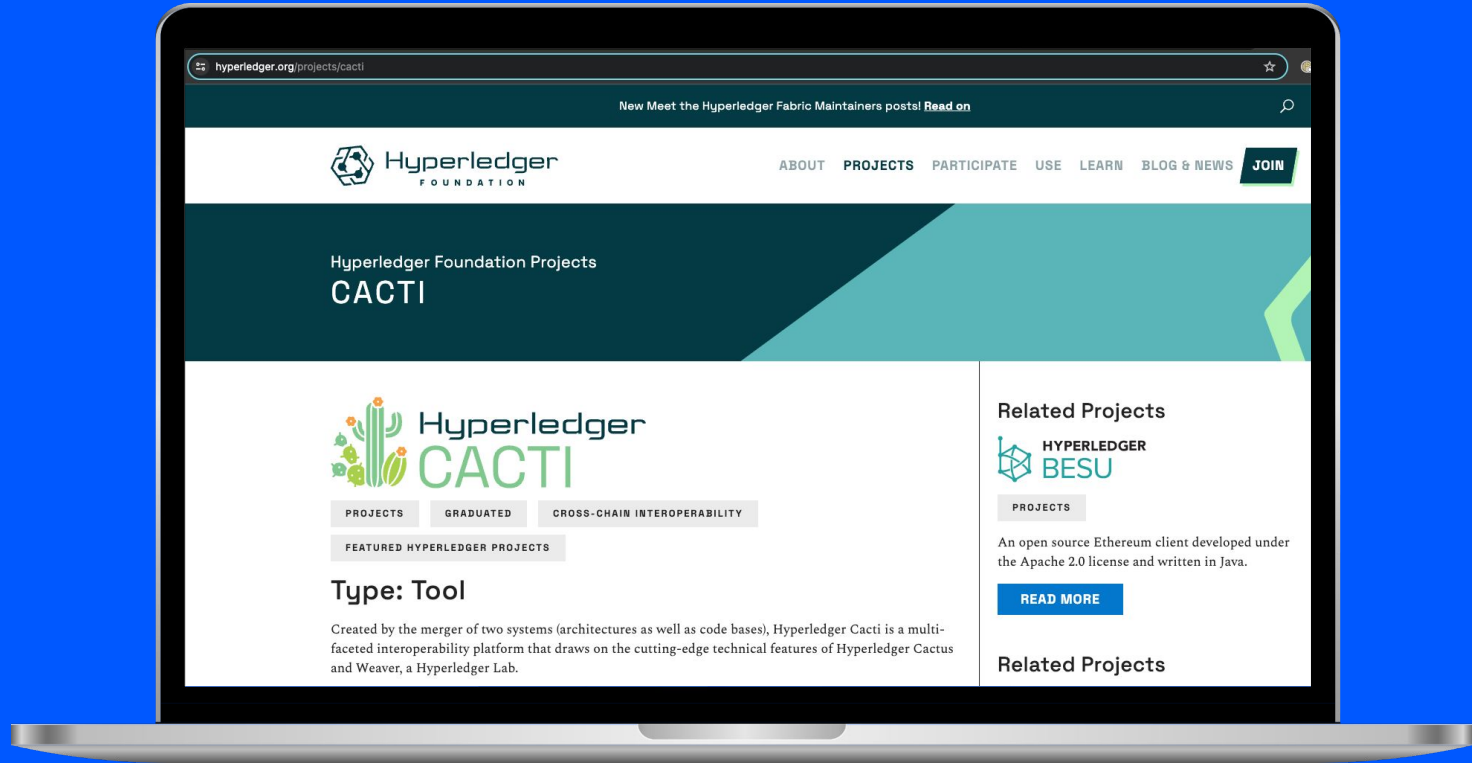
Traditional Infrastructure

Blockchain Networks

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We should not <u>ALLOW</u> the same to happen in the digital space.

Traditional Infrastructure

Chain A

Chain B

Chain C

INTEROPERABILITY should not
be a buzzword but a **REALITY**.

CACTI

hyperledger.org/projects/cacti

New Meet the Hyperledger Fabric Maintainers posts! **Read on**

Hyperledger FOUNDATION

ABOUT   PROJECTS   PARTICIPATE   USE   LEARN   BLOG & NEWS   JOIN

Hyperledger Foundation Projects
CACTI

Hyperledger CACTI

PROJECTS   GRADUATED   CROSS-CHAIN INTEROPERABILITY

FEATURED HYPERLEDGER PROJECTS

Type: Tool

Created by the merger of two systems (architectures as well as code bases), Hyperledger Cacti is a multi-faceted interoperability platform that draws on the cutting-edge technical features of Hyperledger Cactus and Weaver, a Hyperledger Lab.

Related Projects

HYPERLEDGER BESU

PROJECTS

An open source Ethereum client developed under the Apache 2.0 license and written in Java.

READ MORE

Related Projects

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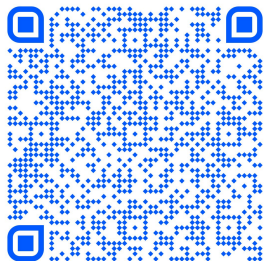
It's a interoperability framework built to link blockchain technologies and run transactions spanning multiple networks.

By abstracting the application layer from the DLT protocol, it allows DLT networks to interact with atomic transactions and state commits.

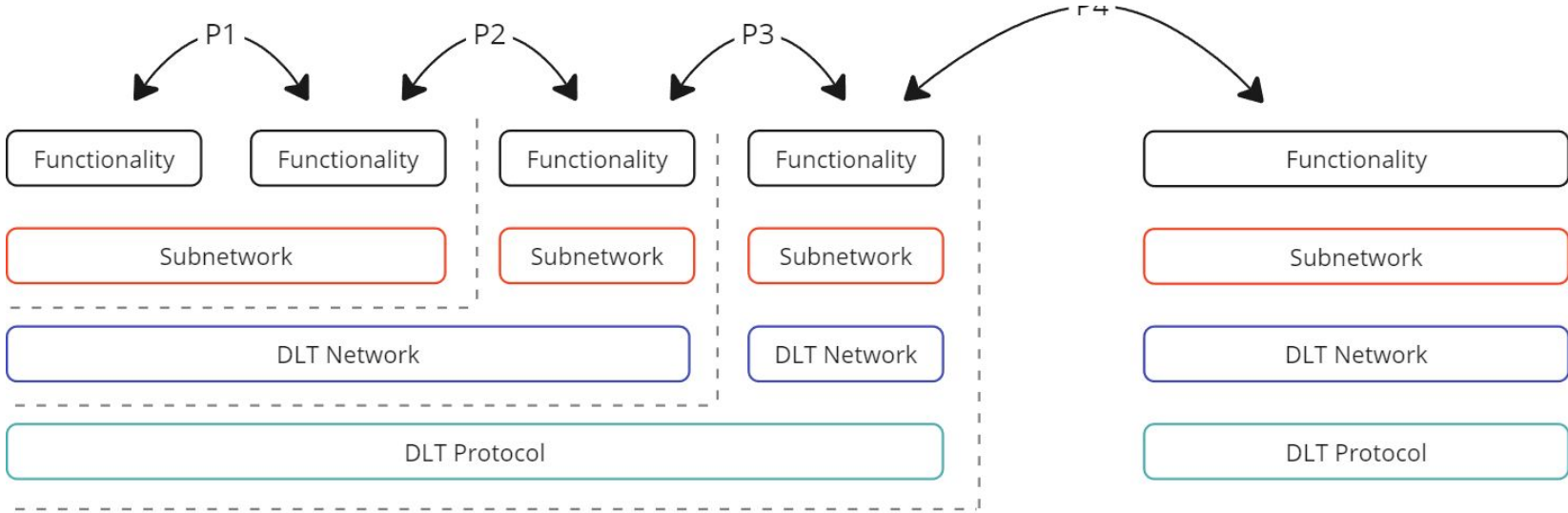# Hyperledger CACTI

PROJECTS   GRADUATED   CROSS-CHAIN INTEROPERABILITY

FEATURED HYPERLEDGER PROJECTS

BLOG | HYPERLEDGER CACTI | HYPERLEDGER CACTUS

INTRODUCING HYPERLEDGER CACTI, A MULTI-FACETED PLUGGABLE INTEROPERABILITY FRAMEWORK
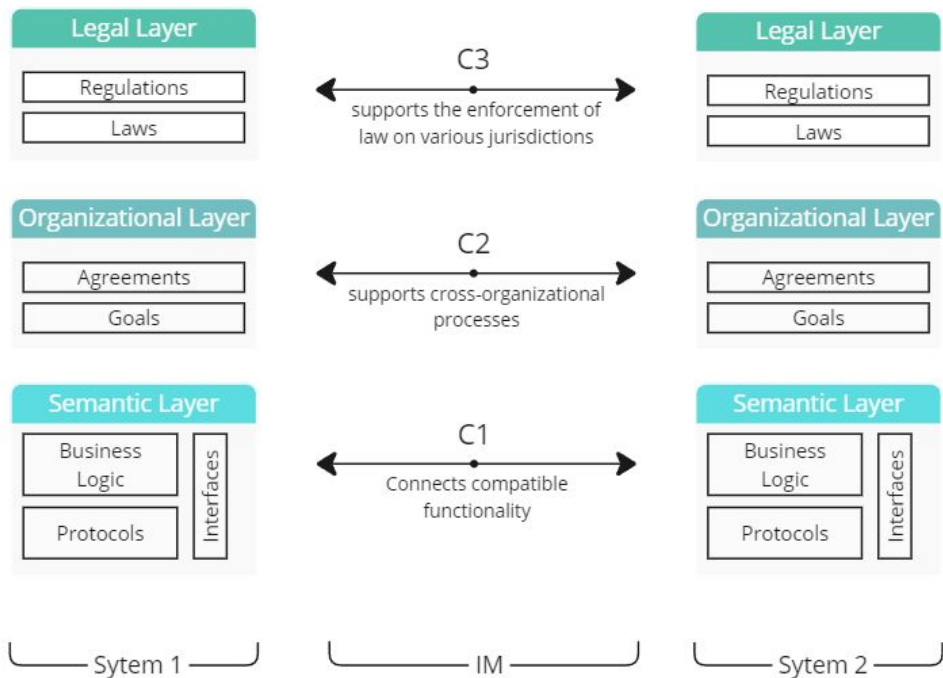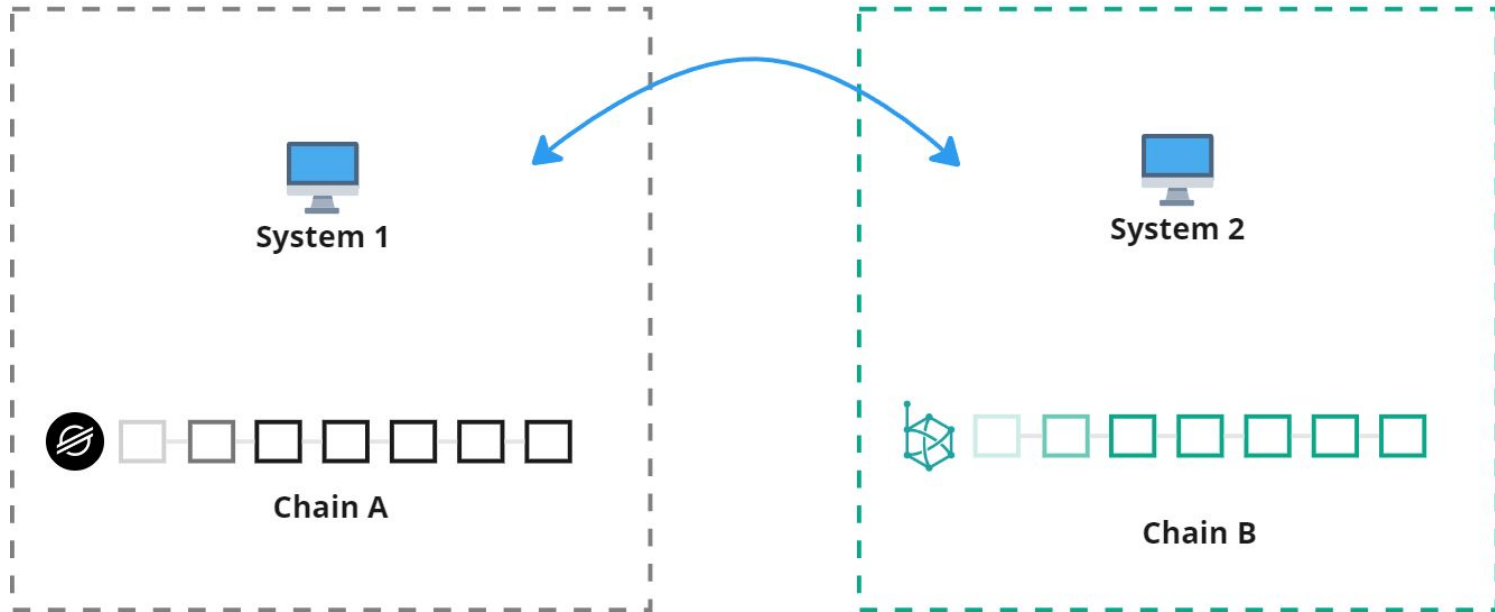
HYPERLEDGER | NOV 7, 2022

P1

P2

P3

P4

| Functionality | Functionality | Functionality | Functionality | Functionality |

| Subnetwork | | Subnetwork | Subnetwork | Subnetwork |

| DLT Network | | | DLT Network | DLT Network |

| DLT Protocol | | | | DLT Protocol |

The higher the C-level, the more standardized and mature the ecosystem

Legal Layer

Regulations

Laws

C3

supports the enforcement of law on various jurisdictions

Legal Layer

Regulations

Laws

Organizational Layer

Agreements

Goals

C2

supports cross-organizational processes

Organizational Layer

Agreements

Goals

Semantic Layer

Business Logic

Protocols

Interfaces

C1

Connects compatible functionality

Semantic Layer

Business Logic

Protocols

Interfaces

Sytem 1

IM

Sytem 2

Potentiality: P4
Compatibility: C3

System 1

Chain A

System 2

Chain B

Source Blockchain

```
10011
00111
11010
```

Interoperability Mode

```
10011
00111
11010
```

Target Blockchain

```
10011
00111
11010
```
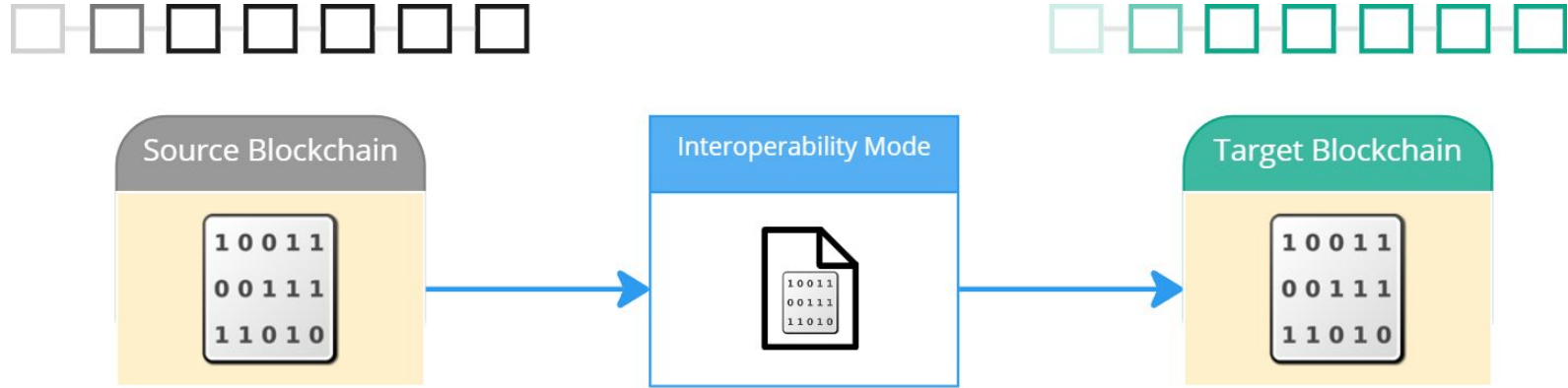
Data is copied from one DLT to another, with an optional intermediate processing step. For example, copying price information from one DLT into another. Data can be copied from one ledger to the other (typically no cross-chain conditions are implied in data transfers)
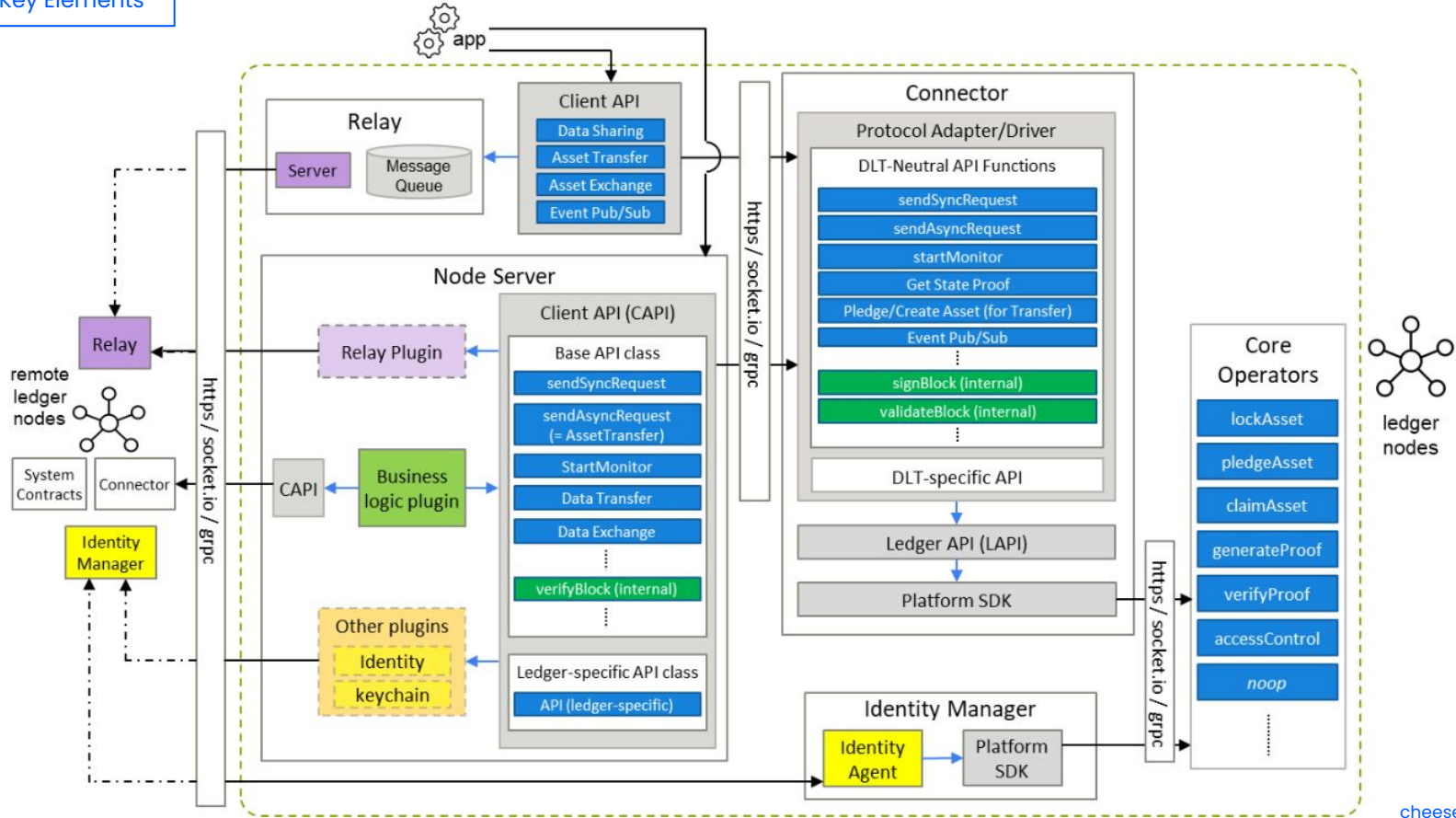
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Source Blockchain

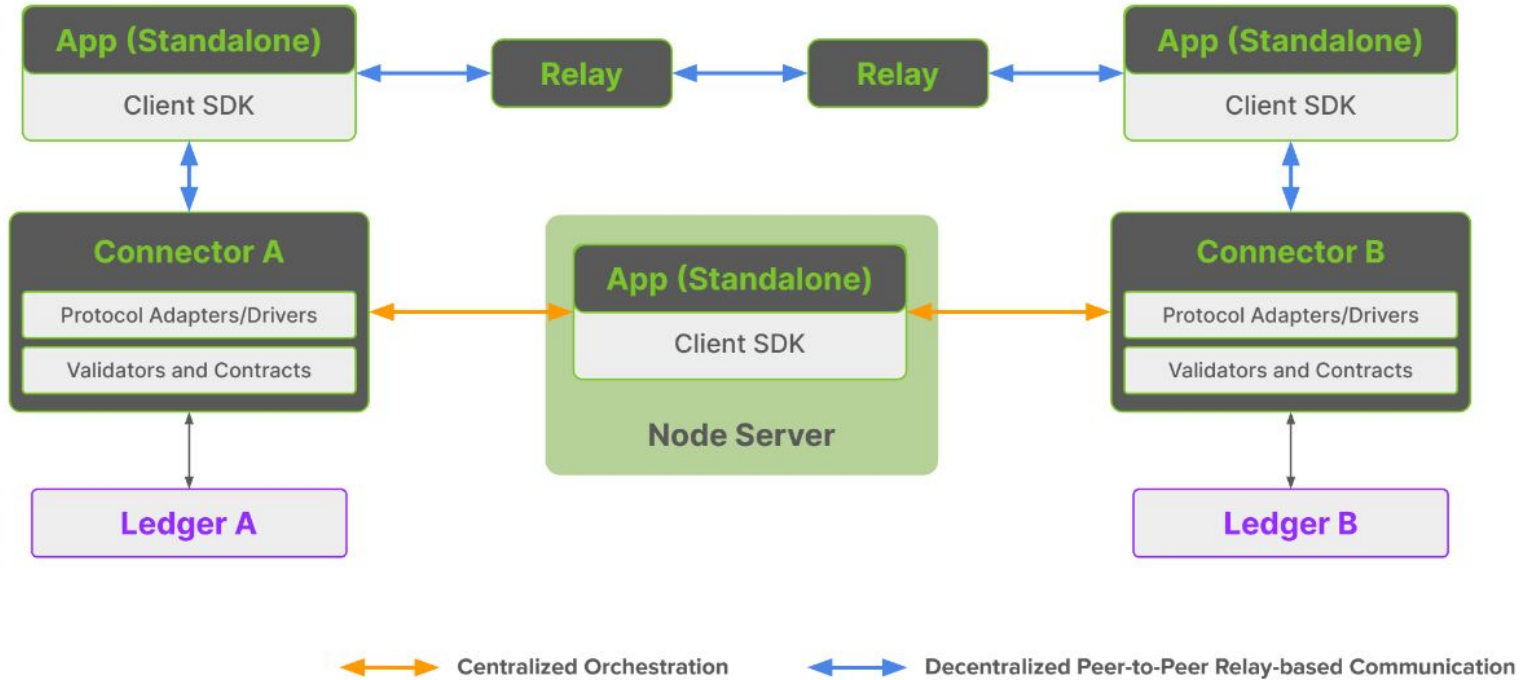**Interoperability Mode**

Target Blockchain
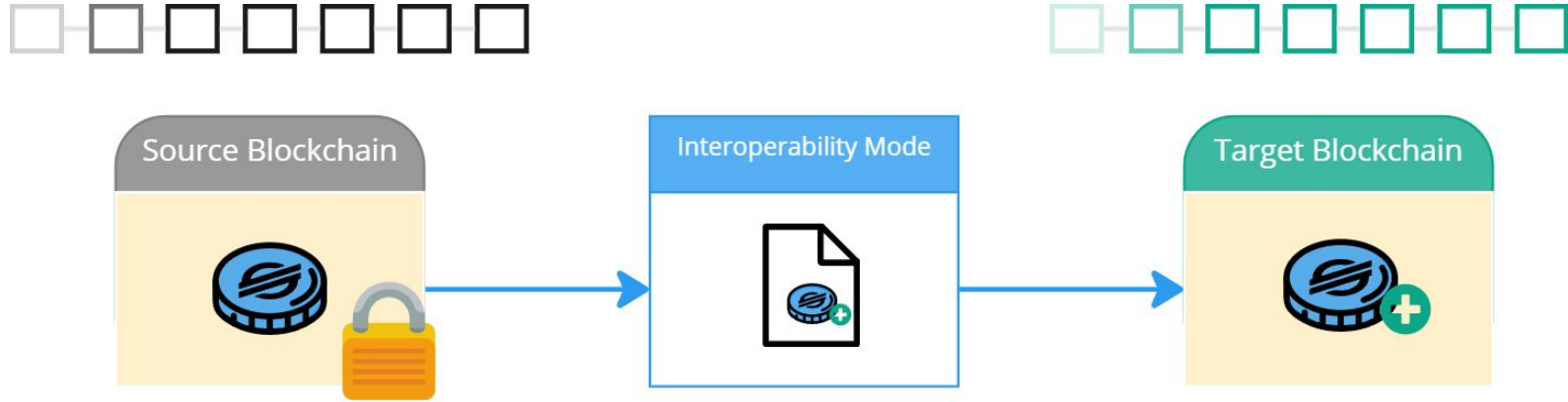
Unilateral or bilateral asset transfers. Assets are transferred from one DLT network to another (implies burning or locking the asset on the source DLT network). For example, locking Bitcoin to a multi-signature address on the bitcoin blockchain and minting a representative asset on the Ethereum blockchain.

Blockchain A

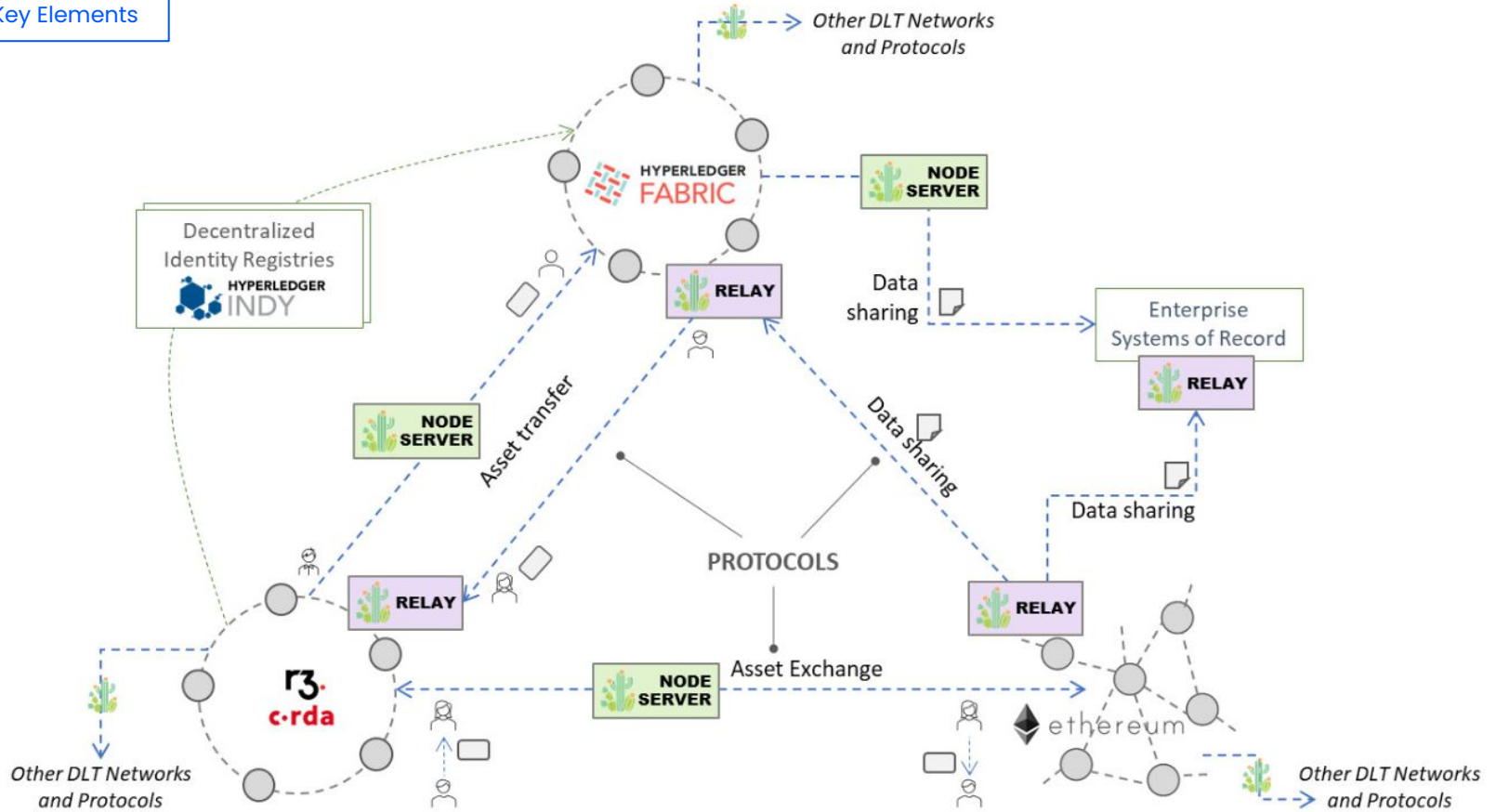**Interoperability Mode**

Blockchain B
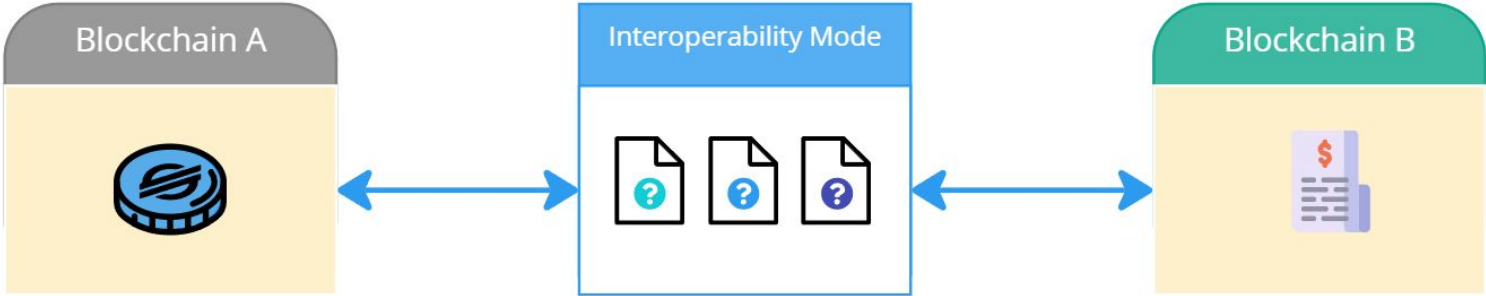
Atomic asset transfers. Assets are exchanged in their respective DLT network, i.e., no transfers across DLT networks occur. Participants need to be present in both chains for this exchange to happen. For example, using hash time lock contracts.

Relay
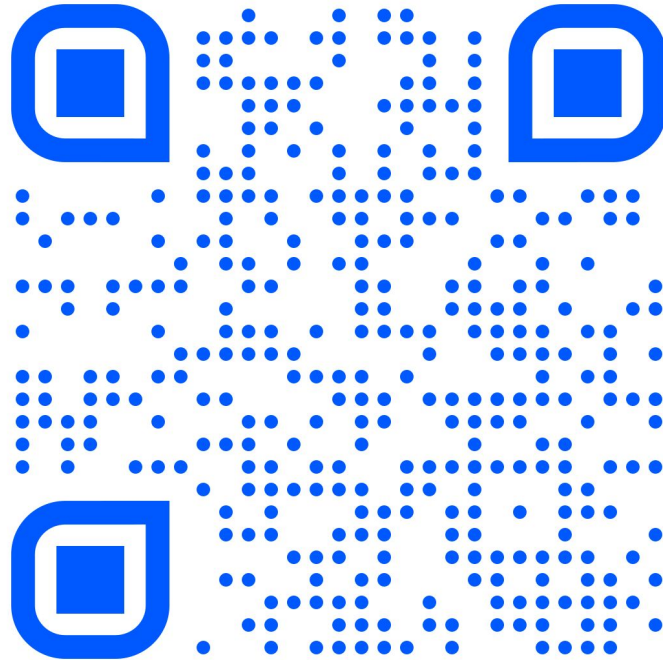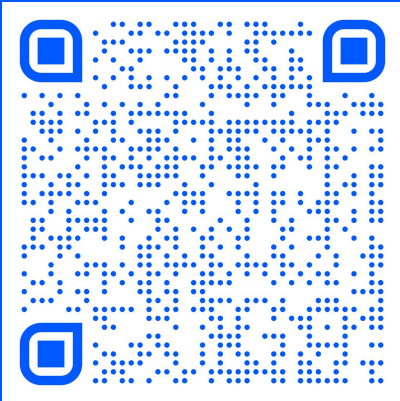- Server
- Message Queue

Client API
- Data Sharing
- Asset Transfer
- Asset Exchange
- Event Pub/Sub

Connector

Protocol Adapter/Driver

DLT-Neutral API Functions
- sendSyncRequest
- sendAsyncRequest
- startMonitor
- Get State Proof
- Pledge/Create Asset (for Transfer)
- Event Pub/Sub
- signBlock (internal)
- validateBlock (internal)

DLT-specific API

Ledger API (LAPI)

Platform SDK

Node Server

Client API (CAPI)

Base API class
- sendSyncRequest
- sendAsyncRequest (= AssetTransfer)
- StartMonitor
- Data Transfer
- Data Exchange
- verifyBlock (internal)

Relay Plugin

CAPI

Business logic plugin

Other plugins
- Identity
- keychain

Ledger-specific API class
- API (ledger-specific)

Relay

remote ledger nodes

System Contracts | Connector

Identity Manager

Identity Manager
- Identity Agent
- Platform SDK

Core Operators
- lockAsset
- pledgeAsset
- claimAsset
- generateProof
- verifyProof
- accessControl
- noop

ledger nodes

https / socket.io / grpc

https / socket.io / grpc

https / socket.io / grpc

app

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App (Standalone)
Client SDK

Relay **Relay**

App (Standalone)
Client SDK

Connector A
Protocol Adapters/Drivers
Validators and Contracts

App (Standalone)
Client SDK
Node Server

Connector B
Protocol Adapters/Drivers
Validators and Contracts

Ledger A

Ledger B

Centralized Orchestration   Decentralized Peer-to-Peer Relay-based Communication

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Other DLT Networks and Protocols

HYPERLEDGER FABRIC

NODE SERVER

Decentralized Identity Registries HYPERLEDGER INDY

RELAY

Data sharing

Enterprise Systems of Record

RELAY

NODE SERVER

Asset transfer

Data sharing

Data sharing

RELAY

PROTOCOLS

RELAY

r3. c·rda

NODE SERVER

Asset Exchange

ethereum

Other DLT Networks and Protocols

Other DLT Networks and Protocols

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@hyperledger/cacti-plugin-ledger-connector-stellar

This plugin provides `Cacti` a way to interact with Stellar networks. Using this we can perform:

- Deploy Smart-contracts over the network.
- Build and sign transactions. (WIP)
- Invoke smart-contract functions that we have deployed on the network. (WIP)

Summary

- Getting Started
- Architecture
- Usage
- Prometheus Exporter
- Runing the tests
- Built With
- Contributing
- License
- Acknowledgments

Getting Started

Clone the git repository on your local machine. Follow these instructions that will get you a copy of the project up and running on your local

First version bridging assets between

Stellar Soroban and Hyperledger Besu.
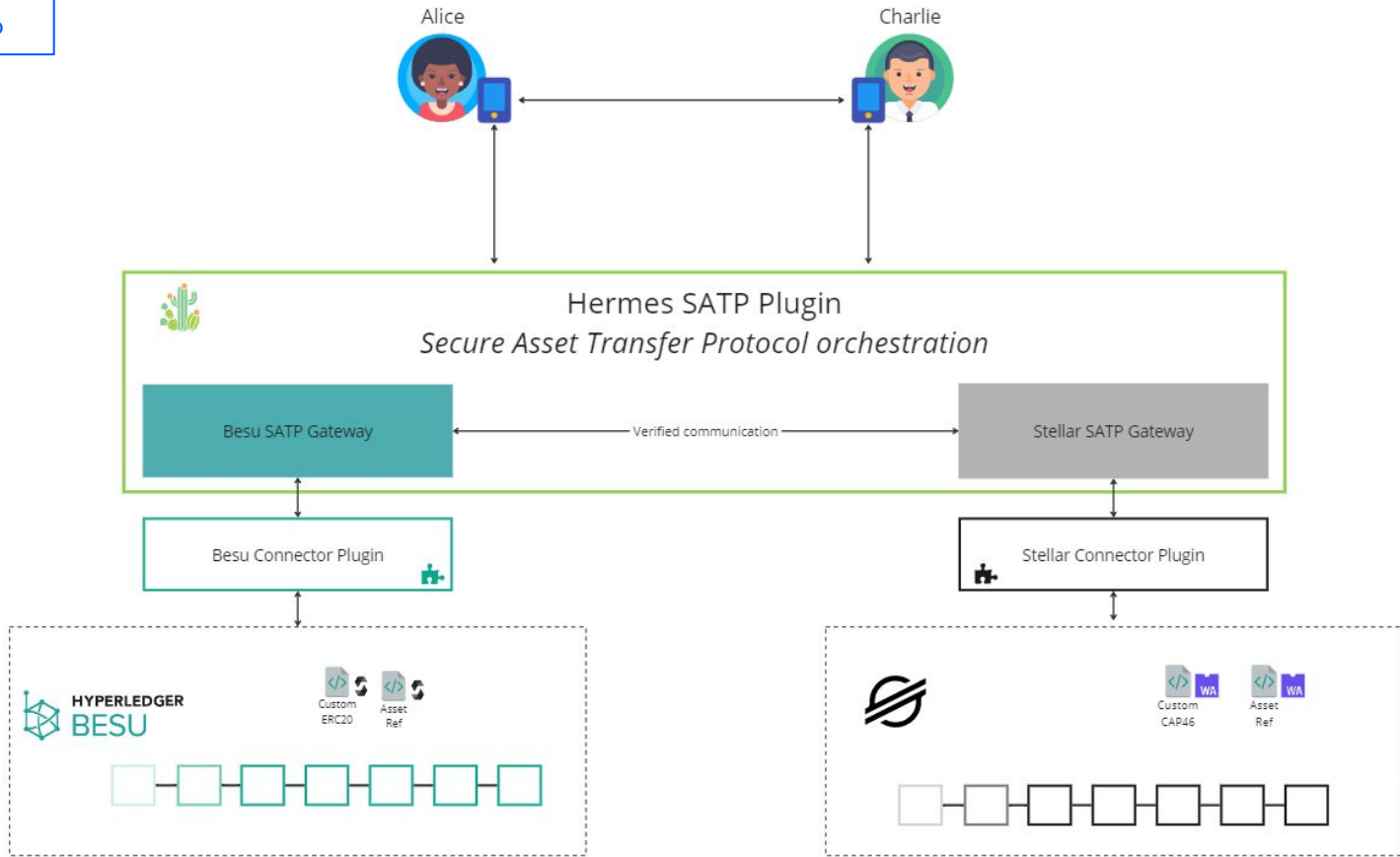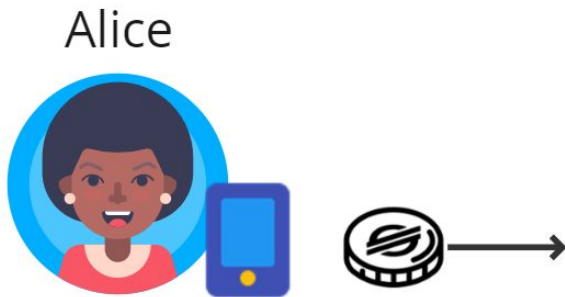
1 Alice sends the funds to the bridge service account in Stellar.
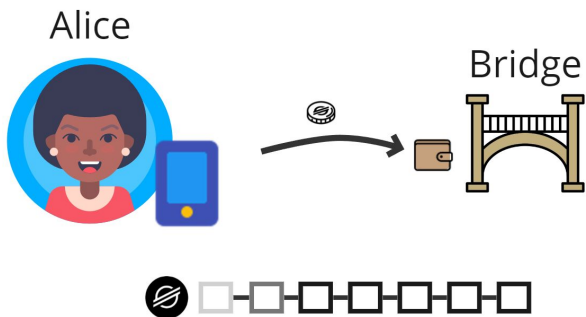
Alice

Bridge

2 Powered by the cacti infrastructure, the bridge locks the funds as escrow and generates a unique reference.

Bridge

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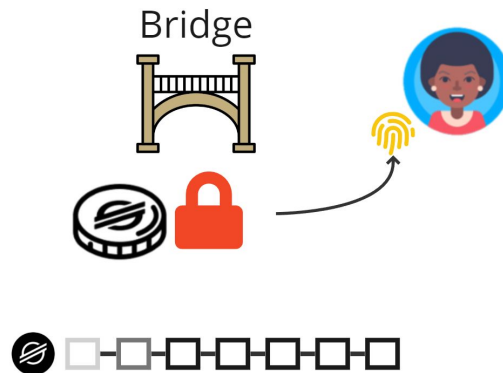
3 At any moment, Alice signals that she wants to move the escrowed funds to her Besu account.

4 While the collateral is safely stored in the Stellar network, the bridge issues a representation of the funds in the Besu network and send to Alice

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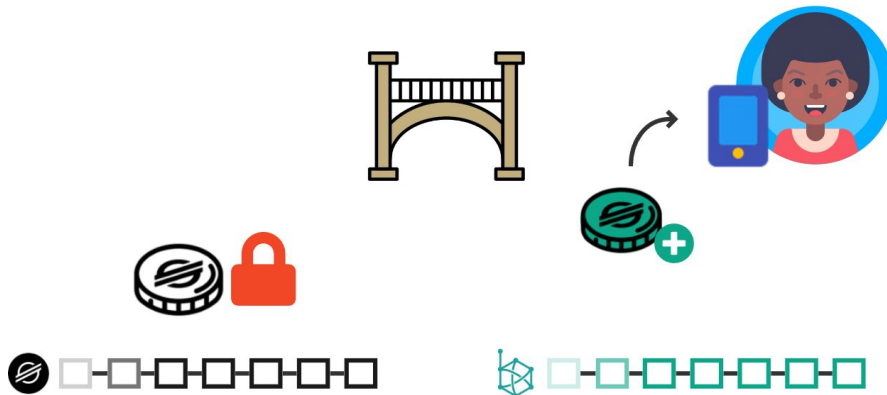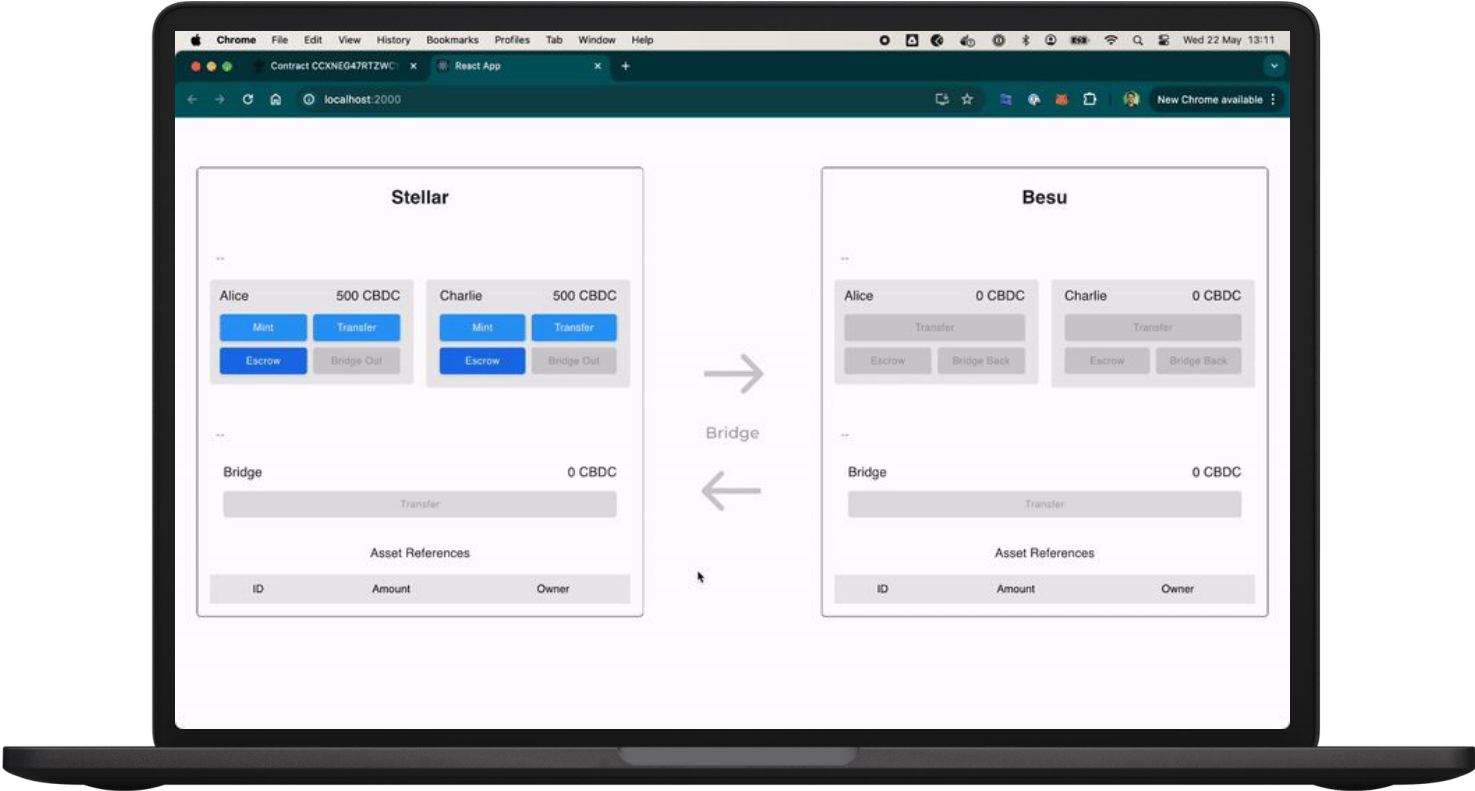
5 Alice then sends the Besu tokens to her friend Charlie.
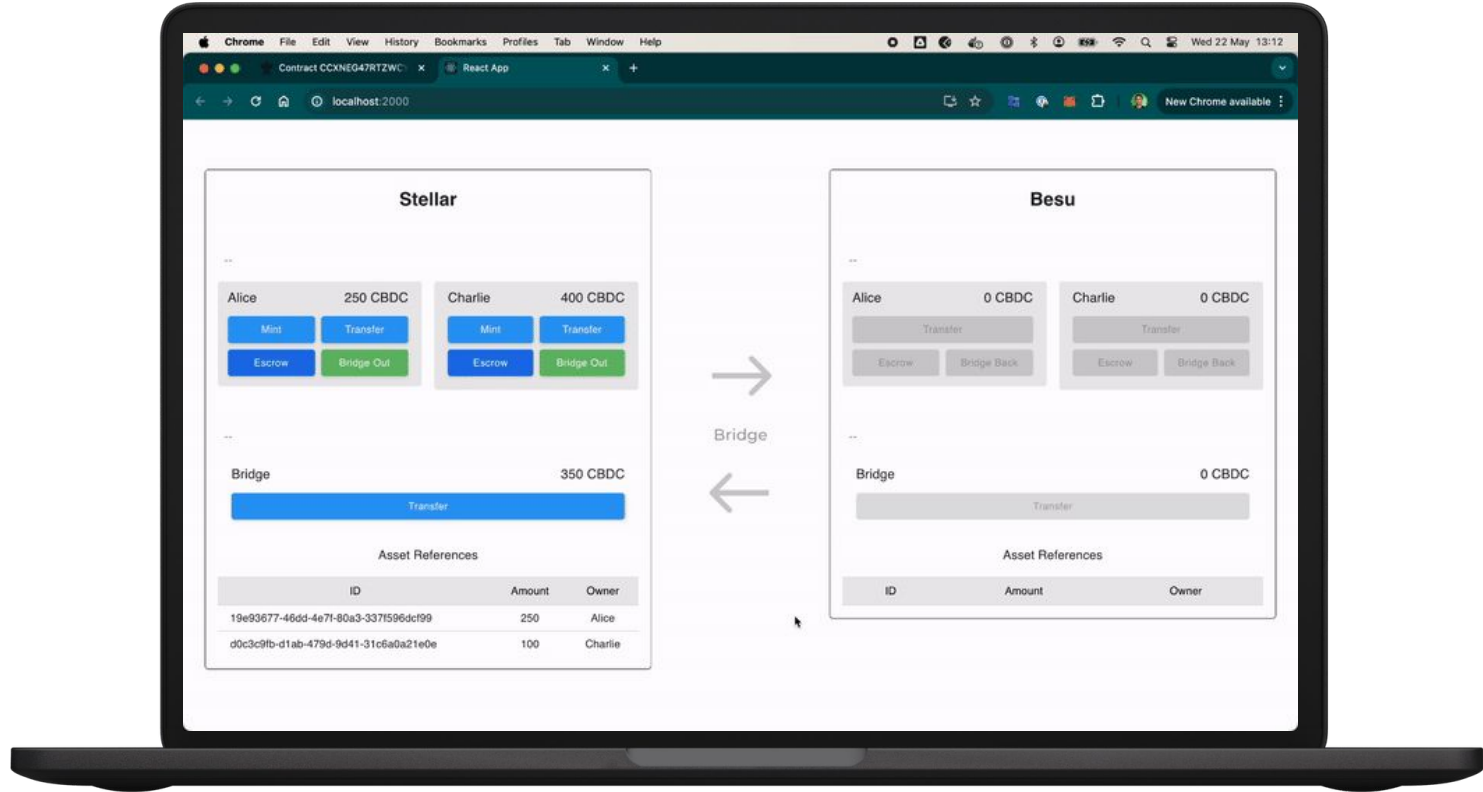
Alice
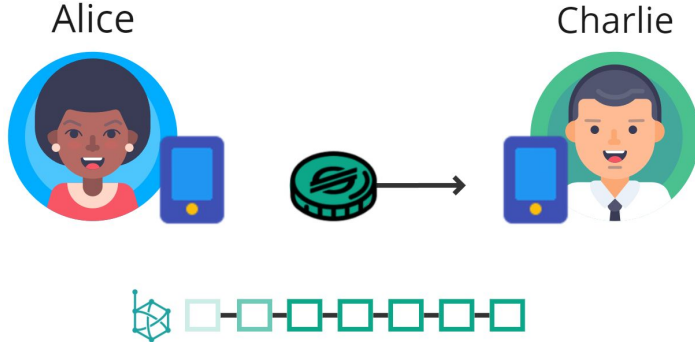
Charlie

6 While the representation token exists in the Besu network, the escrowed amount will remain locked in Stellar. Charlie or any other account, can send the tokens back to the bridge account to be destroyed, releasing the escrowed amount to their account in Stellar
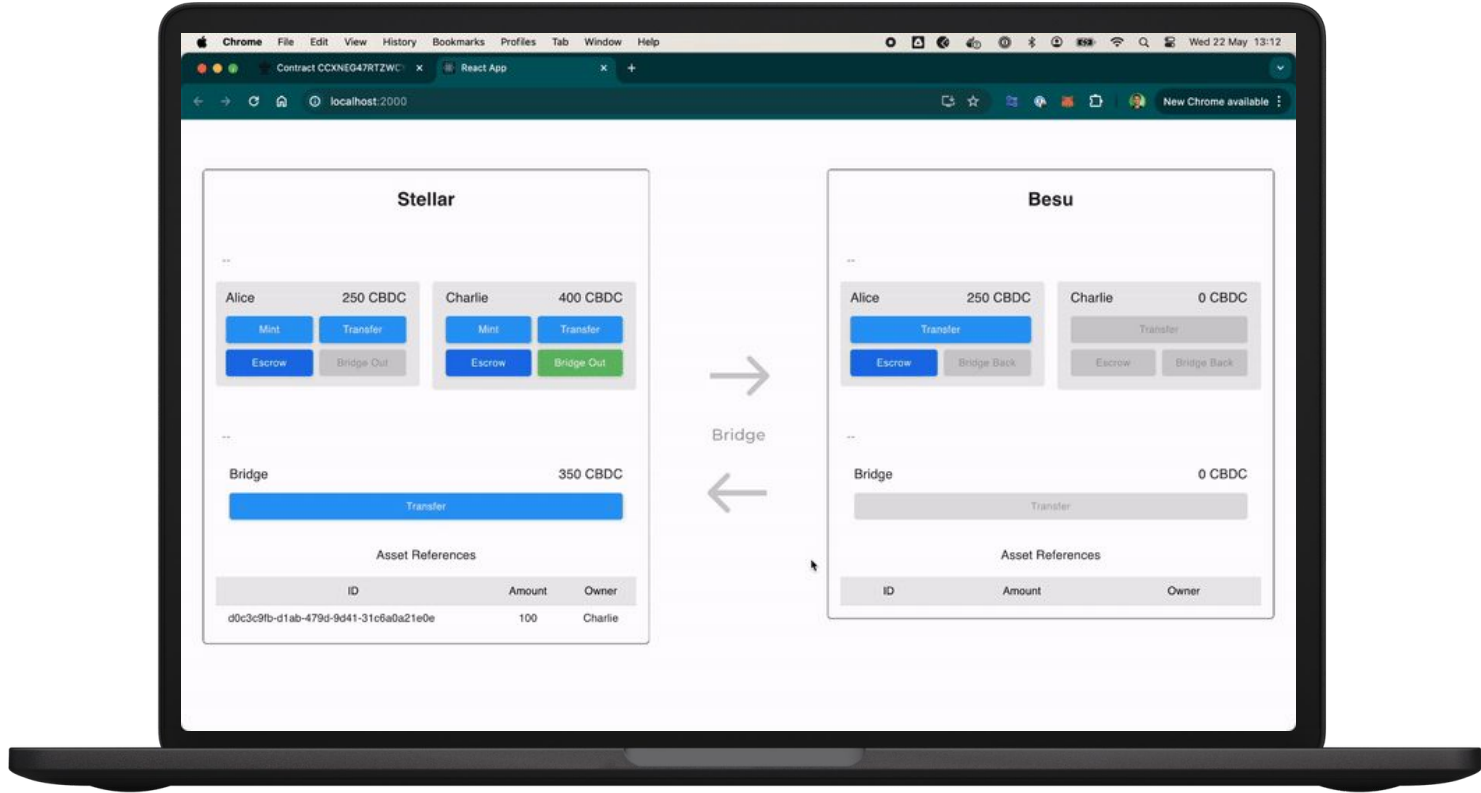
Charlie
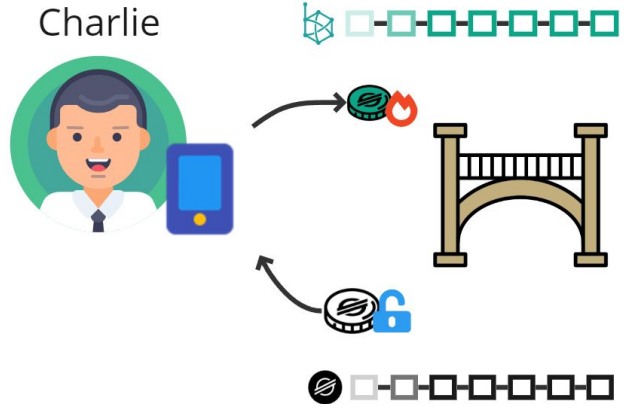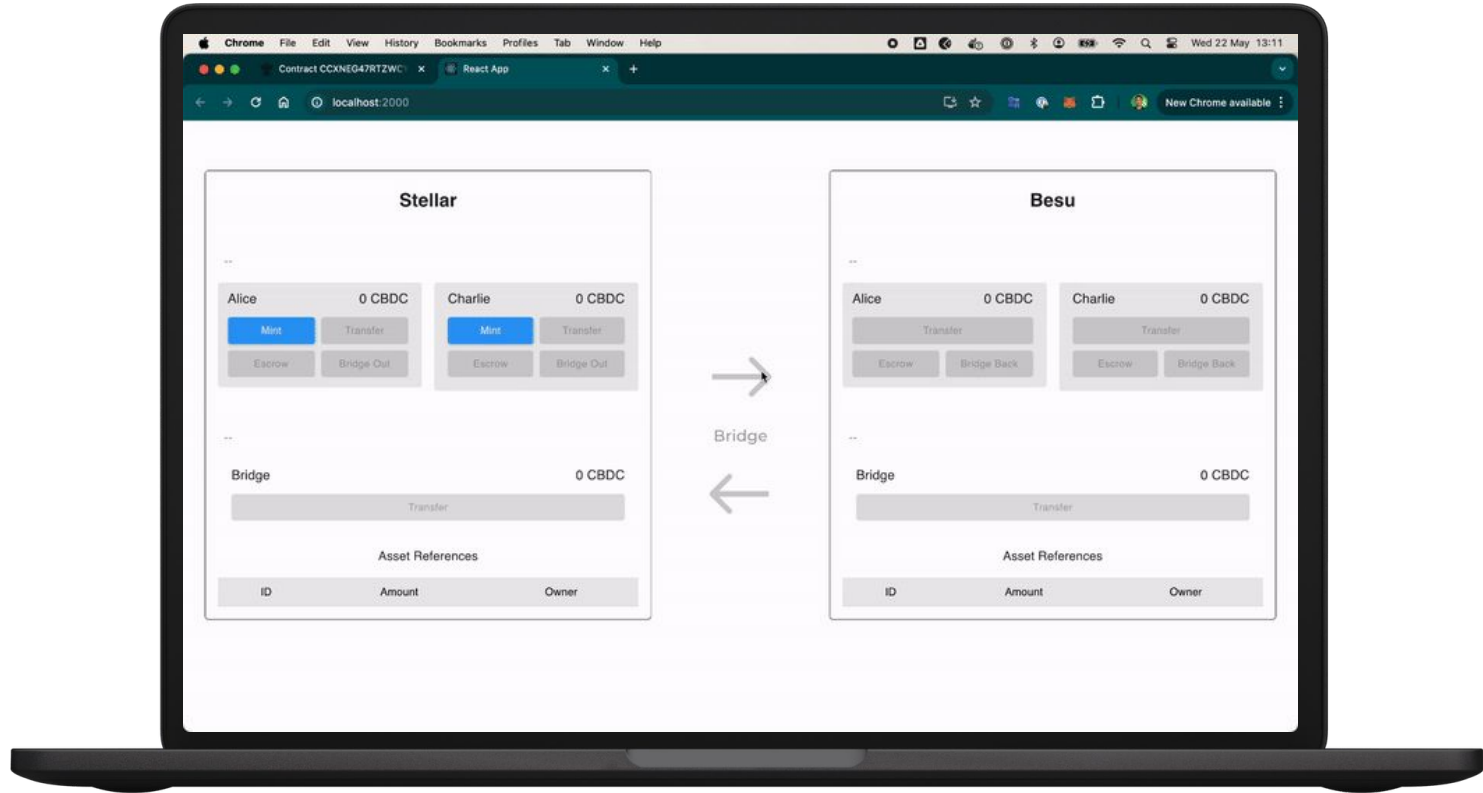
More to come on:

Improving SATP implementation Supporting Stellar Classic

Got a question?
Please, feel free to ask.

Thank you!

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