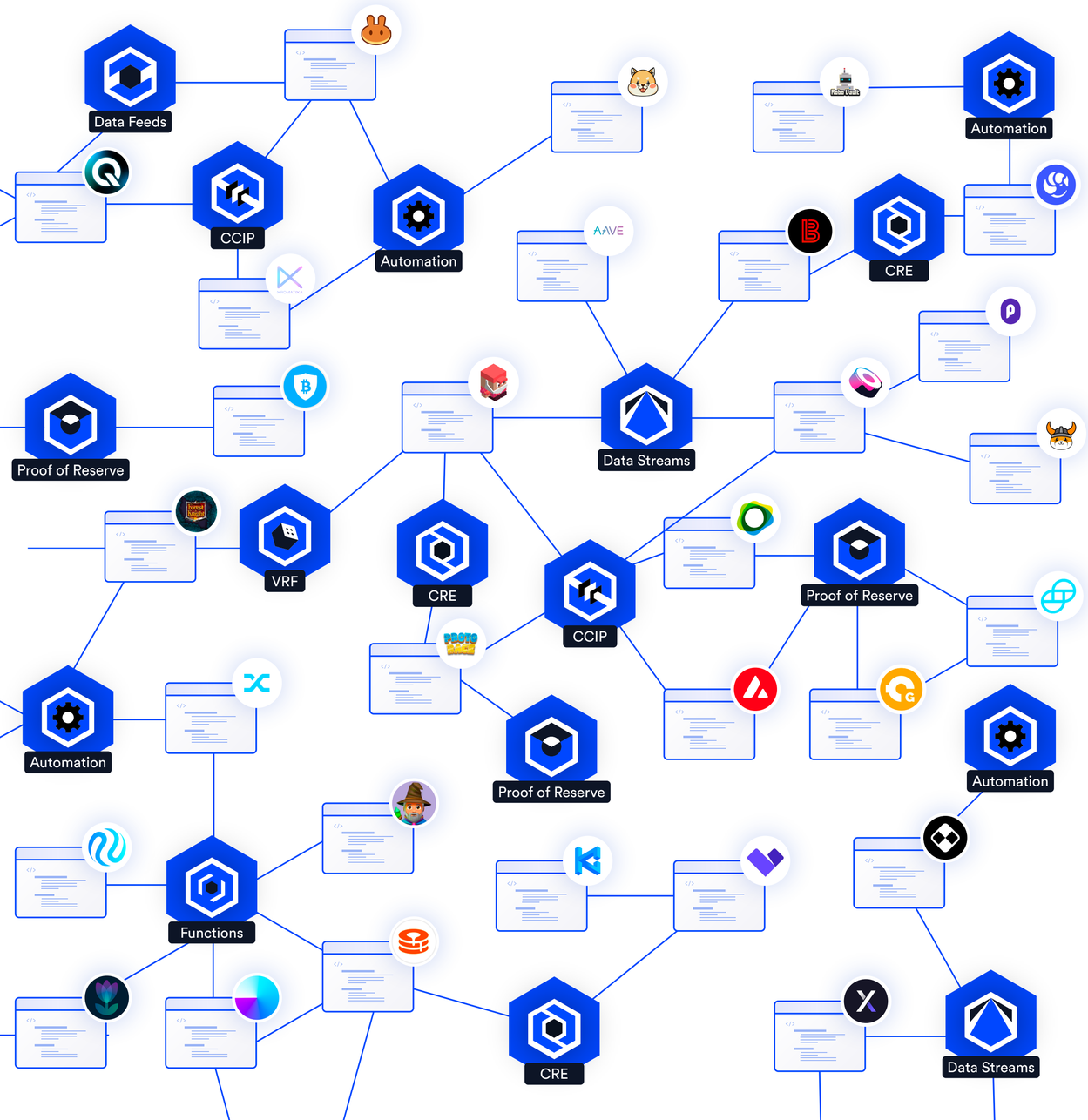
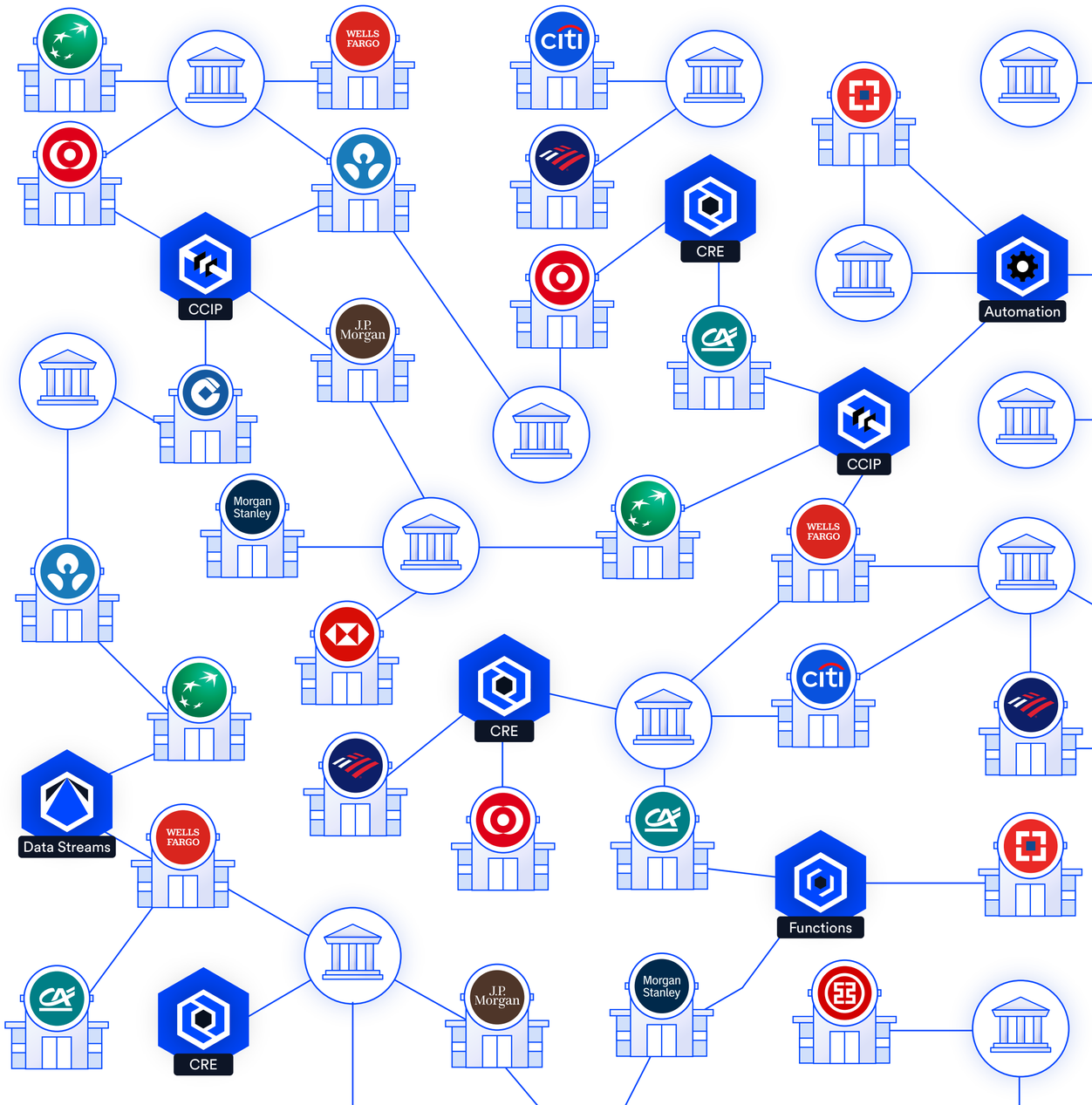
Chainlink

SmartCon 2024

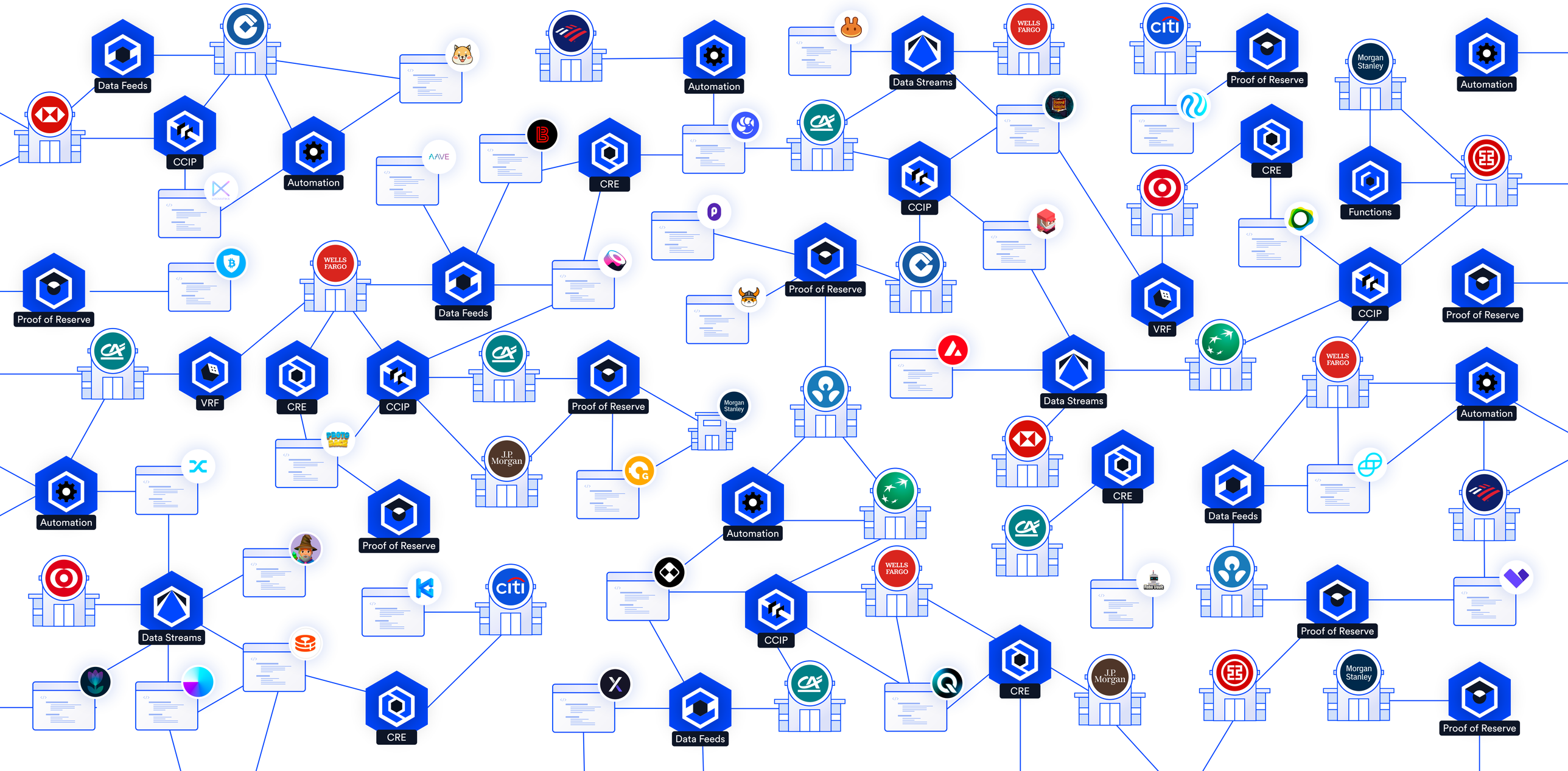
Web3 on Chainlink Standards



TradFi on Chainlink Standards



Merging These Internets of Contracts Using One Set of Standards Is Our Goal

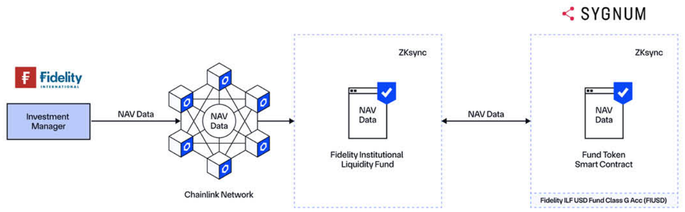


Chainlink Is Collaborating With the Leading Financial Institutions

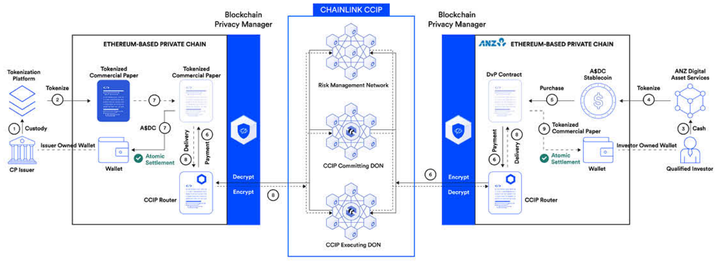
Institutional Usage is Live and More Going Towards Production

Fidelity INTERNATIONAL

SYGNUM

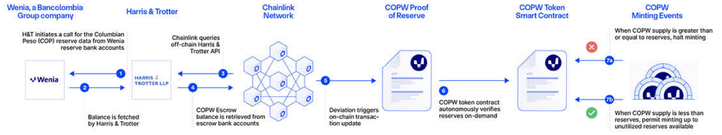


ANZ



Grupo Bancolombia

Wenia



Swift Interoperability

Swift

DTCC

euroclear

clearstream

SDX a SIX company

BNY MELLON

citi

BNP PARIBAS

ANZ

DTCC SmartNAV

DTCC

Participating Firms

J.P.Morgan

STATE STREET.

BNY MELLON

FRANKLIN TEMPLETON

Edward Jones

usbank

MFS Investment Management

Invesco

AMERICAN TRUST CUSTODY

American Century Investments®

Chainlink AI Oracles

Financial And Market Infrastructures

euroclear

Swift

Asset Managers

FRANKLIN TEMPLETON

WELLINGTON MANAGEMENT®

Banks And Custodians

UBS

caceis INVESTOR SERVICES

Vontobel

SYGNUM

Chainlink Runtime Environment (CRE)

Cryptographically Provable Data

Market Data Oracle Networks

Proof of Reserve Oracle Networks

Identity and Other Data Oracle Networks

Cryptographically Trust-Minimized Compute

Verifiable Randomness Function (VRF)

Automation Oracle Networks

Functions Oracle Networks

Cross-Chain Value

CCIP: Cross-Chain Interoperability Protocol

Decentralized Oracle Networks

T-Systems · swisscom · coinbase · Staked · SIMPLY VC · LinkPool · 01 NO.DE · LinkRiver · Stakin · VALIDATION CAPITAL · Stake Systems · Mycelium Node · ZTAKE · Fiews.io · BLOCKSIZE CAPITAL · ChainLayer · NORTHWEST NODES · kyber network · Harvest · Prophet · + hundreds more

DeFi Contracts

CeFi Applications

Real-World Asset Proofs and Wrapped Assets

CGT · WBTC · BTCB · eFIL · AAVE · GEMINI · COMPOUND · Ava Labs · PAXOS · BitGo · archblock · Swingby · COINREST

New Hybrid Smart Contracts

THALES

Web3 Contracts

Web2 Applications

DOLCE & GABBANA · bmm · aws · Lemonade

DeFi Contracts

CeFi Applications

New Trust-Minimized Applications

Cross-Chain Smart Contracts

OP · BORED BREAKFAST CLUB · + hundreds more

OPTIMISM · polygon · BNB CHAIN · SOLANA · Gnosis Chain · Moonriver · CELO · OKEX · PLASM · HYPERLEDGER · CONFLUX · Harmony · rsk · Algorand · Moonbeam · ARBITRUM · BASE · AVALANCHE · STARKNET · zkSync · Polkadot · fantom · COSMOS · Edgeware · Klaytn · Kava · METIS · Hedera Hashgraph · OASIS · + hundreds of blockchains

CROSS-CHAIN INTEROPERABILITY PROTOCOL

CROSS-CHAIN INTEROPERABILITY PROTOCOL

CROSS-CHAIN INTEROPERABILITY PROTOCOL

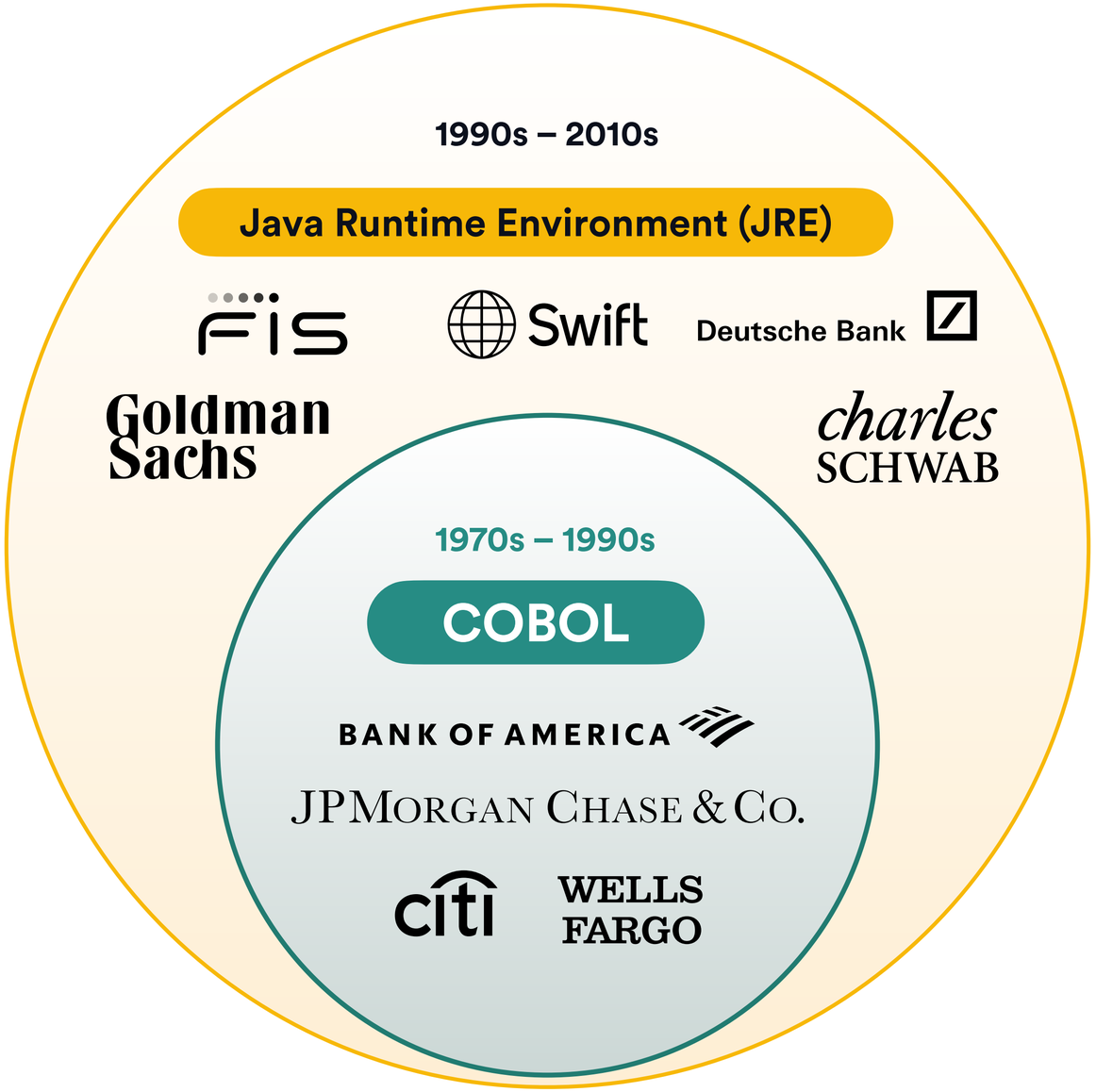
Global Banks

Asset Managers

Clearing & Settlement Depositories

Central Bank Digital Currencies

Every 30 Years a New Runtime Powers a Financial System Revolution



Java Runtime Environment (JRE)

- By 2011, **80%+** of electronic trading apps were running on JVM
- A key driver of using database technology and online banking
- Many leading financial institutions still leverage JRE:
  - Alliance Messaging Hub – Swift's messaging solution
  - FIS Profile – FIS's core banking platform
  - Autobahn – Deutsche Bank's multi-channel gateway
  - GS Collections – Goldman Sachs' Java collections framework

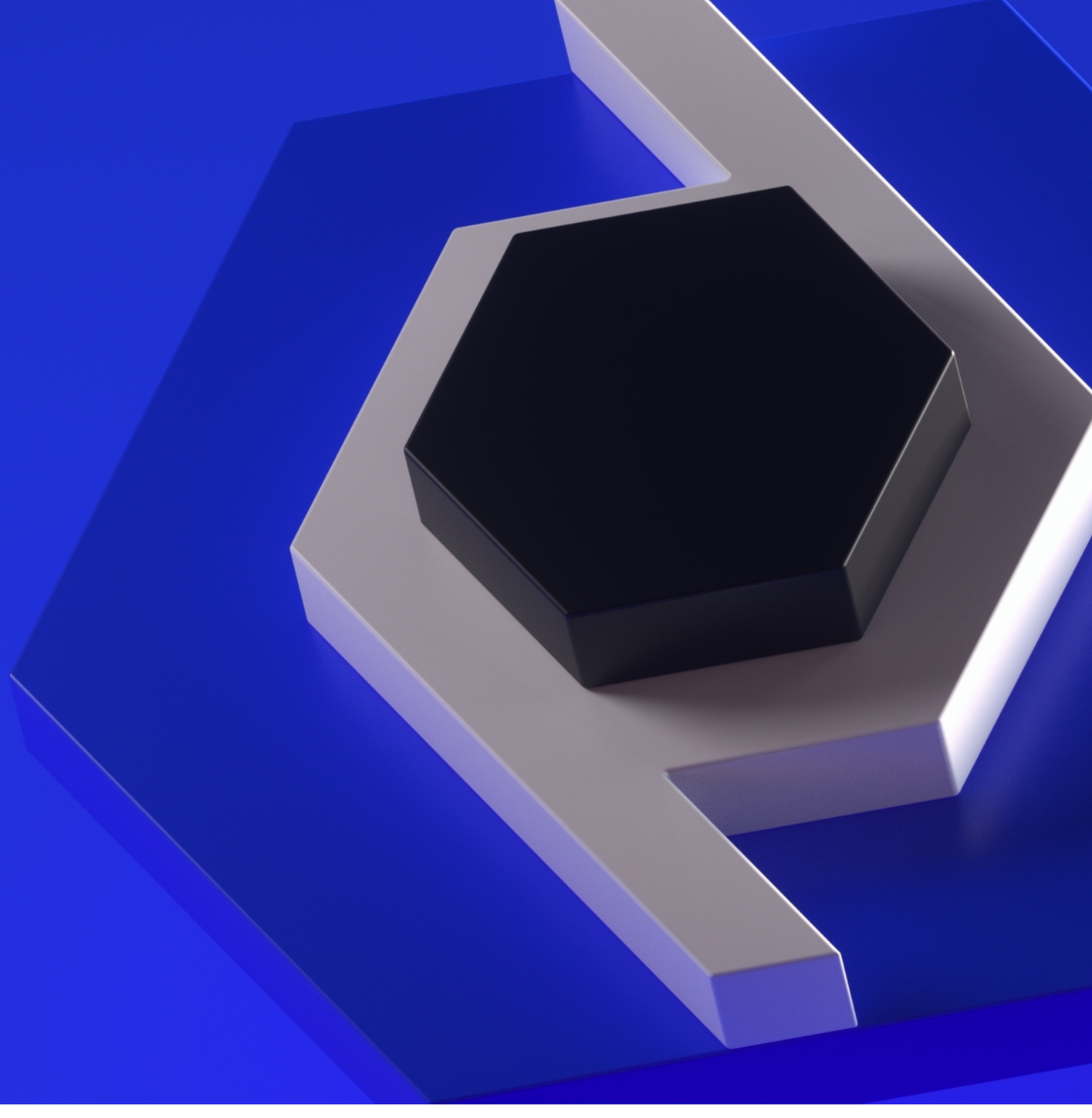
COBOL Runtime

- Cobol drives **90%** of ATM transactions
- Cobol drives **80%** of in-person banking transactions
- **~$3 trillion** in daily commerce flows through Cobol systems
- Transformed core transaction processing within banks in the 1970s during the first computer revolution, enabling electronic banking
- Still powers major banking use cases like mainframe payment processing, credit card transactions, ACH payments etc.

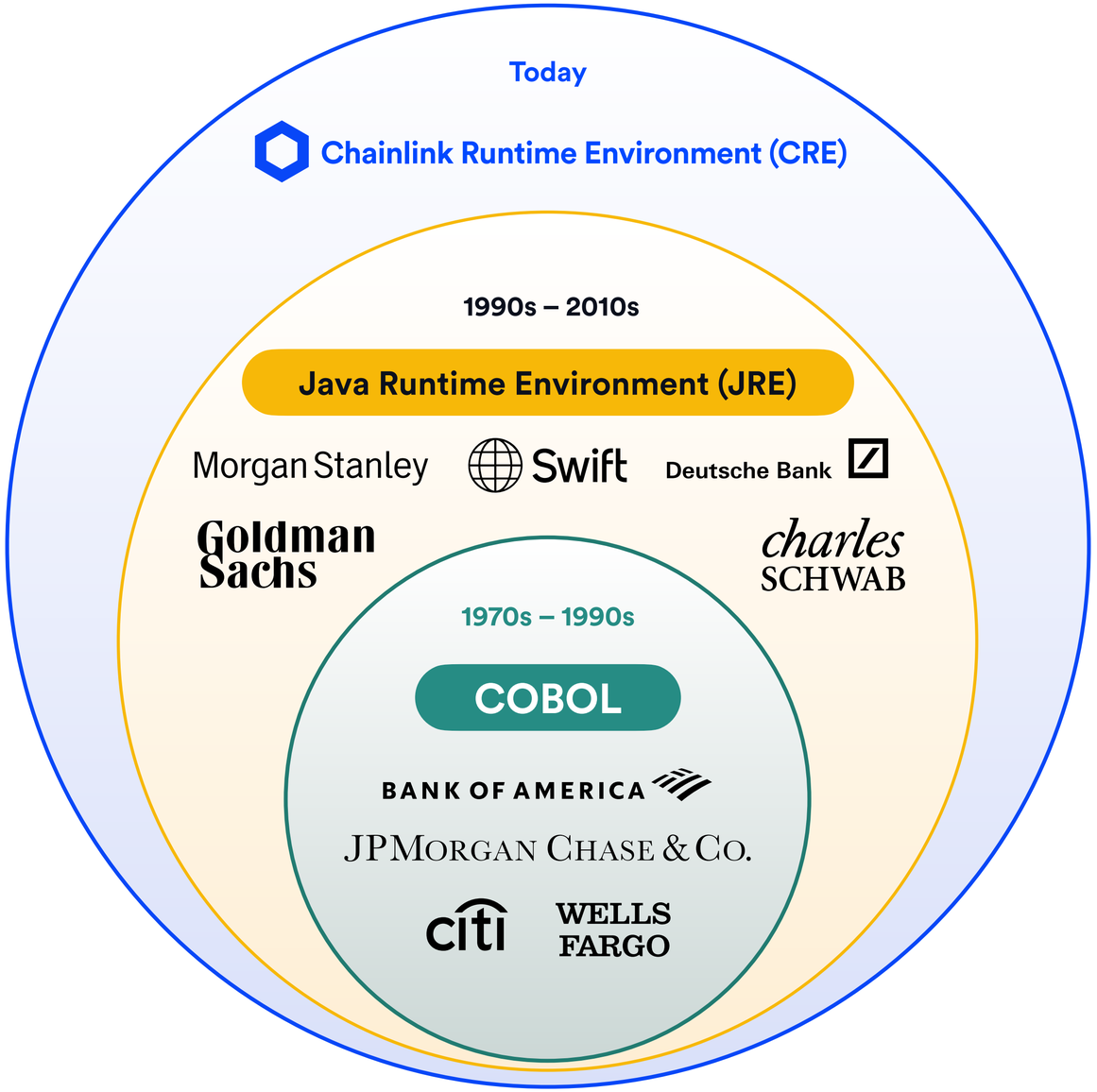
Sources: Reuters report on Cobol, Oracle Java technical report, Oracle Java blogs, FIS global report, Autobahn installation, Charles Schwab website

ANNOUNCING

Chainlink Runtime Environment (CRE)



Chainlink Runtime Environment Is the Next Stage



Chainlink Runtime Environment

- Market leader for powering DeFi and TradFi smart contracts
- Best security track record for computations of its type
- Widely used cross-chain transaction standard in CCIP

Java Runtime Environment

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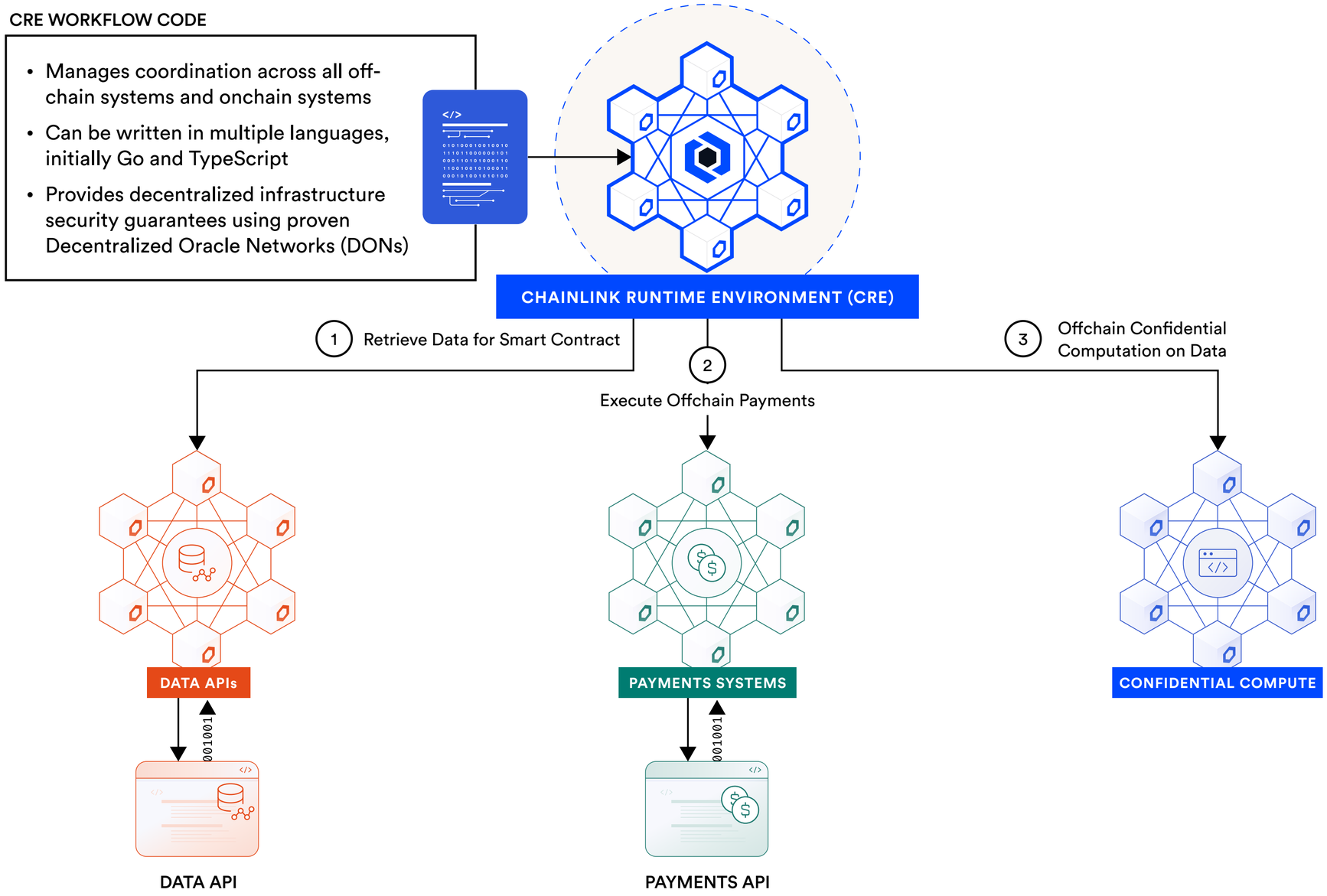
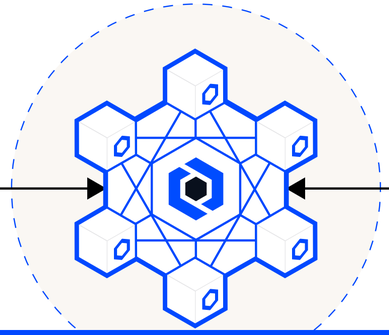
Chainlink Runtime Environment (CRE)



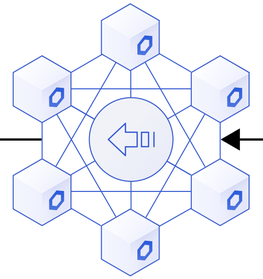
Chainlink Runtime Environment (CRE)

CRE WORKFLOW CODE

- Manages coordination across all off-chain systems and onchain systems
- Can be written in multiple languages, initially Go and TypeScript
- Provides decentralized infrastructure security guarantees using proven Decentralized Oracle Networks (DONs)

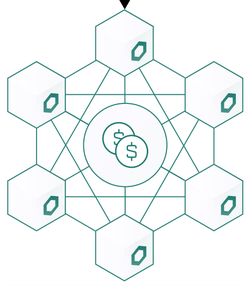


CHAINLINK RUNTIME ENVIRONMENT (CRE)

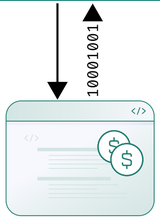


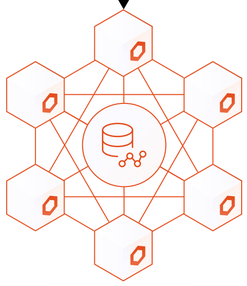
CHAIN READER

BLOCKCHAIN A

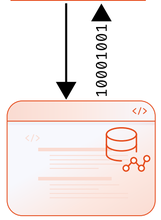


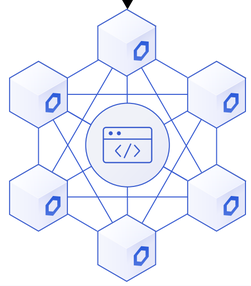
PAYMENTS SYSTEMS



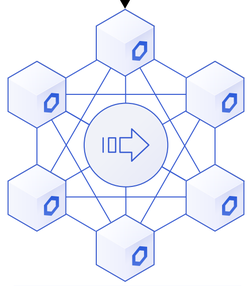


DATA APIs



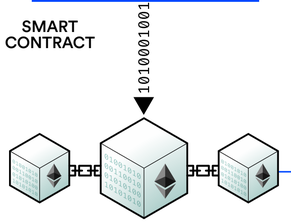


CONFIDENTIAL COMPUTE

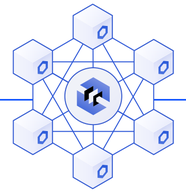


CHAIN WRITER

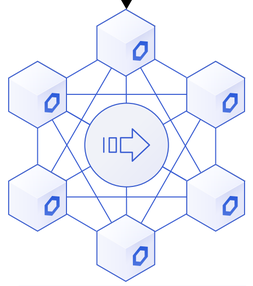
SMART CONTRACT



PUBLIC CHAINS

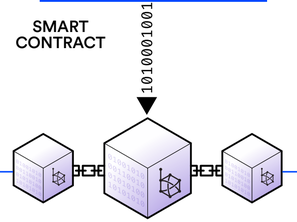


CCIP

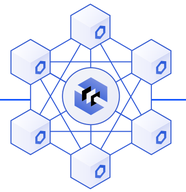


CHAIN WRITER

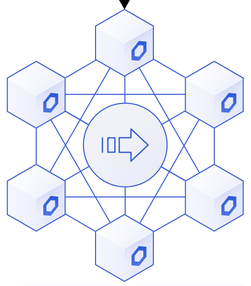
SMART CONTRACT



PRIVATE CHAINS

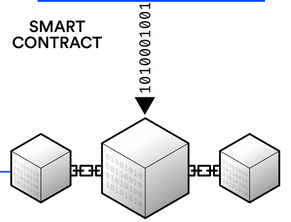


CCIP

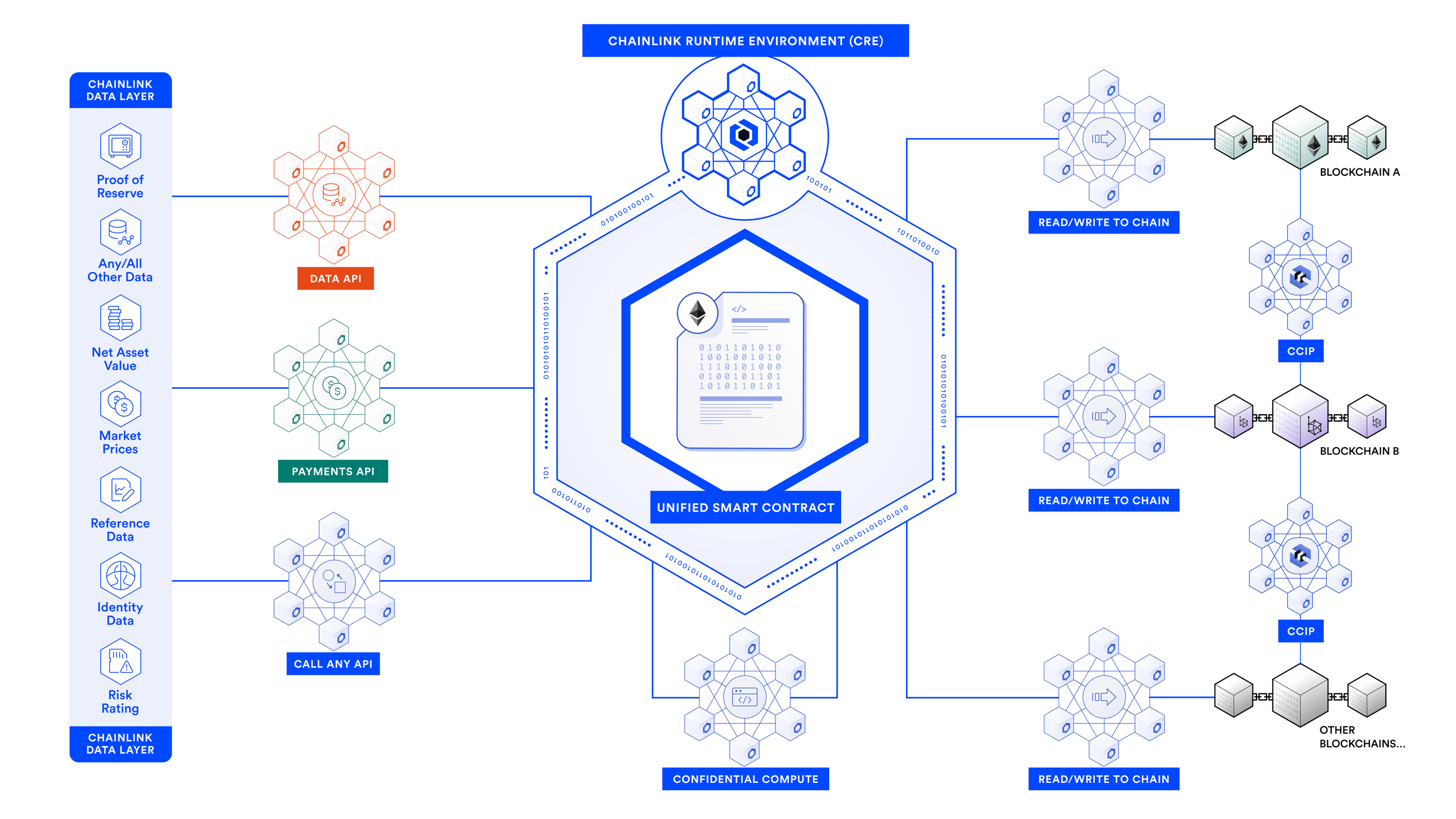


CHAIN WRITER

SMART CONTRACT



OTHER BLOCKCHAINS...

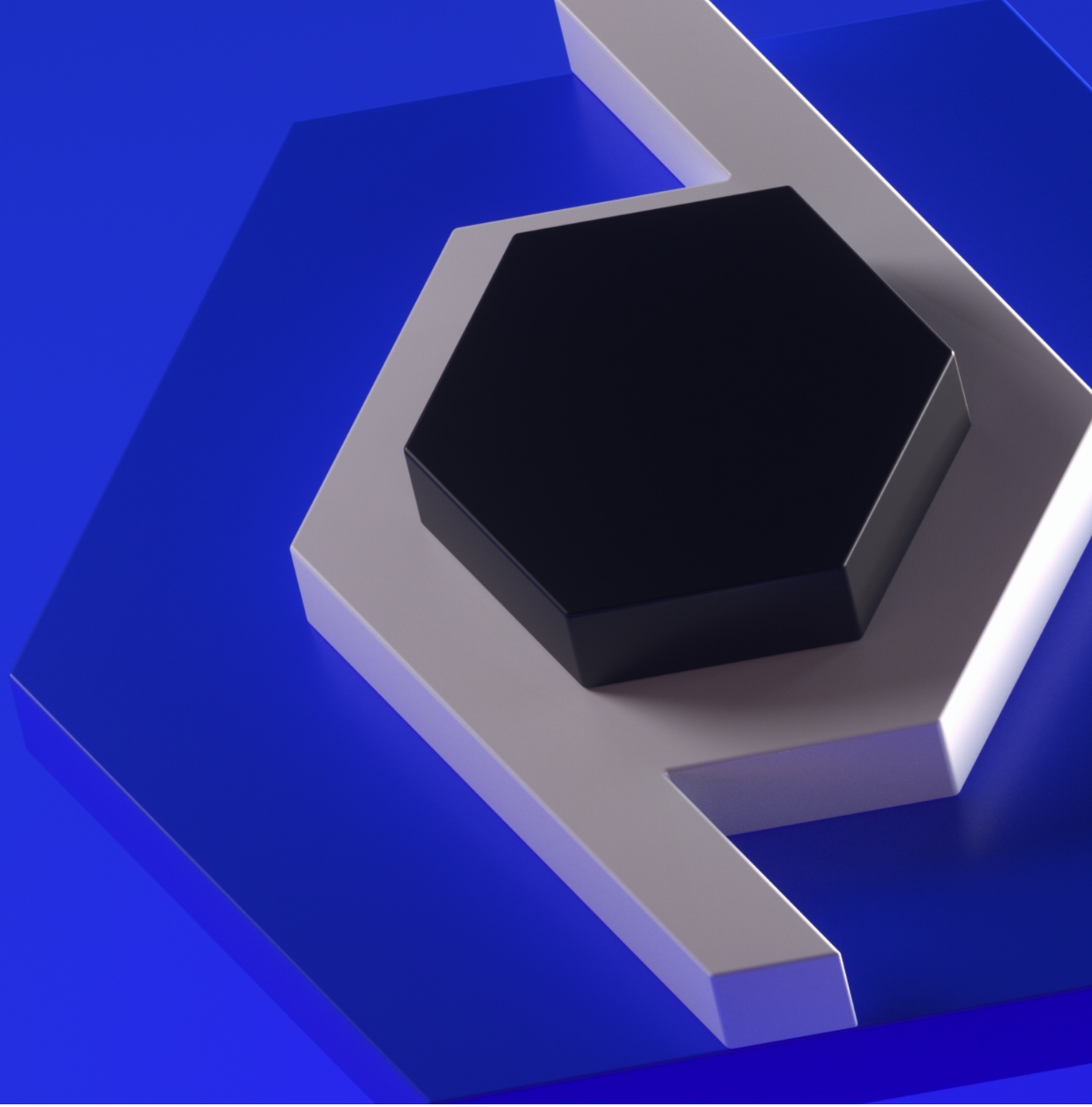

CHAINLINK RUNTIME ENVIRONMENT (CRE)
CHAINLINK DATA LAYER
Proof of Reserve
Any/All Other Data
Net Asset Value
Market Prices
Reference Data
Identity Data
Risk Rating
CHAINLINK DATA LAYER
DATA API
PAYMENTS API
CALL ANY API
UNIFIED SMART CONTRACT
CONFIDENTIAL COMPUTE
READ/WRITE TO CHAIN
READ/WRITE TO CHAIN
READ/WRITE TO CHAIN
BLOCKCHAIN A
CCIP
BLOCKCHAIN B
CCIP
OTHER BLOCKCHAINS...

ANNOUNCING

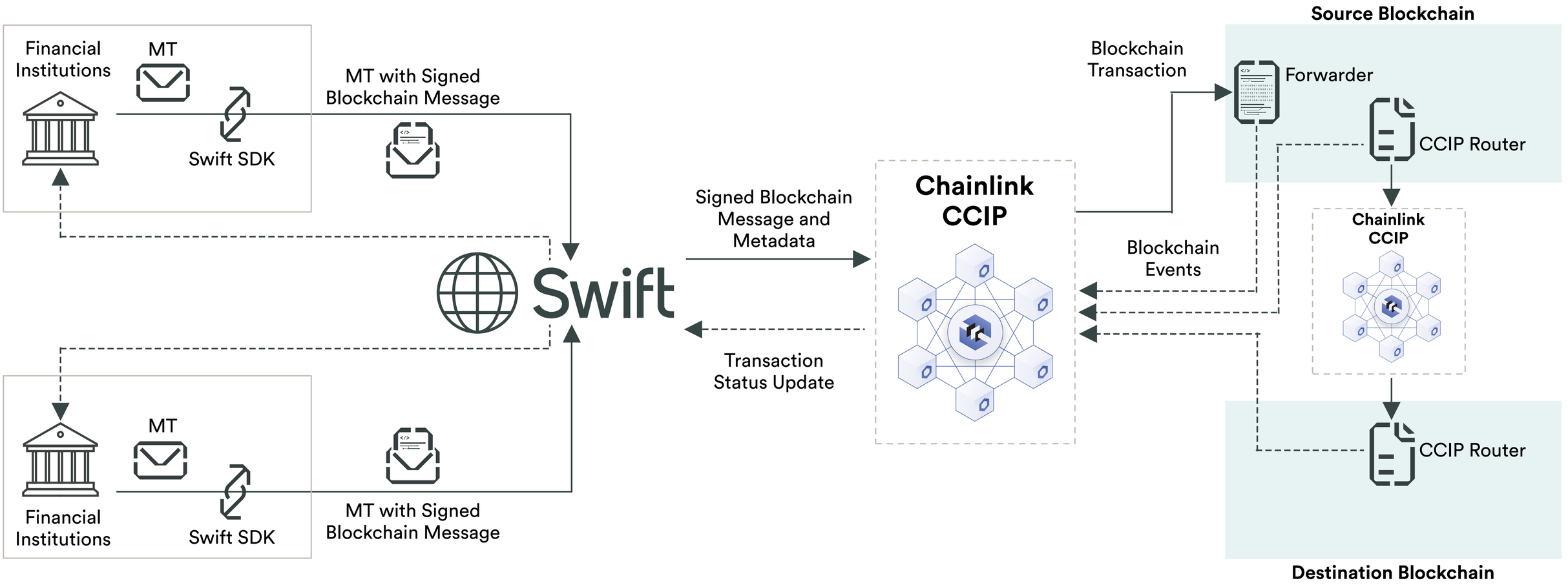
Chainlink Runtime Environment (CRE)

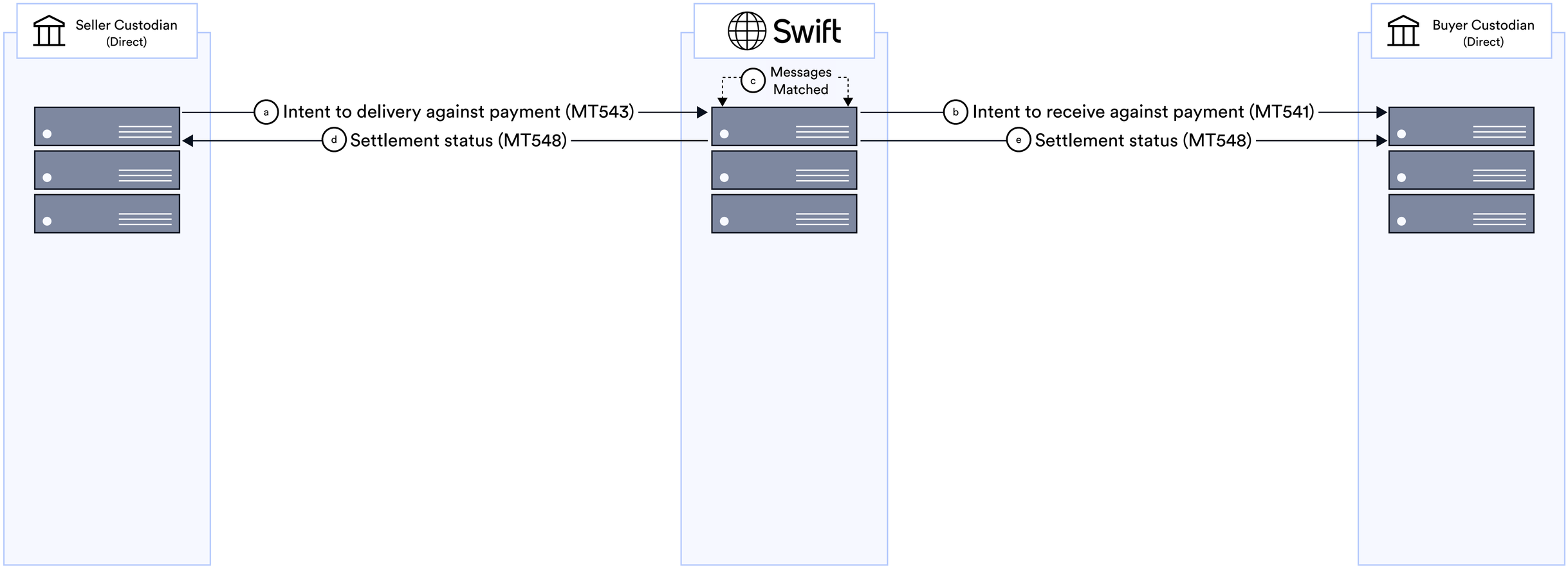
EARLY ACCESS SIGNUP

chain.link/cre-early-access

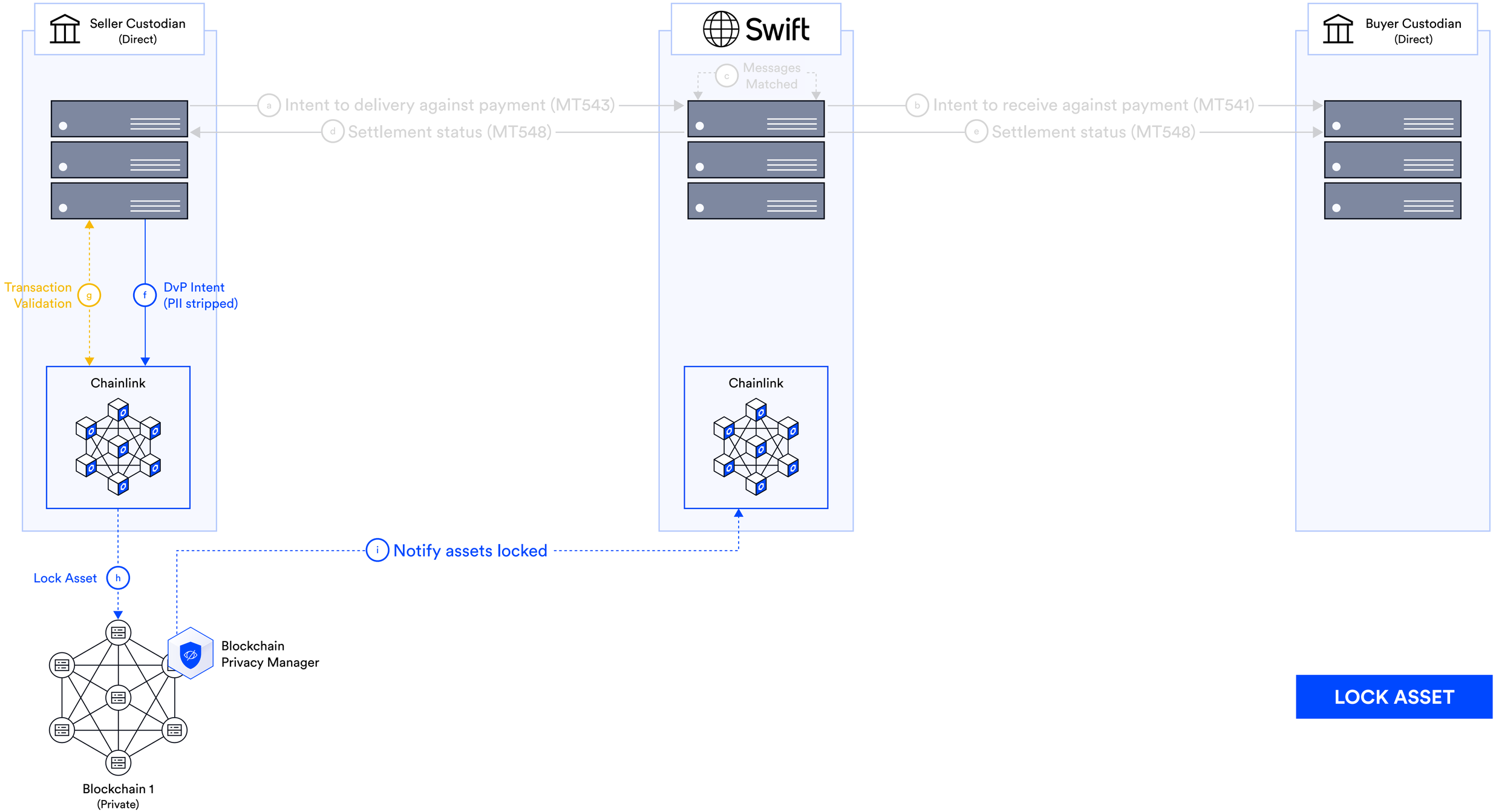


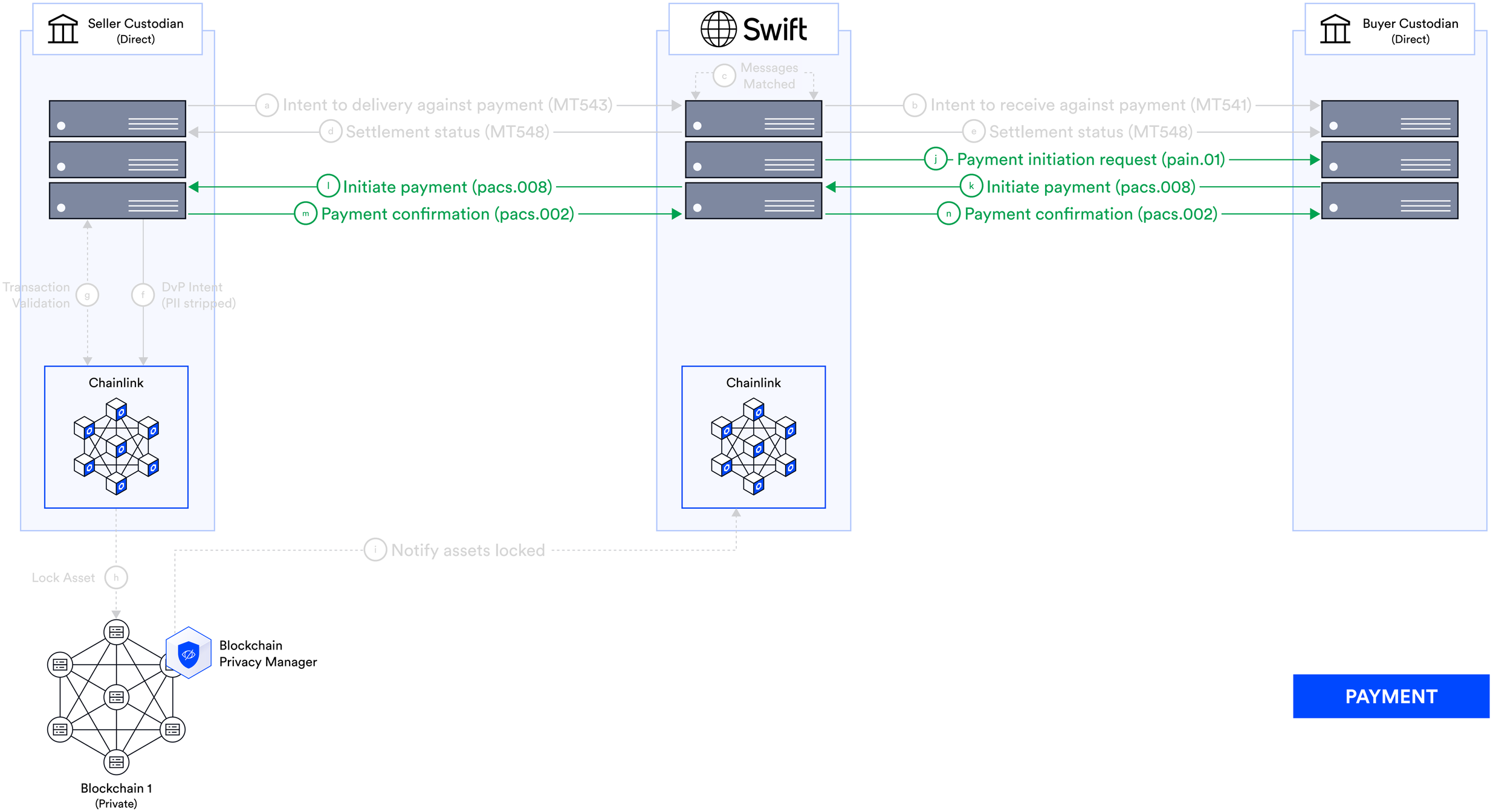
Connecting Capital Markets to Chains Utilizing Existing Global Standards





PRE SETTLEMENT


Seller Custodian
(Direct)
Swift
Buyer Custodian
(Direct)
c Messages Matched
a Intent to delivery against payment (MT543)
d Settlement status (MT548)
b Intent to receive against payment (MT541)
e Settlement status (MT548)
Transaction Validation
g
f DvP Intent (PII stripped)
Chainlink
Chainlink
i Notify assets locked
Lock Asset
h
Blockchain Privacy Manager
Blockchain 1
(Private)
LOCK ASSET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j Payment initiation request (pain.01)
l Initiate payment (pacs.008)
k Initiate payment (pacs.008)
m Payment confirmation (pacs.002)
n Payment confirmation (pacs.002)
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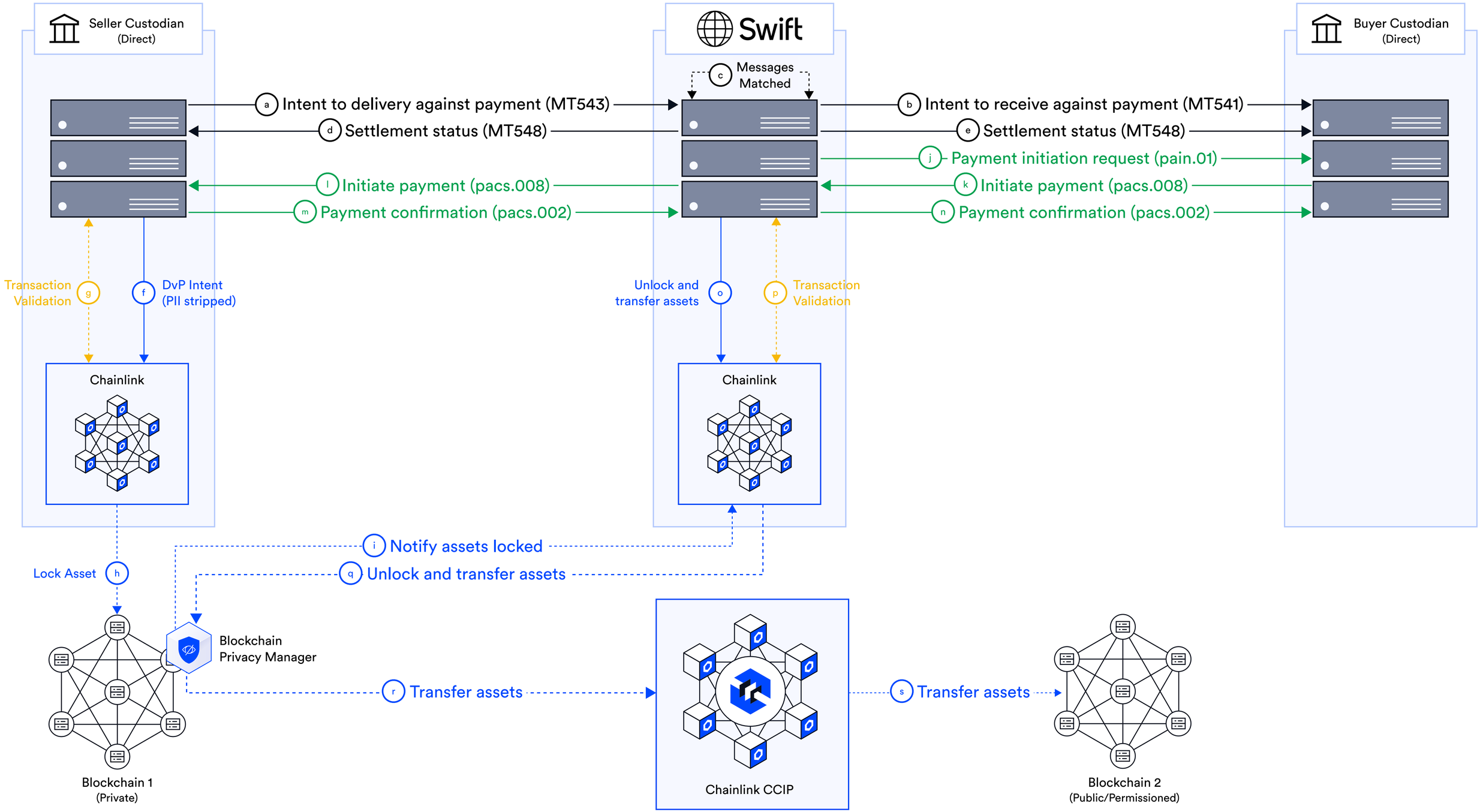
PAYMENT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Chainlink
Chainlink
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Lock Asset
h
q Unlock and transfer assets
Blockchain Privacy Manager
r Transfer assets
s Transfer assets
Blockchain 1
(Private)
Chainlink CCIP
Blockchain 2
(Public/Permissioned)

LEARN MORE

Chainlink Runtime Environment (CRE)

// Main Stage

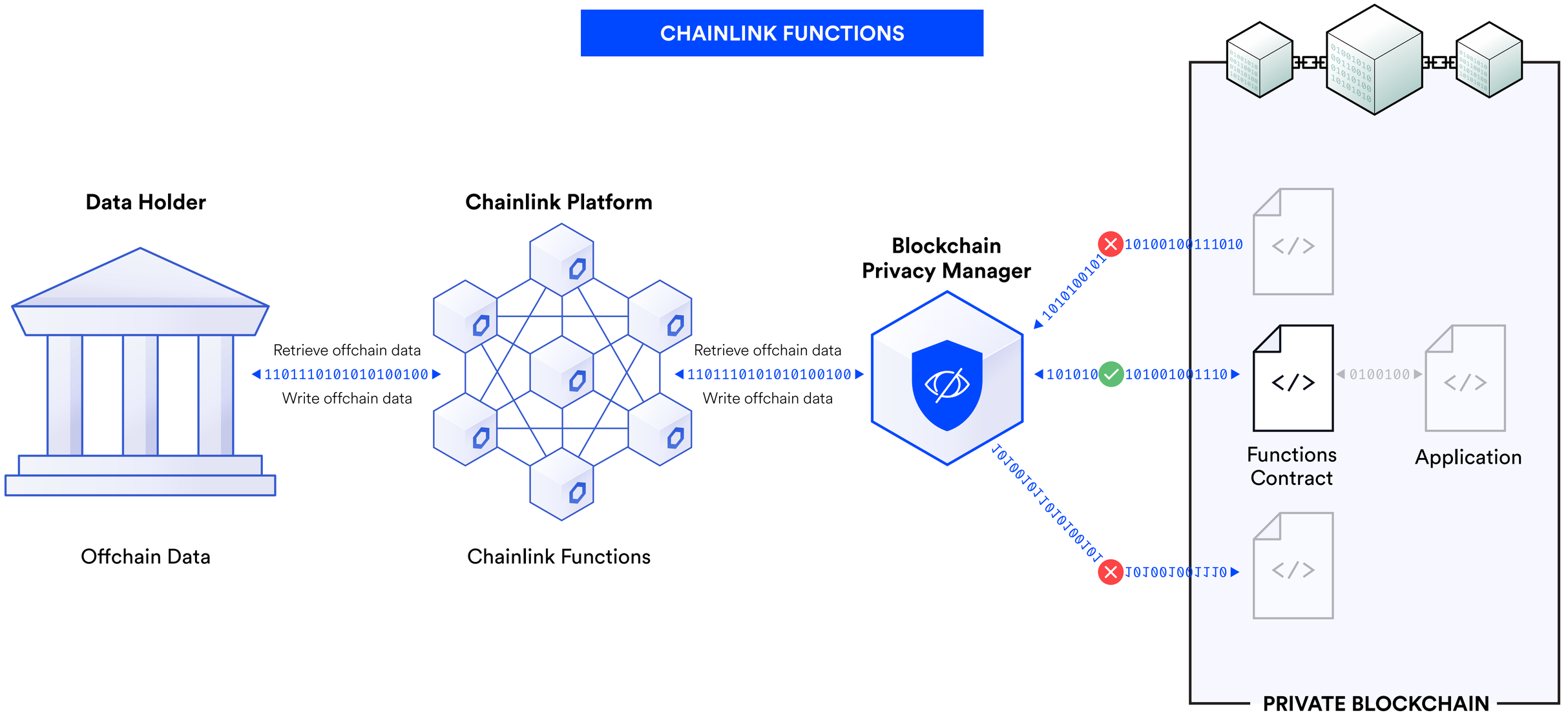
Up Next

5:10–6:10PM

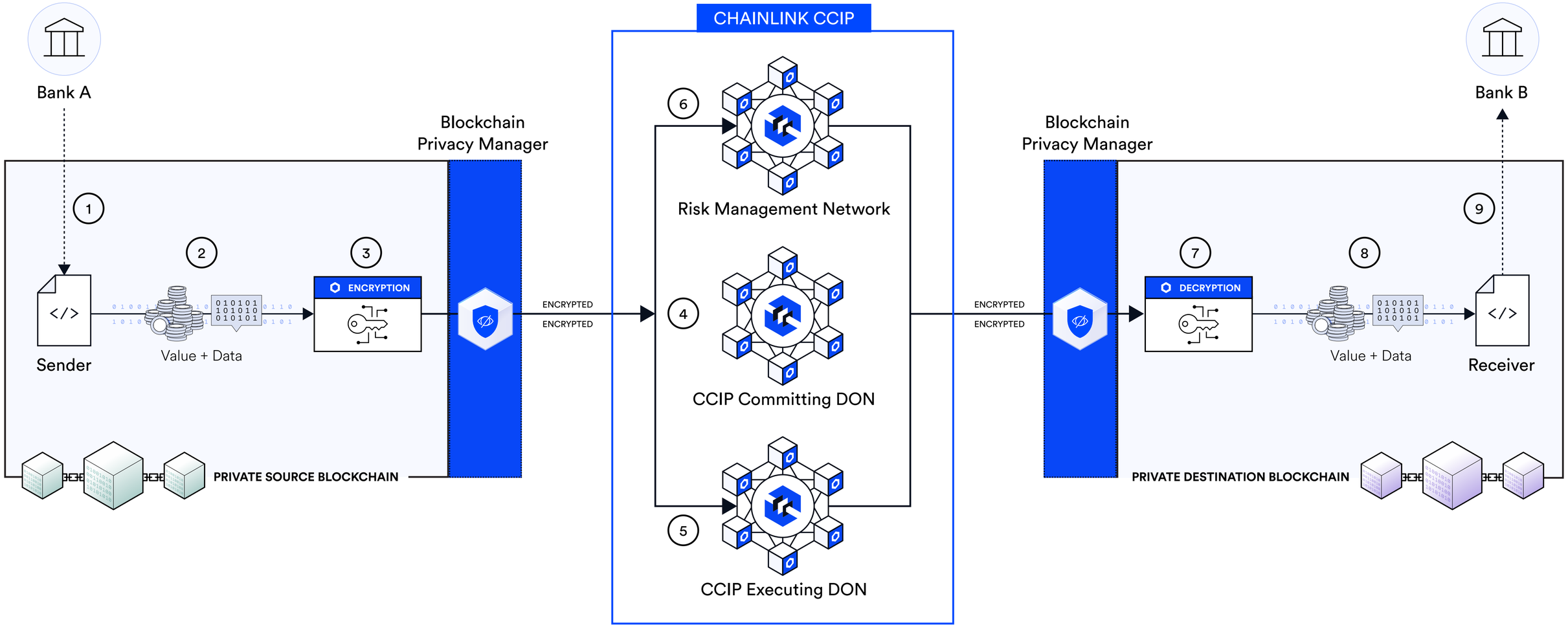
Uri Sarid

Chief Architect, Chainlink Labs

Blockchain Privacy Manager



CCIP Private Transactions



LEARN MORE

CCIP Private Transactions and Blockchain Privacy Manager

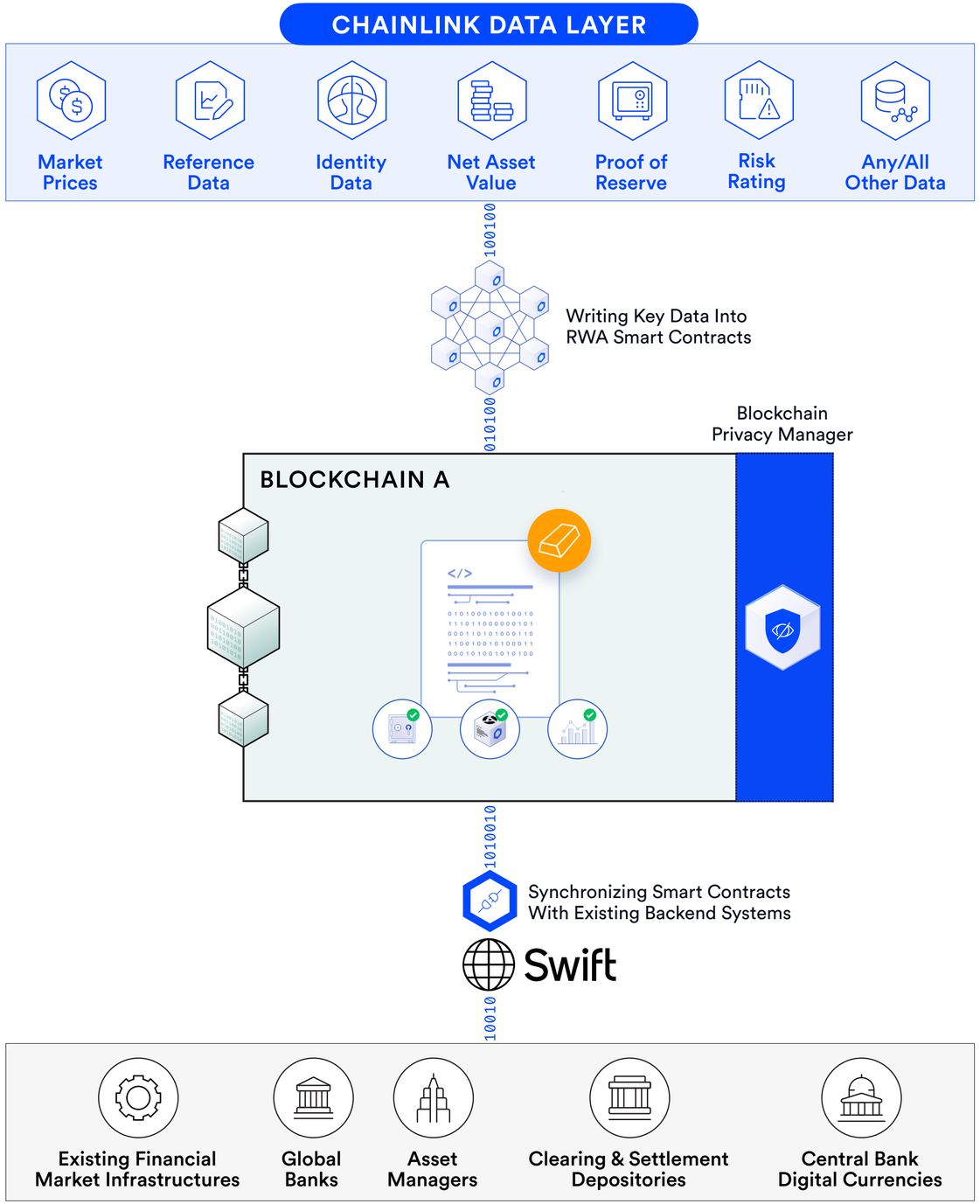
// Main Stage

Up Next

5:10–6:10PM

Anurag Soin

Product Lead Digital Asset Services, ANZ Bank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100100
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010100
Blockchain Privacy Manager
BLOCKCHAIN A
1010010
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10010
Existing Financial Market Infrastructures
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Clearing & Settlement Depositories
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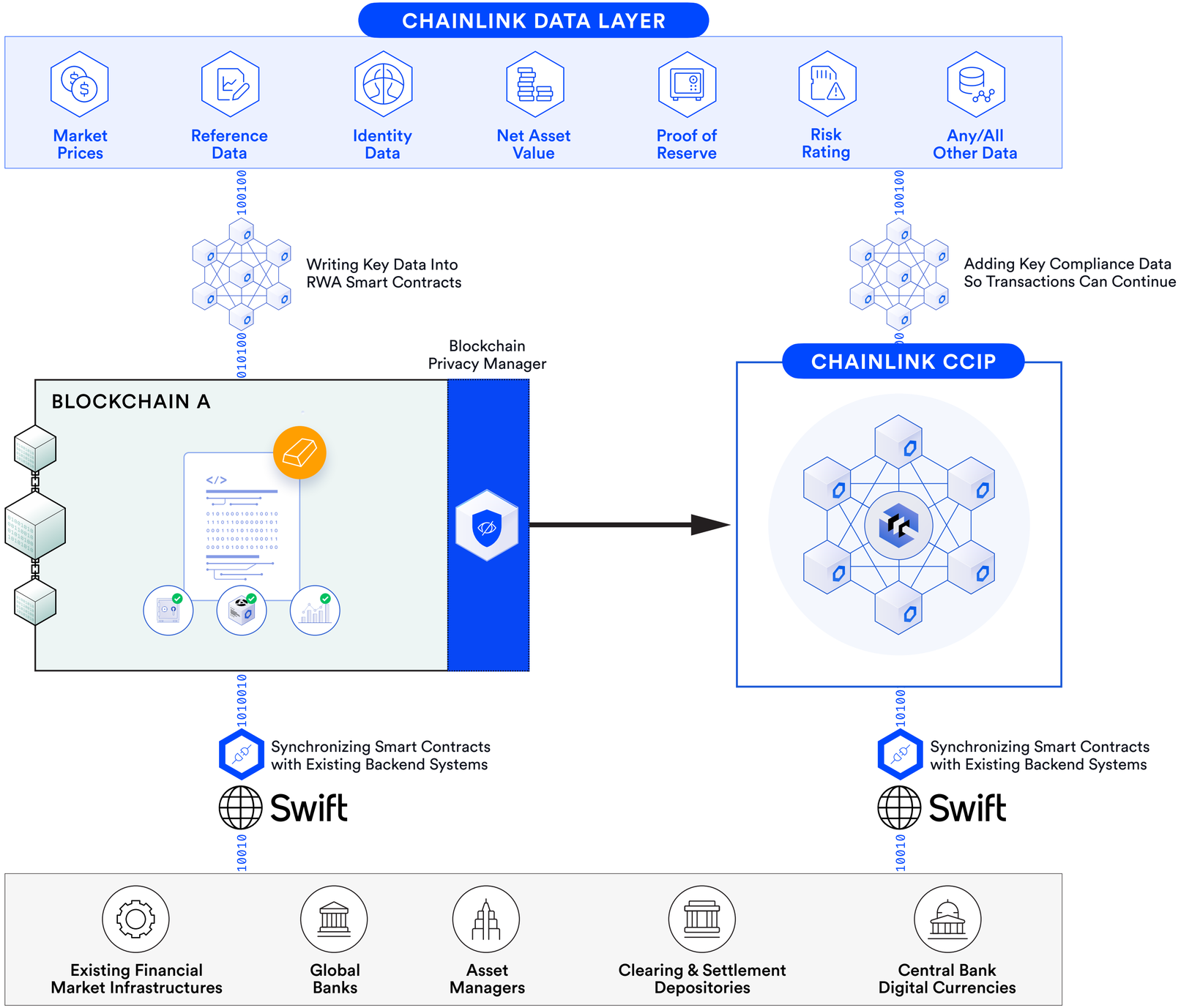
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CHAINLINK CCIP
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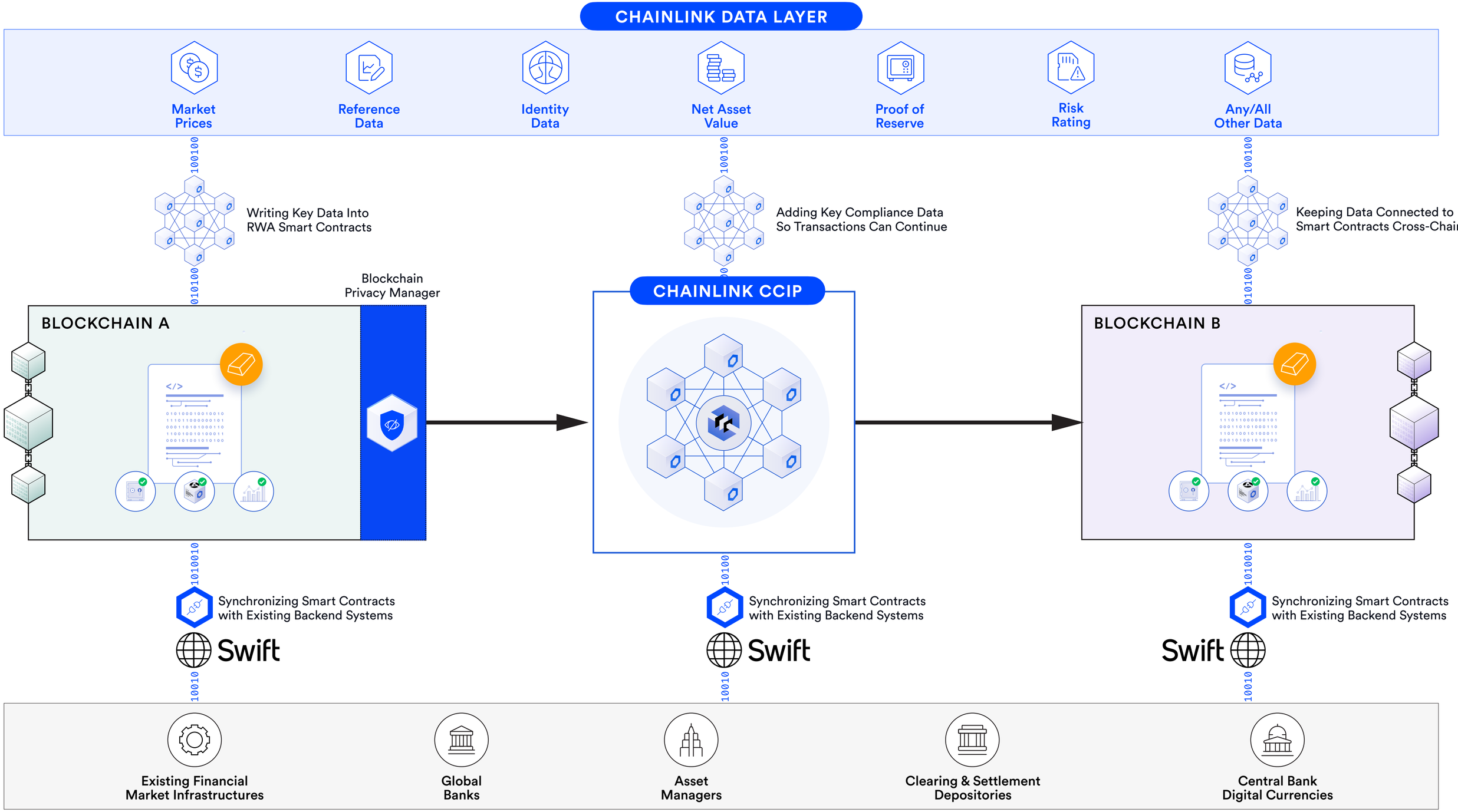
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Blockchain Privacy Manager
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CHAINLINK CCIP
BLOCKCHAIN B
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Swift
Synchronizing Smart Contracts with Existing Backend Systems
Swift
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Global Banks
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Central Bank Digital Currencies

DECO

Start exploring

DECO Sandbox

Experience the power of zero-knowledge proofs and privacy-preserving data verification for onchain finance by leveraging pre-configured use cases or creating your own.

Start exploring

Optimize User Onboarding and Streamline Operations

Strengthen Compliance Without Data Exposure

Drive Privacy Innovation in Onchain Finance

Proof of Identity Onchain With Full Data Privacy

DATA PROVIDER

Offchain Data Holder (Identity Data Provider)

Identity Provider API

BANK-OPERATED SYSTEMS

DECO PROVER

- Operated by the Financial Institution
- Queries Identity API for Full Identity Data
- Cleanses Private Data and Submits Proof of Identity for Verification

CHAINLINK ORACLE NETWORK

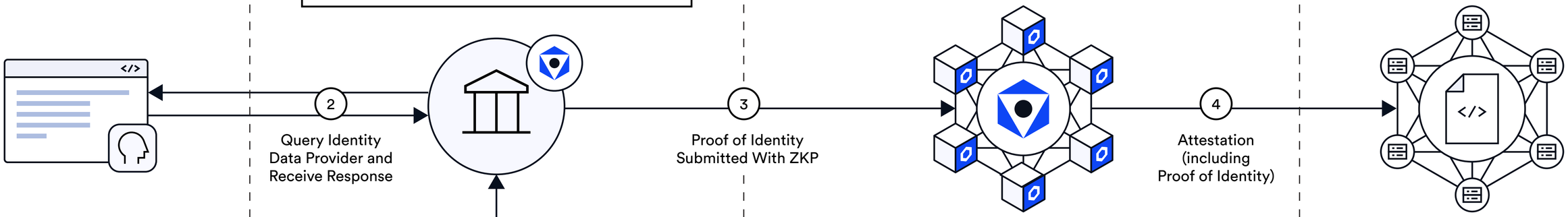
DECO VERIFIER

- Data Remains Private
- Proof of Identity Verified by Oracle Network
- Verified Proof of Identity Placed Onchain

ONCHAIN

Smart Contract

Onchain Attestation



FINANCIAL INSTITUTION COMPLIANCE SYSTEMS

Internal Systems Login to Data Provider Using Prover

Identity check

Overview

HTTPS Requests

Assertions on Private Fields

Template Variables

Runs

Advanced

Public Fields

Assertions on Public Fields

Configuration Editor

Settings

HTTPS Requests

DECO performs HTTPS requests during proof generation. Here, you can configure each request's URL, headers and body. Currently only JSON-encoded responses are supported!

1. GET https://withpersona.co...

Duplicate

Add request

Method URL

GET https://withpersona.com/api/v1/inquiries Fetch

Method DECO will call this URL.

Request Headers | Request Body | Response Headers | Response Body


```
{
  "data": [
    {
      "type": "inquiry",
      "id": "inq_RedZVVwtnfZYMWESP64H15BYK2eX",
      "attributes": {
        "status": "completed",
        "reference-id": null,
        "note": null,
        "behaviors": {
          "request-spoof-attempts": 0,
          "user-agent-spoof-attempts": 0,
          "distraction-events": 5,
          "hesitation-baseline": 79883,
          "hesitation-count": 6,
          "hesitation-time": 60066,
          "shortcut-copies": 0,
          "shortcut-pastes": 0,
```

LEARN MORE

DECO Sandbox

// Main Stage
Tomorrow
10:20–10:50AM

Lorenz Breidenbach
Head of R&D, Chainlink Labs

TRANSACTION VALUE ENABLED (TVE)

$16.6+ Trillion

Cumulative Transaction Value Enabled

aave Compound PAXOS Liquity GMX SYNTHETIX

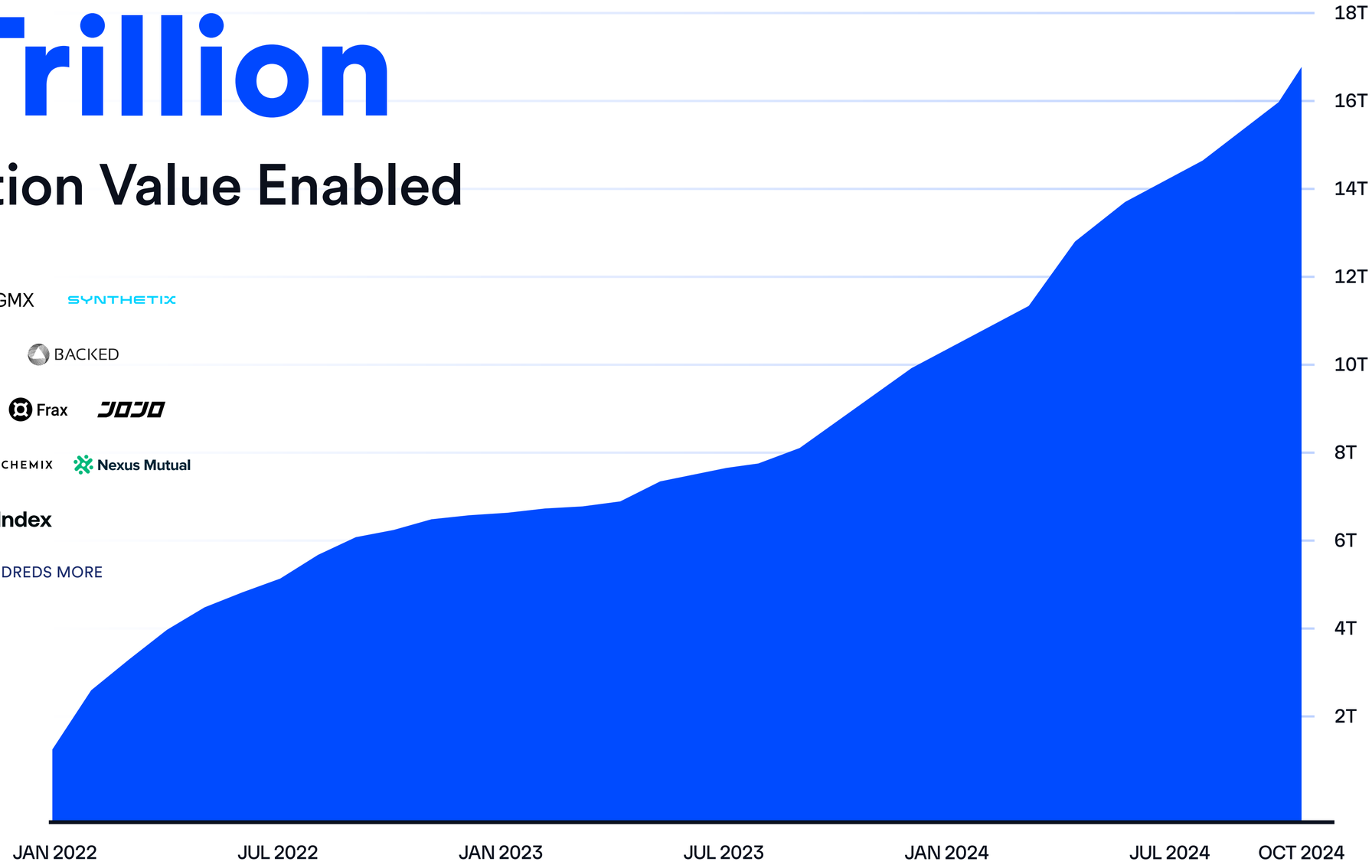
SPARK Sky ens vertex QiDao BACKED

Alpaca Finance PancakeSwap LIDO BENQI Frax JOJO

Flexa OSTIUM LFJ pool Set ALCHEMIX Nexus Mutual

EIGENPIE RADIANT Gearbox Balancer Index

Silo Beefy dHEDGE CRYPTEX + HUNDREDS MORE



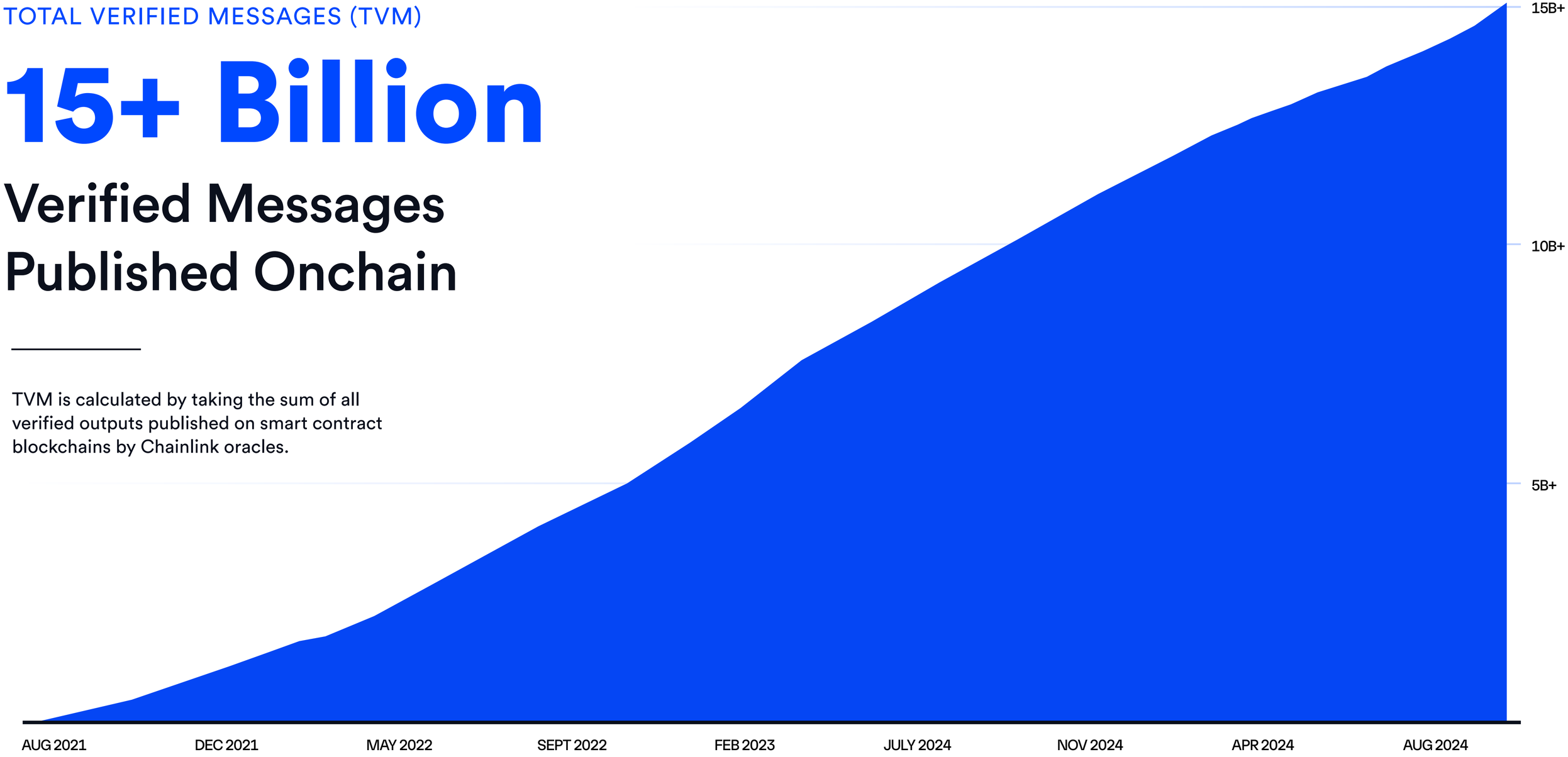
TVE is calculated by taking the sum of the USD value associated with each transaction utilizing a Chainlink oracle

TOTAL VERIFIED MESSAGES (TVM)

15+ Billion

Verified Messages Published Onchain

TVM is calculated by taking the sum of all verified outputs published on smart contract blockchains by Chainlink oracles.



Data Adoption Remains High & PoR Is Accelerating Rapidly

Lido

AAVE

Spark

Synfutures

Compound

PancakeSwap

Eigenpie

Balancer

Paxos

FRAX

BenQi

Liquity

ENS

Beefy

Synthetix

Nexus Mutual

LFJ

Flexa

Gearbox

dHedge

Silo

Index

Set

Alpaca

Alchemix

Radiant

Backed

QiDao

Pool Together

Cryptex

+ HUNDREDS MORE

solv

21shares

Superstate

Wenia

ether.fi

FBTC IGNITION

Lombard

Avalanche

M^0

MatrixDock

Swell

Backed

PumpBTC

Lorenzo

DLC.link

Adapt3r

Usual

Zoth

ZKLend

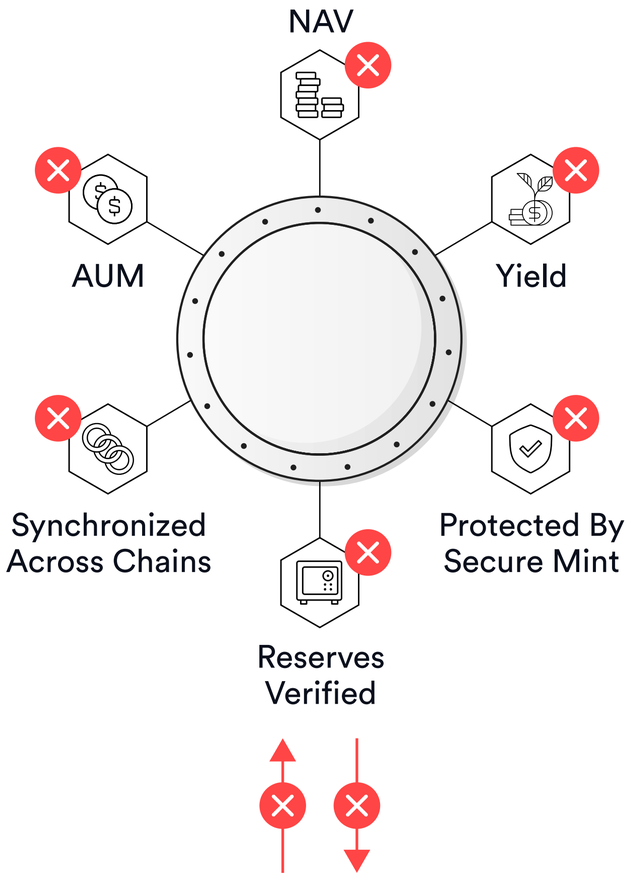
Bedrock

Credora

ION Digital

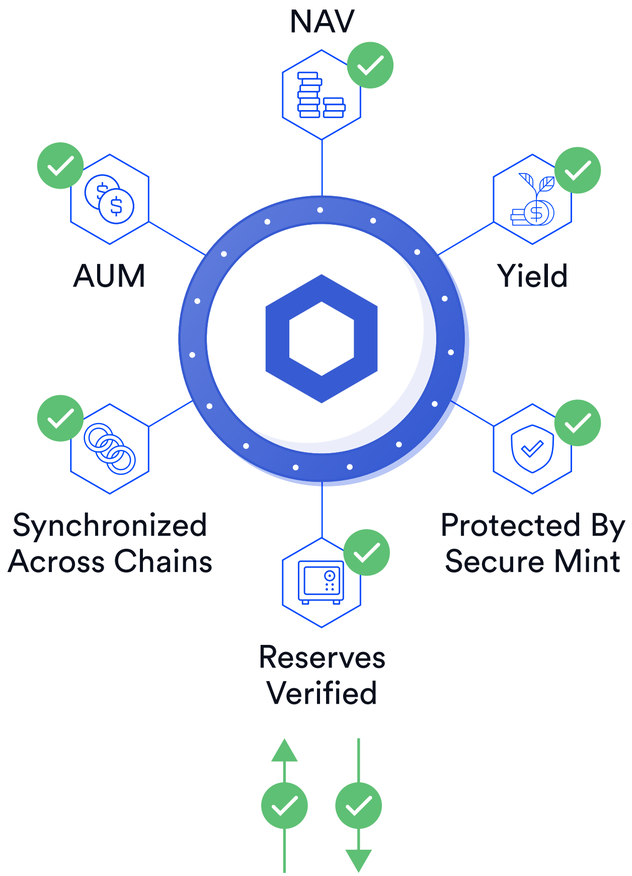
SmartData Enriches Tokens to Create SmartAssets

Disconnected Tokenized Asset



Asset Managers Treasuries

SmartData-Enriched SmartAsset



Asset Managers/Treasuries

LEARN MORE

The Foundation for Onchain Finance

// Main Stage

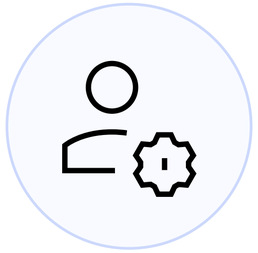
Up Next

5:10–6:10PM

Ghando

VP Product, Chainlink Labs

Launching Important New Capabilities for CCIP

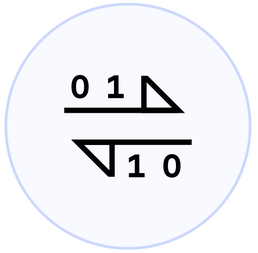


Self-Serve Deployments

NEW

Token Developer Attestation

PRIVATE BETA

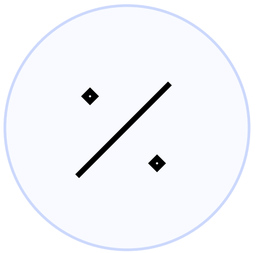


Programmable Transfers

Developer Control And Flexibility

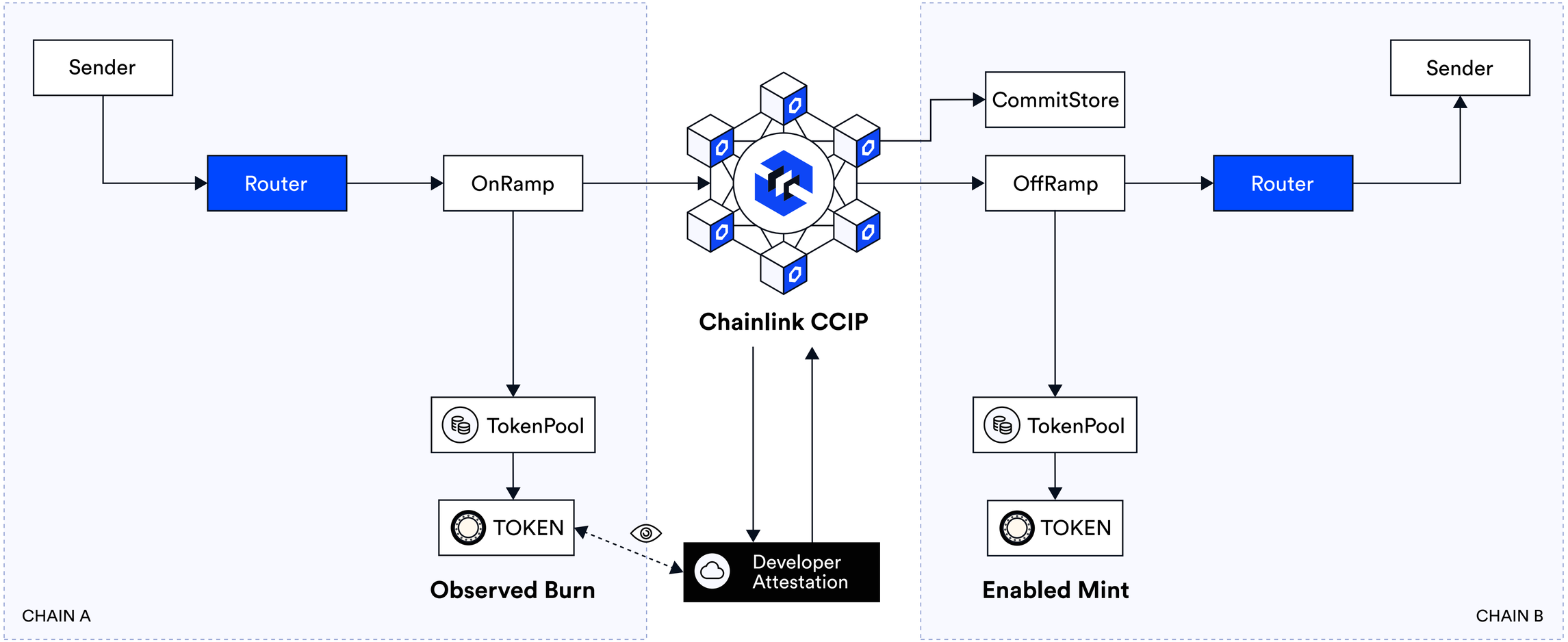
Defense-in-Depth Security

No Liquidity Pools Required

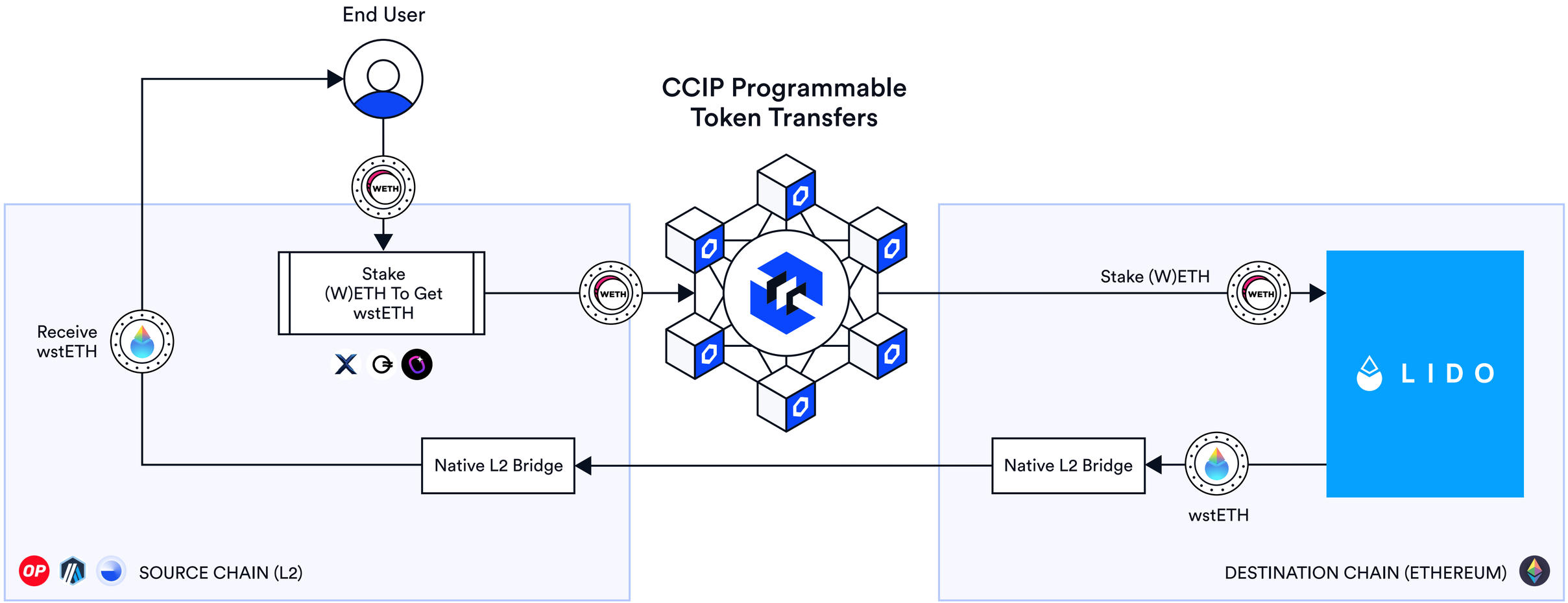


Zero-Slippage Transfers

Attestations Provide Additional Security for Developers



One-Step Staking From Arbitrum, Base, and Optimism



CCIP Security and Programmability Accelerating Adoption

Lido and Other Major LST Protocols Adopt CCIP for Direct Staking

Lido

EigenPie

Frax

StakeStone

Origin

Diva

Gravita

10 Chains Choose CCIP as Their Canonical Bridge

BotanixLabs	$2bn valuation
Bitlayer	$400m TVL
Ronin	2M DAU

B² NETWORK

Soneium

WEMIX

kroma

METIS

CELO

Major Assets Becoming CCT Enabled

Aave GHO (GHO)

Solv Protocol (SOLVBTC)

Lombard Staked BTC (LBTC)

Stader ETHx (ETHX)

World Mobile Token (WMTX)

Origin Ether (OETH)

Mountain Protocol (USDM)

Matrixport (STBT)

Tensorplex Staked TAO (stTAO)

Bedrock (UNIBTC)

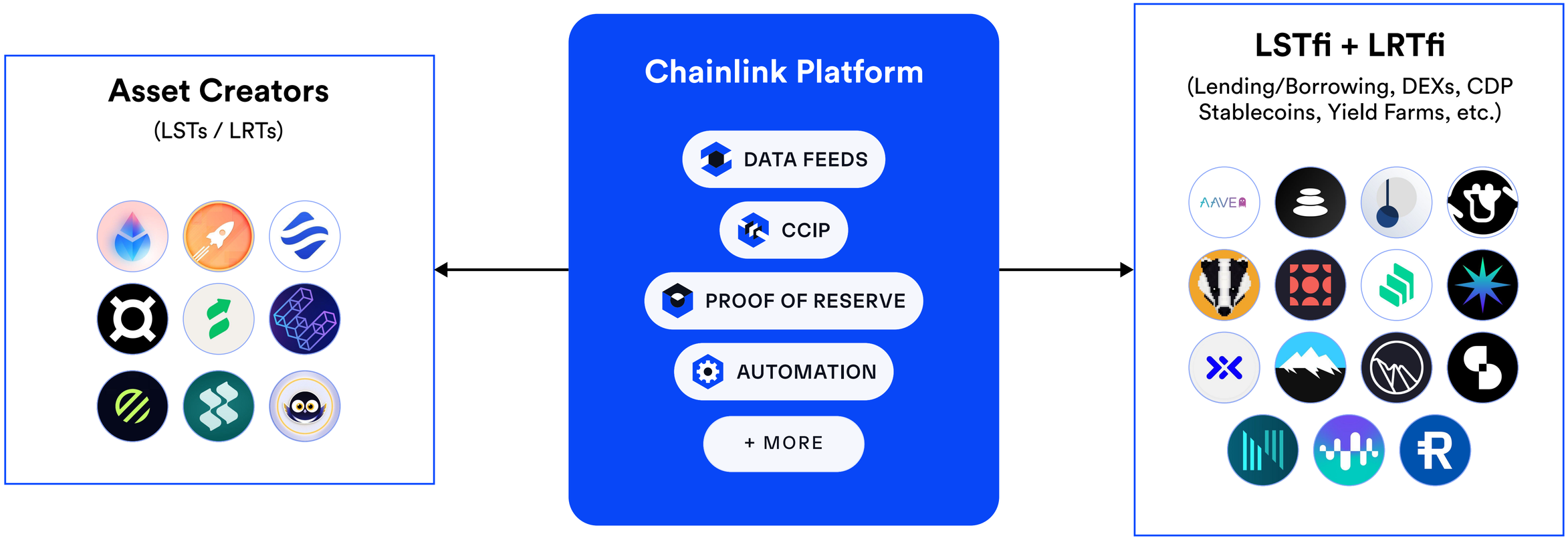
Lorenzo stBTC (STBTC)

pumpBTC (PUMPBTC)

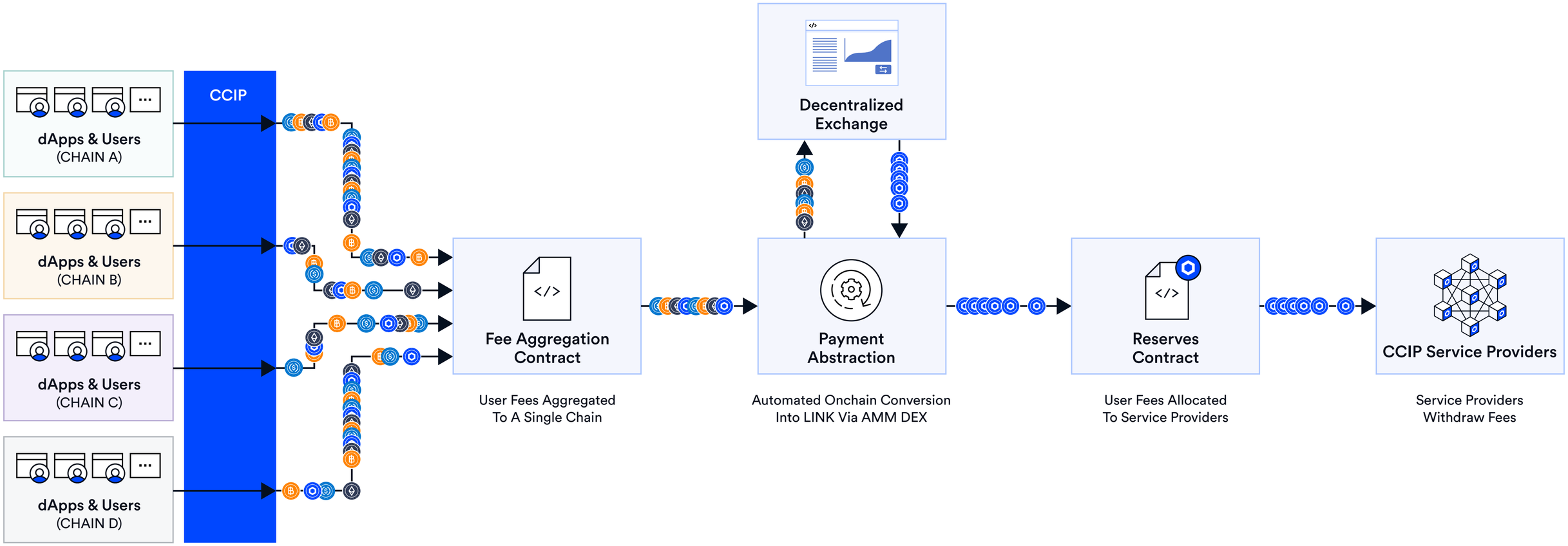
Turbo (TURBO)

+ MANY MORE

Chainlink: The Composability Layer for LSTfi and LRTfi



Chainlink CCIP v1.6 Cross-Chain Billing



*SIMPLIFIED DESIGN FOR ILLUSTRATIVE PURPOSES

LEARN MORE

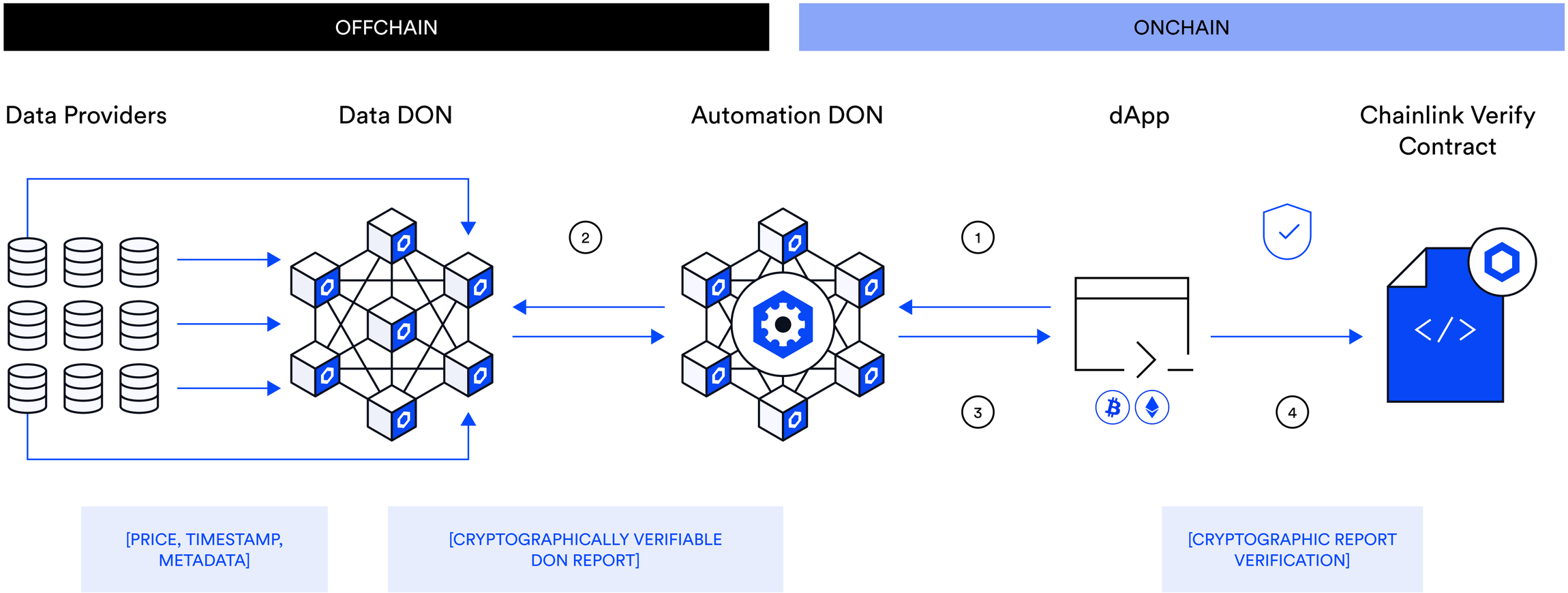
Catalyzing Blockchain Interoperability:

Chainlink CCIP's Latest Tools and Innovations

// Spotlight Stage
Tomorrow
2:50–3:10PM

Rahul Shah
Product Lead, Chainlink Labs

Low-Latency Speeds and Transaction Automation



Data Streams Adoption Is Growing Due to Key Features

GMX

GMX-SOLANA

JOJO

Holdstation

KiloEx

PancakeSwap

Cryptex

Vertex

Ostium

Zaros

Drake.exchange

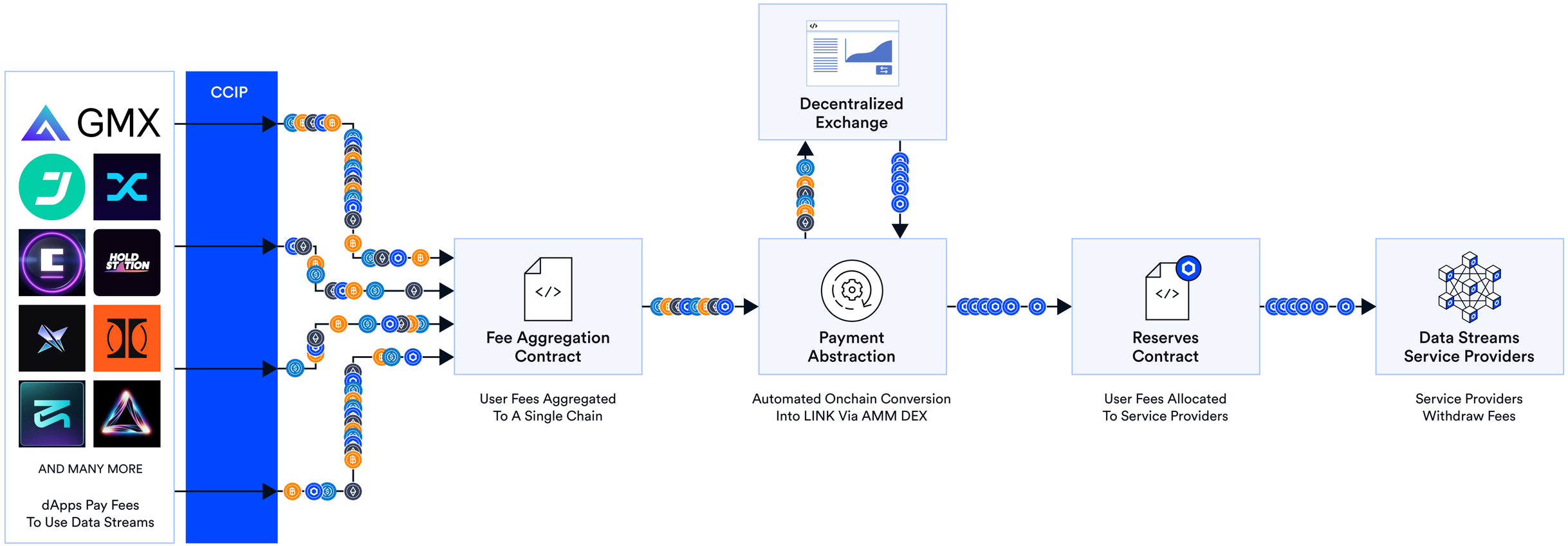
Dexodus

Umami

Xyro

YFX

Chainlink Data Streams Unified Billing



*SIMPLIFIED DESIGN FOR ILLUSTRATIVE PURPOSES

LEARN MORE

Data Streams: Any Data, Any Blockchain, Any Scale

// Spotlight Stage

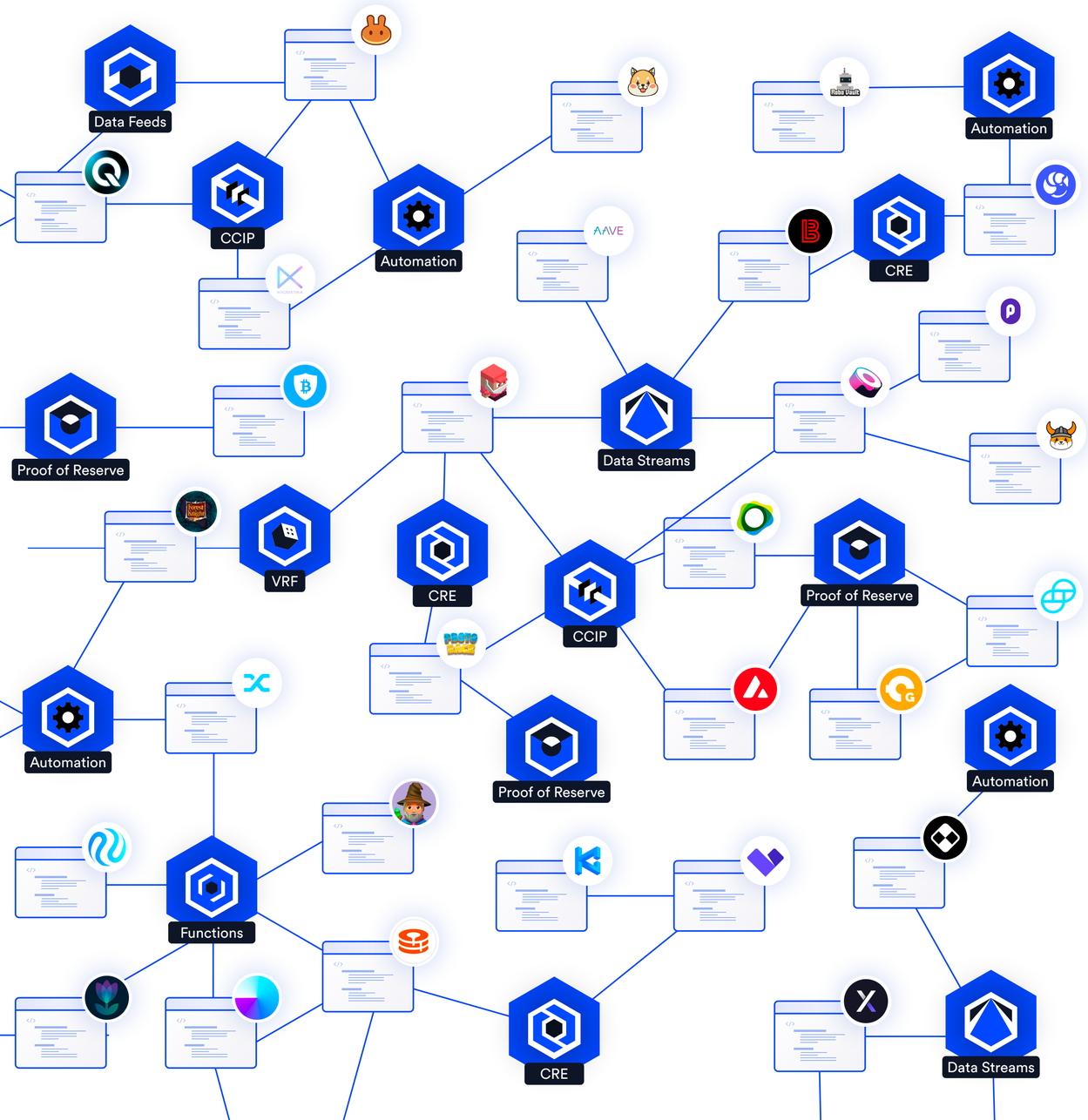
Tomorrow

3:10–3:30PM

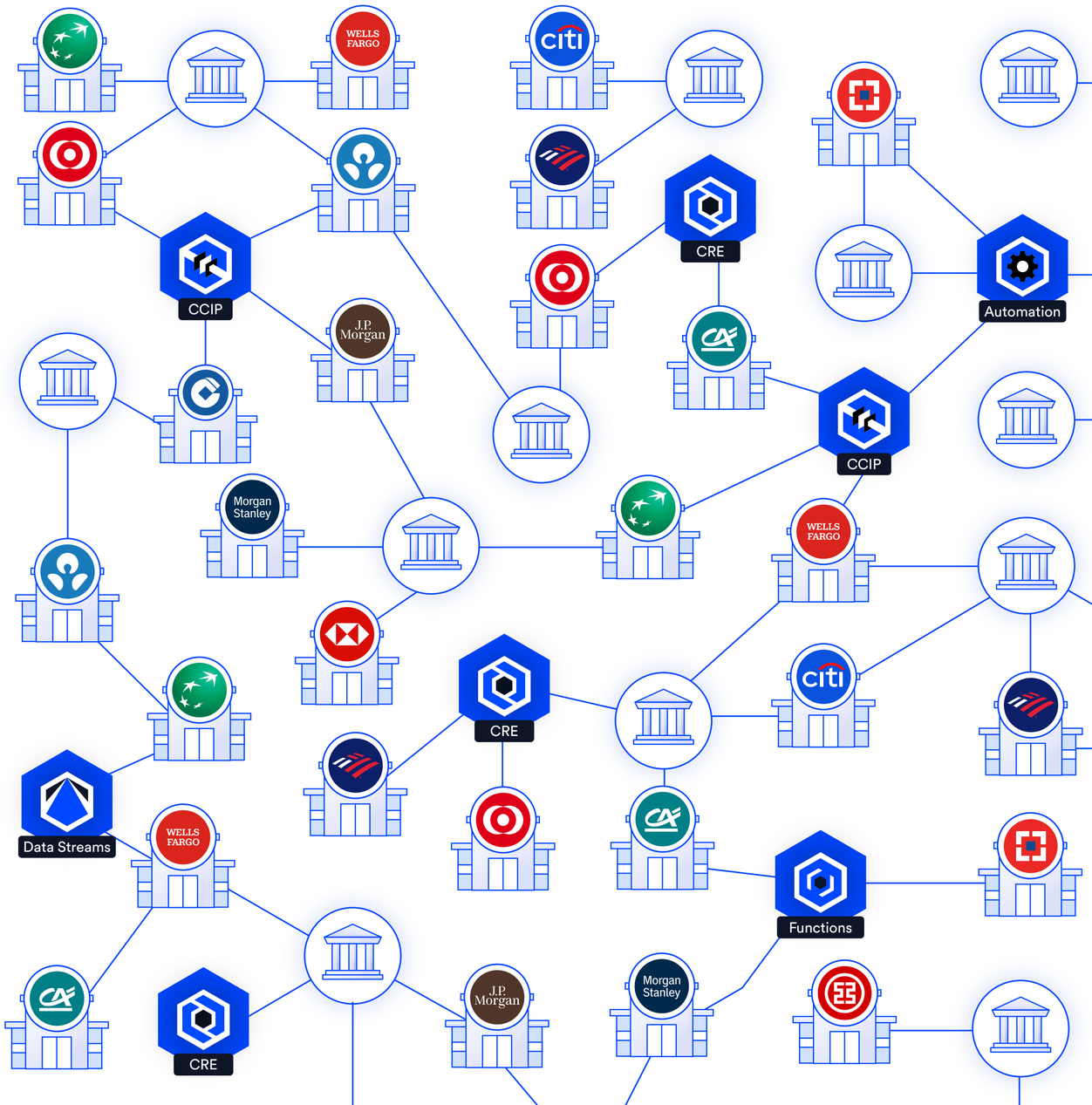
Raoul Schipper

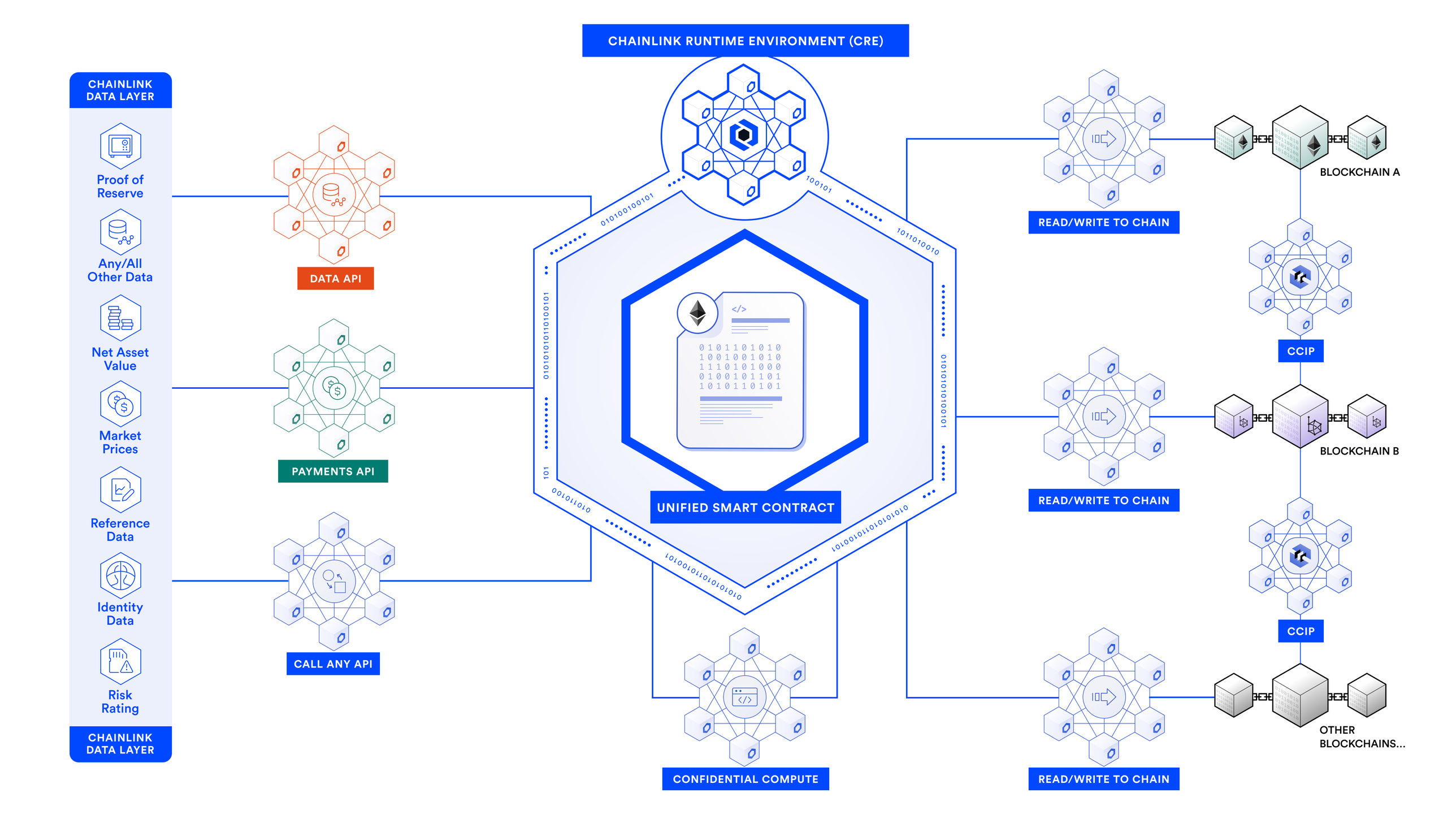
Strategic Account Manager, Chainlink Labs

Web3 on Chainlink Standards

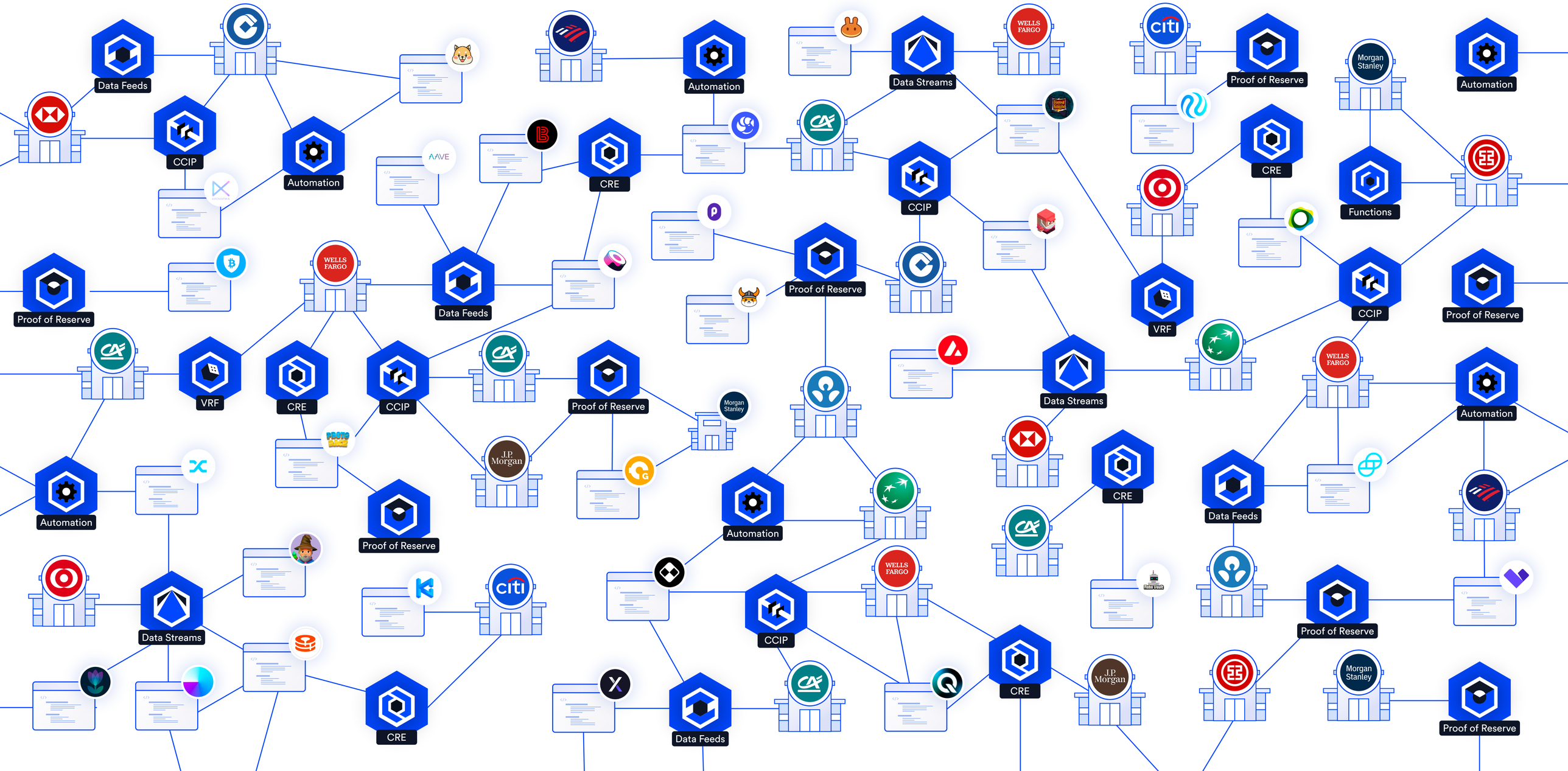


TradFi on Chainlink Standards

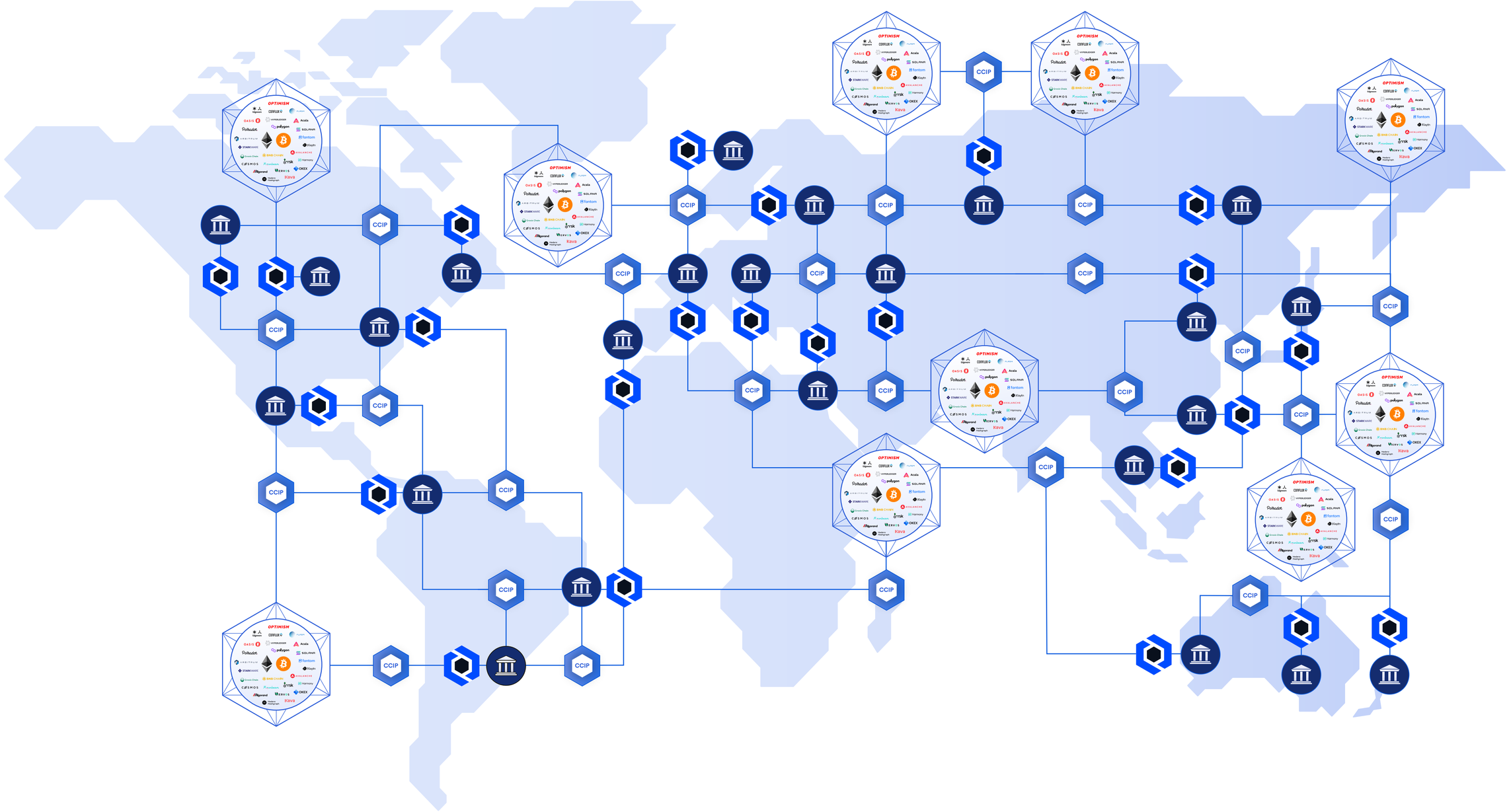



CHAINLINK RUNTIME ENVIRONMENT (CRE)
CHAINLINK DATA LAYER
Proof of Reserve
Any/All Other Data
Net Asset Value
Market Prices
Reference Data
Identity Data
Risk Rating
CHAINLINK DATA LAYER
DATA API
PAYMENTS API
CALL ANY API
UNIFIED SMART CONTRACT
CONFIDENTIAL COMPUTE
READ/WRITE TO CHAIN
READ/WRITE TO CHAIN
READ/WRITE TO CHAIN
BLOCKCHAIN A
CCIP
BLOCKCHAIN B
CCIP
OTHER BLOCKCHAINS...

Merging These Internets of Contracts Using One Set of Standards Is Our Goal



CCIP and CRE Create a Global Internet of Contracts



Chainlink

Thank You

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