SECURRENCY

Project Caravel: Phase II
Control Locations, Custody, and Blockchain Transaction Reversability

March 31, 2021

Fintech
Infrastructure

Security,
Compliance, and Convenience

Capital
Formation and liquidity

Agenda

SECURRENCY

Project Caravel Overview

- Recap of November Demonstration
- Custody Demonstration Objectives
- Digital Asset Custody – Regulator Statements & Challenges
- Custody Model Comparison (Traditional, Blockchain, Hybrid)

Today's Demonstrations/Discussions

- Hybrid Control Location: On-Chain / Off-Chain Synchronization
- Transaction Reversibility: Recovery from lost, stolen, or misappropriated value
- Possession and Control: Broker control & recovery from broker failure
- Self-custody: Compliance and reconciliation for hosted & unhosted wallets
- Key Management: Multi Party Computation (MPC) & Hardware Security Module (HSM)

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Project Caravel Vision:

Multi-jurisdiction Regulator Dialogue in Experimental Setting to Showcase Benefits of Blockchain Technologies for Regulatory Challenges

- Phase I: Cross-border transaction policy enforcement & distribution control
- **Phase II: Custody, Control Locations, and Transaction Reversibility**
- Future Phases:
  - Onboarding, enrollment & escrow
  - Automated reporting & audit capabilities
  - Privacy and oversight
  - Collateral, risk management, balance sheet exposure, and insurance

Project Caravel Phase I Recap 10 Scenarios

BASIC

- Scenario 1: (SEC.RegD) Exempt private offering of US Corporation Common Stock in the US
  - *Rules: Reg D Rule 506(c) (US)*
- Scenario 2: (EPF) Exempt private offering of ADGM-registered fund shares in ADGM
  - *Rule(s): ADGM Exempt Fund*

ADVANCED (Cross Jurisdiction)

- Scenario 3: Exempt private offering of ADGM-registered fund shares in the US
  - *Rule(s): Reg D, Rule 506(c) (US); ADGM Exempt Fund*
- Scenario 4: Exempt primary offering of US Corporation Equity in ADGM
  - *Rule(s): Reg S (Cat3) + Rule 903; ADGM Exempt Market Offer (Mkt 4.3)*

SECONDARY MARKET TRADING

- Scenario 5: Exempt secondary resale of US Corporation Debt in ADGM
  - *Rule(s): Reg S (Cat2) + Rule 904 (US); ADGM Exempt Market Offer (Mkt 4.3)*
- Scenario 6: Secondary resale of US Corporation Common Stock in the US
  - *Rule(s): Rule 144 (US)*

+4 more ASIC/FSRA oriented scenarios

The November demonstration focused on the ability of (smart contract) technology to capture regulatory policy and automate transaction compliance for decentralized, cross-jurisdiction transactions.

1. Automated multi-jurisdiction transactions
2. Distribution control of assets
3. Accountability for compliance decisions

ABU DHABI GLOBAL MARKET
سوق أبوظبي العالمي

ASIC
Australian Securities & Investments Commission

Project Caravel Phase II (Custody):

Potential Commercial & Regulatory Benefits of Blockchain Technology

1. Instant trade settlement:
   Leverage blockchain to enable instant trade clearing and on-demand settlement
2. T+2 --> T+0 reconciliation:
   Reconciliation of ownership records and encumbrance in a diverse ecosystem
3. Scalable audits:
   Immutable transaction history resides in regulated control locations enabling alignment of institutional and retail processes
4. Full value recoverability:
   Ability to restore ownership in the event of account compromise or loss of control (lost secret), theft, disappearance of intermediary, or ledger event (51% attack, forking, quantum attack)
5. Intrinsic compliance and risk management:
   “Smart” assets with embedded rules provide accountability, policy enforcement, and fraud detection at global scale.

Today's Demonstrations

Today's session will focus on the following:

- Control Location: Off-chain recordkeeping using on-chain/off-chain mirror
- Settlement: near instant ecosystem clearing and settlement of transactions
- Custody: Payment escrow and custody of tokenized securities
    - Reversibility of lost, stolen, or misappropriated value
    - Business continuity and disaster recovery (blockchain outage, quantum or 51% attack, forking)
- Travel Rule / Blue Sheet: regulator review of transactions (suspicious activity)

NOT showing (future sessions can focus on other important topics):

- Regulatory Policy Enforcement: Shown previously
- Enrollment and Escrow: Enrollment and qualification of investors in a global context; funds escrow
- Reporting: Tools for automated audit, disclosures, and government reporting (tax, CRS/FATCA, securities)
- Collateral and Risk Management: Tools to manage and make transparent exposure
- Privacy and Oversight: Tools for PII and transaction privacy while retaining oversight

Applicable Regulation & Regulatory Concerns - Possession and Control

Settlement & Custody of Digital Assets

Settlement & Custody of Digital Assets: SEC

SECURRENCY

*Applicable Rules**

- Rule 3a1-1 (ATS Exemption)
- Rule 15c3-1 (Computation of Net Capital)
- **Rule 15c3-3 (Customer Protection Rule)**
- Rule 17a-3 (Record retention for Exchanges)
- Rule 17Ad-7 (Record retention for TAs)
- Rule 17a-4 (Record retention for BDs)
- Rule 17a-5 (Financial Reporting Rule)
- Rule 17a-13 (Quarterly Securities Count Rule)

Regulatory/Policy Concerns

- Traditional securities infrastructure has checks and controls w/ involvement of various intermediaries, regulators/auditors examining broker-dealer, and ability to reverse/cancel mistaken or unauthorized transactions.
- Digital assets issued/transferred using DLT may not be subject to the same, established clearing and settlement processes like traditional securities. Greater potential for financial harm to broker-dealer, customers, counterparties and other creditors.
- Fraud, theft, loss with respect to custodianship of digital assets; loss of private key needed to transfer a client's digital assets; inability to reverse fraudulent/mistaken transactions; other malicious actors
- "A digital asset security that is not in the exclusive physical possession or control of the broker-dealer because, for example, an unauthorized person knows or has access to the associated private key (and therefore has the ability to transfer it without the authorization of the broker-dealer) would not be held in a manner that complies with the possession or control requirement of Rule 15c3-3 and thus would be vulnerable to the risks the rule seeks to mitigate."

Applicable Guidance and/or Research

- SEC-FINRA Joint Statement on Broker-Dealer Custody of Digital Asset Securities (July 2019)
- SEC No-Action Letter re: ATS Role in the Settlement of Digital Asset Security Trades (Sept. 2020)
- SEC Statement and Request for Comment Regarding the Custody of Digital Asset Securities by Special Purpose Broker-Dealers (Dec. 2020)
- SEC Division of Examinations Risk Alert (Feb. 2021)

**For the purposes of this demonstration*

Settlement & Custody of Digital Assets: ASIC

SECURRENCY

*Applicable Rules/Laws**

- Corporations Act 2001
  - S 763 (Financial Products)
  - S 766E (Meaning of provide a custodial or depository service)
  - S 768A (Clearing and settlement facility)
  - S 913B (Requirements to obtain AFS License)
  - S 1012IA (Treatment of arrangements under which a person can instruct another person to acquire a financial product)
- Corporations Regulations 2001
- Australian Securities and Investments Commission Act 2001
- Competition and Consumer Act 2010

Regulatory/Policy Concerns

ASIC Corporate Plan 2018-2022: "Potential harms from technology driven by the growing digital environment and structural changes in financial services and markets. We will continue to focus on monitoring threats of harm from emerging products (e.g. ICOs and crypto currencies), cyber resilience, the adequate management of technological solutions by firms and markets, and misconduct that is facilitated by or through digital and/or cyber-based mechanisms."

AUS Senate Select Cmte FinTech & RegTech

- "I think the committee will have to give some thought as to what sort of digital asset policy we should have, given the consistent feedback that this is an undeveloped area of Australian policy." - Select Cmte Chair
- The February 11 public hearing also discussed potential changes to Managed Investment Schemes, including: carving out decentralized autonomous organizations from falling under that regime, and pushing ASIC to approve Bitcoin ETFs under the Managed Investment Scheme

Applicable Guidance and/or Research

- Regulatory Guide 1 (January 2021)
- ASIC INFO 225 (May 2019)
- Regulatory Guide 133 (July 2018)
- Regulatory Guide 148 (September 2017)
- Regulatory Guide 172 (May 2018)
- ASIC INFO 219 (March 2017)
- Regulatory Guide 36 (June 2016)
- Regulatory Guide 211 (December 2012)
- Regulatory Guide 185 (November 2005)

**For the purposes of this demonstration*

Settlement & Custody of Digital Assets: ADGM

SECURRENCY

*Applicable Rules/Laws**

- *ADGM Conduct of Business Rulebook (COBS)*
- *ADGM Market Infrastructure Rulebook (MIR)*
- COBS Chapter 10 (Operating a Central Securities Depository)
- COBS Chapter 14 (Client Money and Relevant Money Provisions)
- **COBS Chapter 15 (Safe Custody Rules)**
- COBS Chapter 17 (Rules 17.7-17.8, in particular)
- MIR Rule 2.6 (Operational Systems and Controls)
- MIR Rule 2.7 (Transaction Recording)
- MIR Rule 2.10 (Custody Services)
- MIR Rule 3.8 (Settlement Services)

Regulatory/Policy Concerns

- In its April 2018 crypto-asset regulatory framework consultation, the FSRA identified five main risk areas associated with crypto-assets:
  - AML/CTF/Tax;
  - Consumer Protection;
  - Technology Governance;
  - 'Exchange-Type' Activities;
  - Custody

Applicable Guidance and/or Research

- Guidance – Regulation of Virtual Asset Activities in ADGM (February 2020)
- Guidance – Regulation of Digital Securities Activities in ADGM (February 2020)
- Crypto-Asset Consultation (April 2018)

**For the purposes of this demonstration*

Control Location Discussion

Traditional Asset Custody: Independent Control Location

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E-Trade			
Dan	1234	AAPL	20
Joe	5678	AAPL	80
Total		AAPL	100

Broker/Bank/Custodian
Know the customer to facilitate financial transactions. Records (and sometimes physical) Custody of Clients' Assets

Investor A | Investor B

DB

Exchanges/ATS
Facilitate price discovery and order matching for public or private transactions

DB

Broker/Bank/Custodian
Know the customer to facilitate financial transactions. Records (and sometimes physical) Custody of Clients' Assets

Investor C | Investor D

DB

Schwab			
Tim	ab1d	AAPL	50
Bob	r2d2	AAPL	250
Total	**0x92**	**AAPL**	**300**

Benefits:

- Facilitates scale in a broad ecosystem
- It works (almost always)

Limitations:

- Delayed settlement (T+x) due to reconciliation challenge
- Not efficient for private markets
- Divide between institutional and retail access
- Fragmentation makes fraud detection challenging
- Difficult to trace ecosystem risk (encumbrance/exposure) in real time

Control Location

Official "root" record of ownership. Essential for corporate governance & distributions. All shares are accounted for and reconciled

Transfer Agent
Licensed Entity assigned by Issuer to maintain share ownership records

Central Securities Depository (CSD)
Facilitates share ownership clearing and settlement in a broad ecosystem of participants

DB

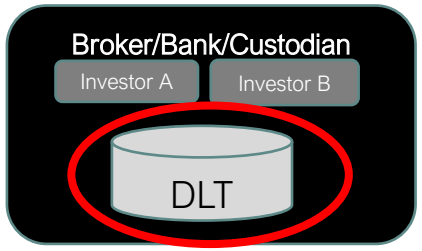
Issuer
Corporation for whom shares are offered. Can be Control Location for small, private offerings

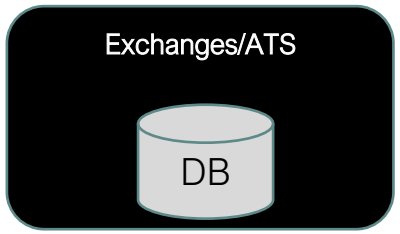
DTCC			
E-Trade	0385	AAPL	100
Schwab	0164	AAPL	300
Total		**AAPL**	**400**

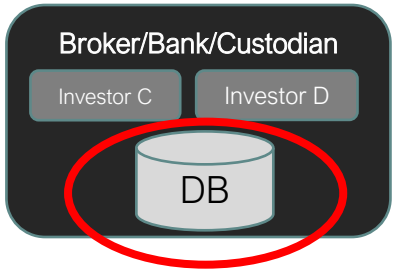
Digital Asset Custody: Blockchain Control Location

SECURRENCY

tZERO			
Dan	0x24	AAPL	20
Joe	0x78	AAPL	80
Total		**AAPL**	**100**







Coinbase*			
Tim	c1	AAPL	50
Bob	c2	AAPL	250
Total	**0x92**	**AAPL**	**300**

Investor E
(self-custody)

MetaMask		
0x11	MSFT	50

Limitations: Possession & Control (P&C) challenges

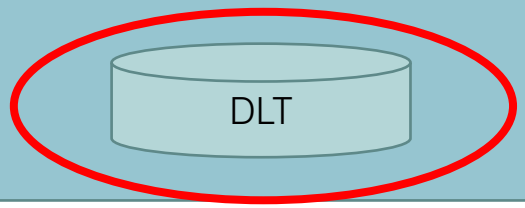
- Transactions irreversible (bearer instruments)
- No recourse for loss, theft, intermediary SIPA reqs
- No distribution control (decentralized transactions without intermediary compliance)
- Technology risks (51% attack, forking, quantum attack, airdrop)

Benefits:

- Near instant settlement/reconciliation*
- Accessible for institutions, retail & self custody
- No double spend (DvP). Programmable contracts (collateral, etc) to convey encumbrance at market scale

Control Location

Off-chain official "root" record of ownership. All shares are accounted for and reconciled ecosystem wide nearly instantly



Issuer

Corporation for whom shares are offered. Responsible for Smart Contract

Ethereum		
0x24	AAPL	20
0x78	AAPL	80
0x92	AAPL	300
0x11	MSFT	50
Total	**AAPL**	**400**
Total	**MSFT**	**50**

Digital Asset Custody: Hybrid Control Location

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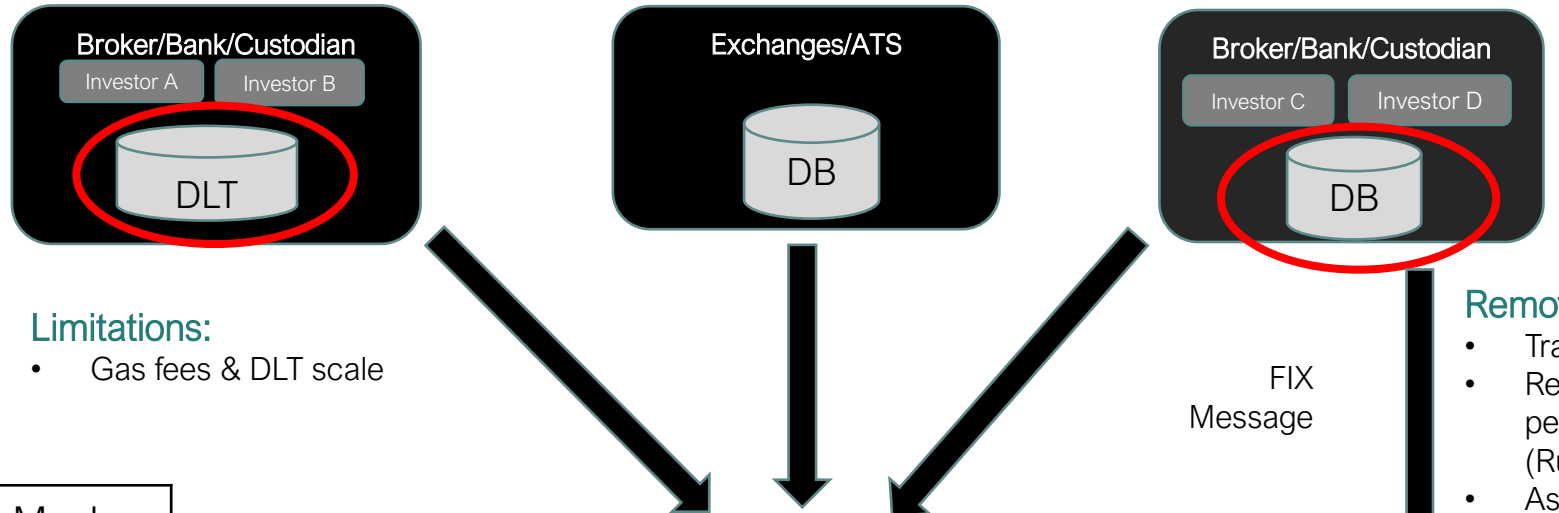
tZERO			
Dan	0x24	AAPL	20
Joe	0x78	AAPL	80
Total		**AAPL**	**100**



Coinbase*			
Tim	c1	AAPL	50
Bob	c2	AAPL	250
Total	**0x92**	**AAPL**	**300**

Verification Service

Licensed entity KYC

Investor E (self-custody)

MetaMask		
0x11	MSFT	50

Limitations:

- Gas fees & DLT scale

Removes P&C Limitations:

- Transactions reversible
- Recourse in the case of loss, theft, per intermediary P&C reqs (Rule15c3-3)
- Assured distribution control (decentralized transactions with integrated compliance)
- Technology risks mitigated (51% attack, forking, quantum attack)

Benefits:

- Near instant settlement/reconciliation
- Reversibility & protection against blockchain failure
- Verifiable compliance & encumbrance
- Broader, more inclusive experience

Issuer

Corporation for whom shares are offered

Future CSD			
Dan	0x24	AAPL	20
Joe	0x78	AAPL	80
Tim	0x92-1	AAPL	50
Bob	0x92-2	AAPL	250
Meg	0x11	MSFT	50
Total		**AAPL**	**400**
Total		**MSFT**	**50**

Blockchain to Control Location Relationship

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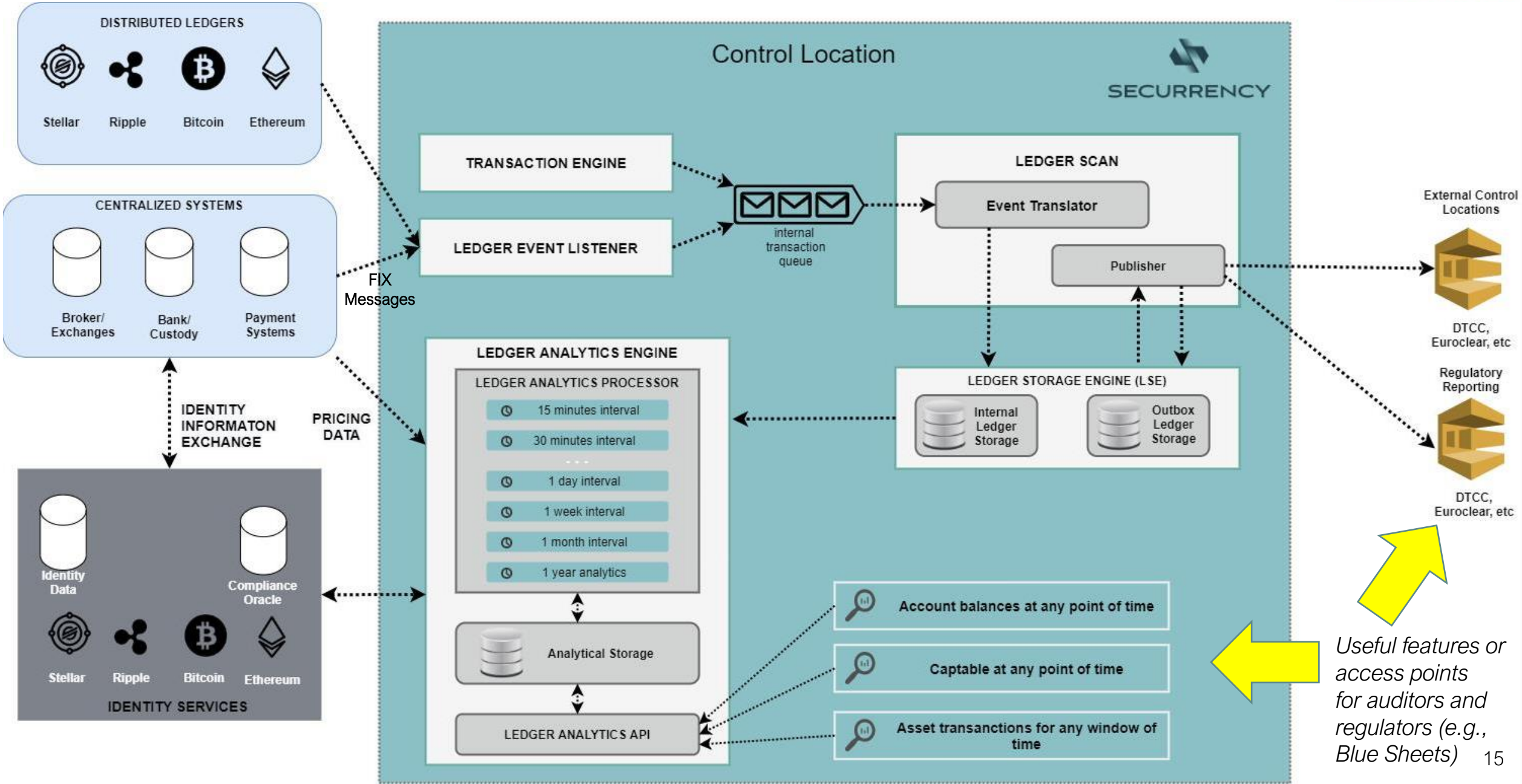

Useful features or access points for auditors and regulators (e.g., Blue Sheets)

Demonstration Overview

Caveats and Disclaimers

Exercise purposes only. This demonstration will not involve the trading of any actual securities.

All the companies, securities and persons in this demonstration are notional.

The presentation today is a **demonstration of technology**, not a final expression of legal sufficiency.

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DEMO

Hybrid Custody:
On-chain &
Off-chain reporting
& recordkeeping

Demo 1: Blockchain to Control Location Relationship

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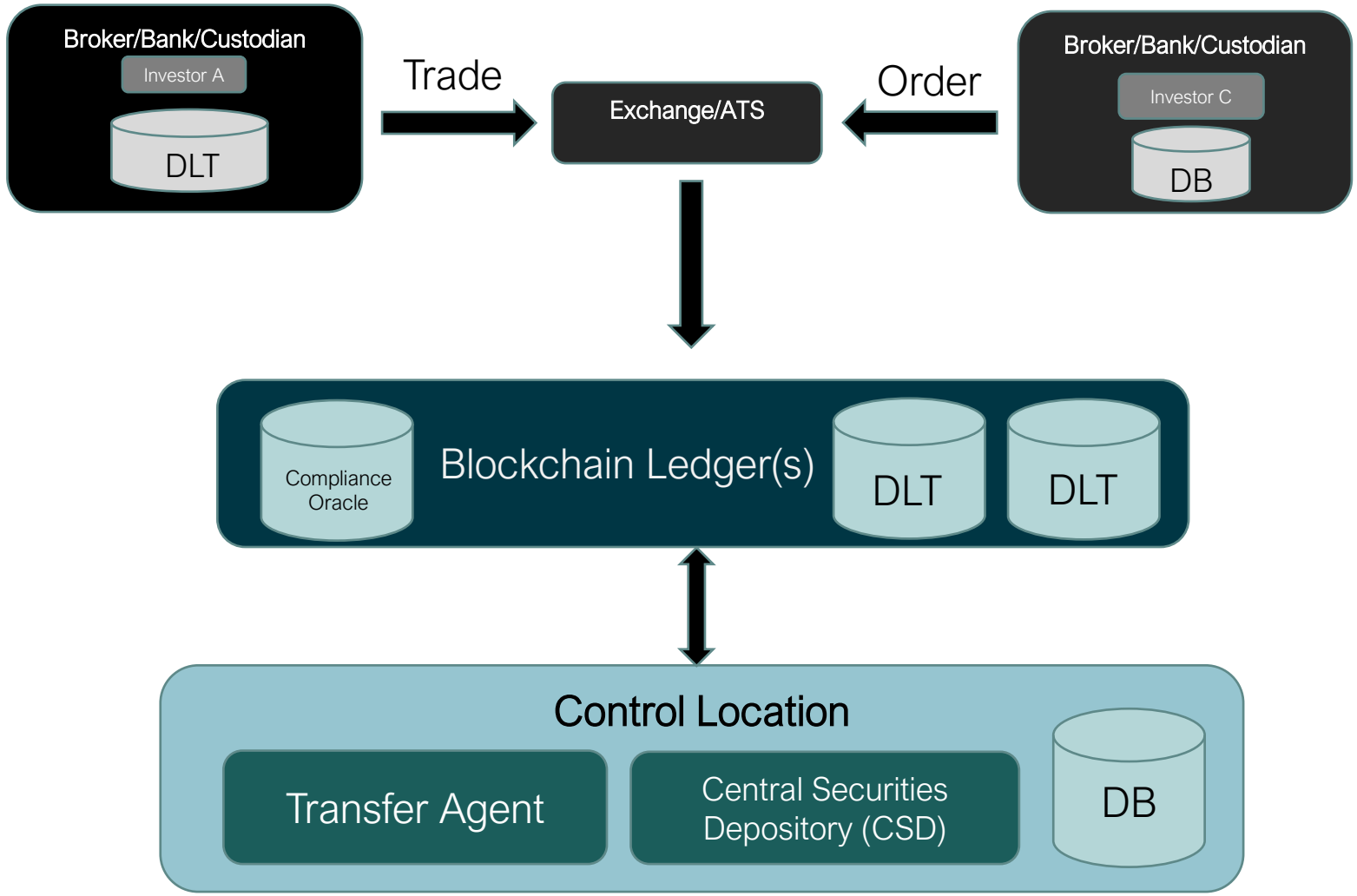
Demonstrating:

Relationship between:

- Investor to ATS
- ATS to blockchain
- Blockchain to control location



SECURRENCY

DEMO

Hybrid Custody: Blockchain Transaction Reversability

Demo 2: Transaction Reversibility

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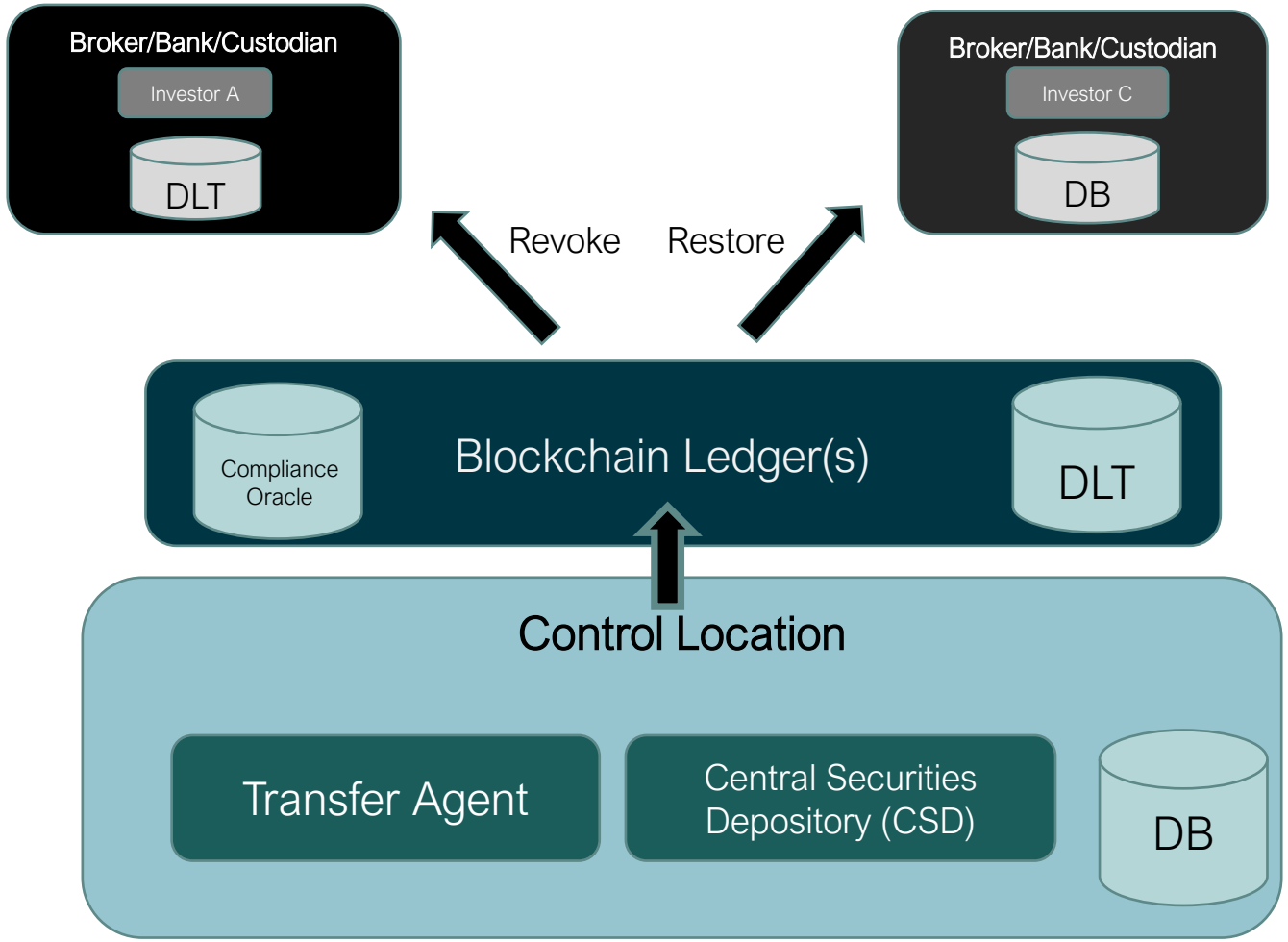
Demonstrating:

1. Control Location to Investor A (Revocation)
2. Control Location to Investor C (Restoration)



SECURRENCY

DEMO

Broker-Dealer Control & Recoverability during Broker-Dealer Liquidation (SIPA)

Demo 3: Broker-Dealer Control & Recoverability during Broker-Dealer Liquidation (SIPA)

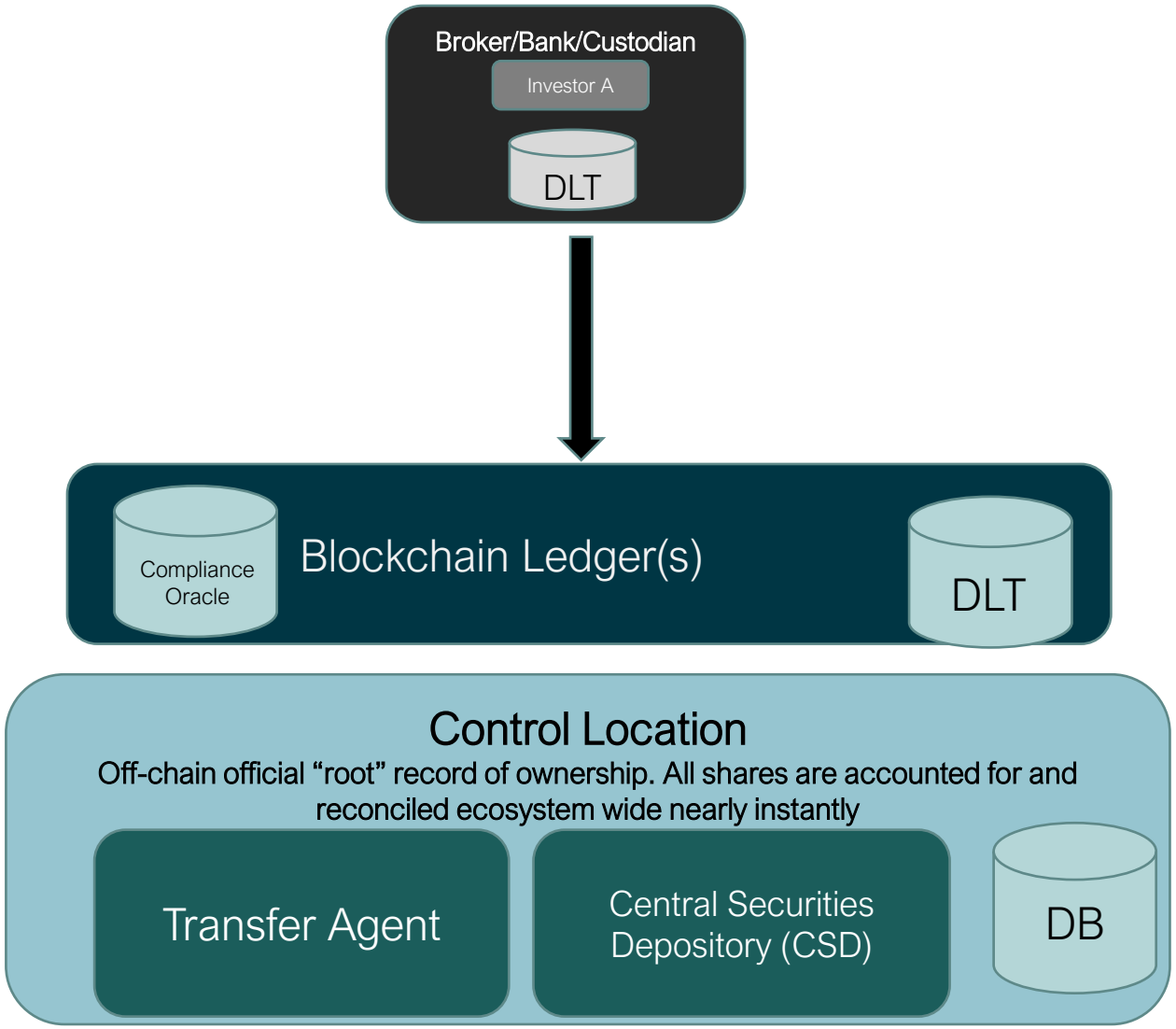
SECURRENCY

Demonstrating:

Broker Custody: Each Client Account holding Many Assets

Transfer Agent Custody: Each Asset held by Many Investor Accounts

1. Broker exercises control over client assets
2. Control location reverses broker action



Securities Investor Protection Act (SIPA)

"(C)ustomers holding digital assets that are not securities through a broker-dealer could receive less protection for those assets than customers holding securities.... SIPA protection does not extend to all assets that may be held at a broker-dealer. Consequently, in a SIPA liquidation of a broker-dealer that held non-security assets, including non-security digital assets, investors may be treated as general creditors, to the extent their claims involve assets that are not within SIPA's definition of 'security.'"

- SEC Statement/RFC SPBD Custody Digital Assets (Dec 2020)

"The SIPA definition of 'security' is different than the federal securities laws definitions. See 15 U.S.C. 78lll(14) (excluding from the SIPA definition of 'security' an investment contract or interest that is not the subject of a registration statement with the Commission pursuant to the provisions of the Securities Act of 1933). This means there may be digital assets that are: (1) securities under the federal securities laws and SIPA, and thus are protected by SIPA; (2) securities under the federal securities laws, but not under SIPA, and thus not protected by SIPA; or (3) not securities under the federal securities laws and therefore not protected by SIPA."

- SEC-FINRA Joint Statement on Broker-Dealer Custody of Digital Asset Securities (July 2019)

With this technology, customers' securities held by a broker-dealer that is a member of the Securities Investor Protection Corporation and customers' cash on deposit at such a broker-dealer for the purpose of purchasing securities *could each be isolated and readily identifiable as "customer property"* and, consequently, available to be distributed to customers ahead of other creditors in the event of the broker dealer's liquidation.

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DEMO

Hosted
& Unhosted Wallets

Demo 4: Registration of Unhosted Wallets

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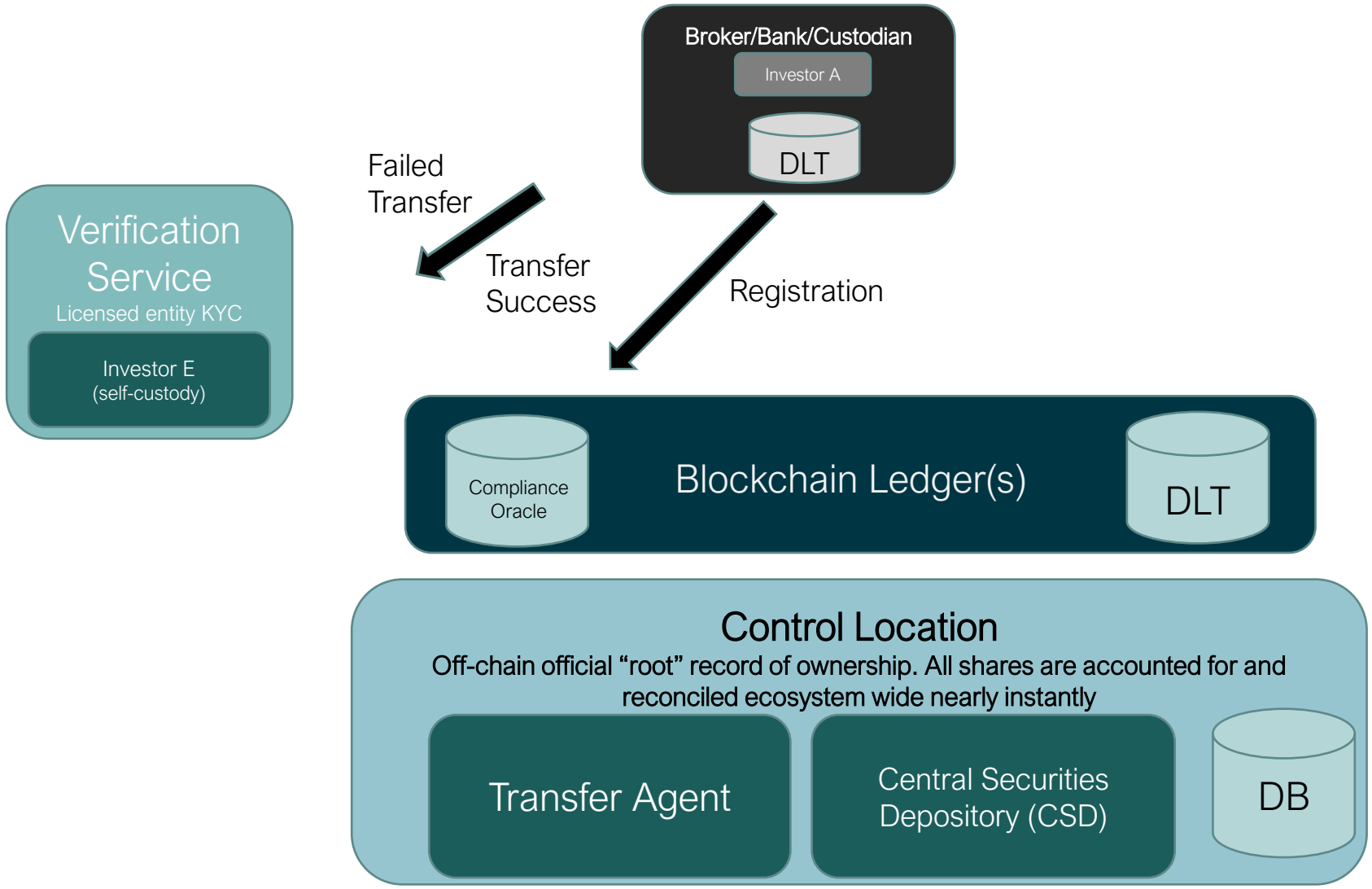
Demonstrating:

1. Value Distribution Control
2. Unhosted Wallet verification Control Location Verification



Discussion:
Key Management
Hardware Security Module (HSM), Multi-Party Computation (MPC), and Multi-signature approaches

HSM & MPC configuration

Public/Private Blockchain

PROVIDED BY GK8

GK8 Mobile Application

Bank's Client App

Employee App

PROVIDED BY GK8

GK8 Desktop Application

PROVIDED BY GK8

Outbound unidirectional communication only

PROVIDED BY GK8

API

API

API

GK8 Cold Vault

Recommended On-Premise Locations:

1. Service Bureau
2. Physical Vault

GK8 Hot MPC

(Local co-signer)

Deployment Options:

1. On-Premise PCs
2. Cloud Servers

OPTIONAL

PROVIDED BY THE BANK

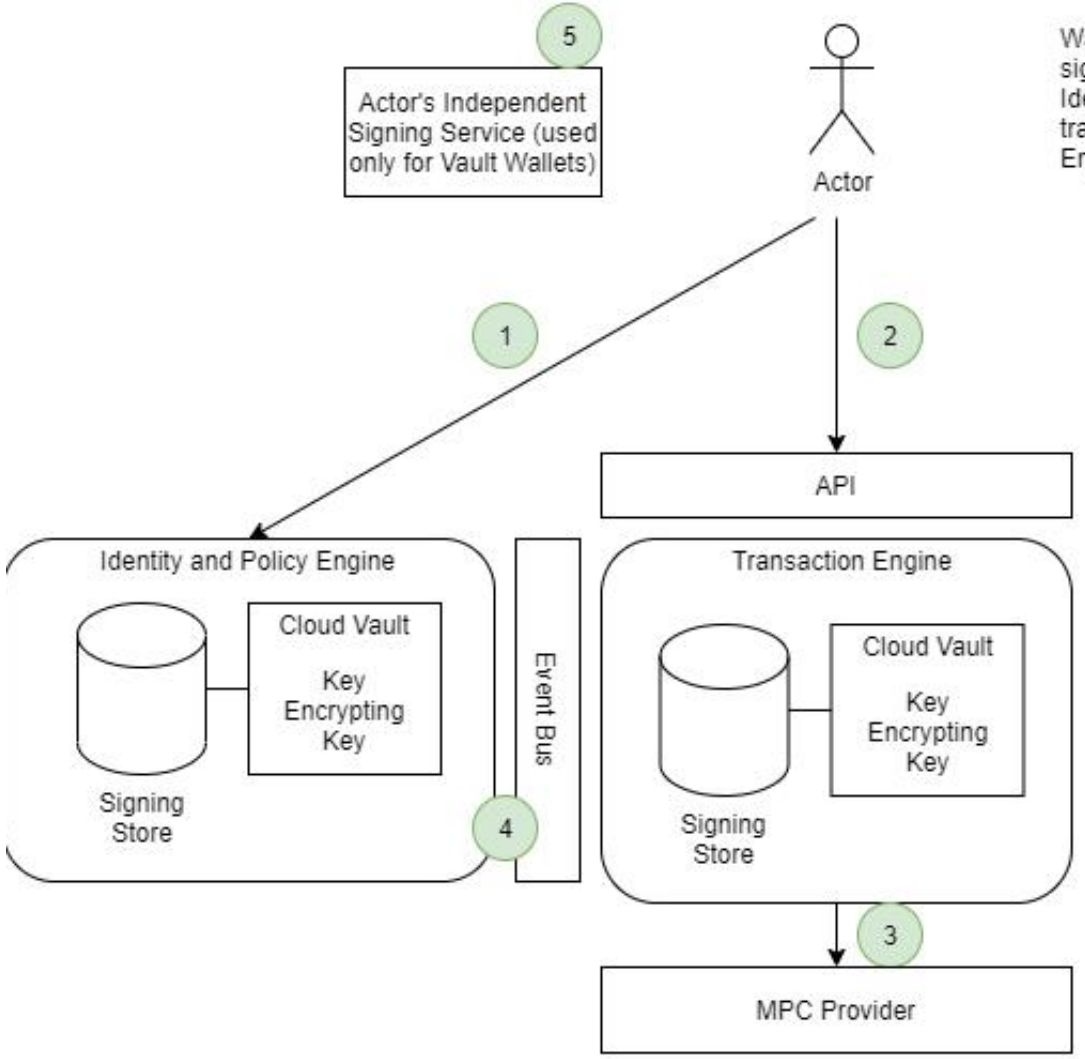
SDK

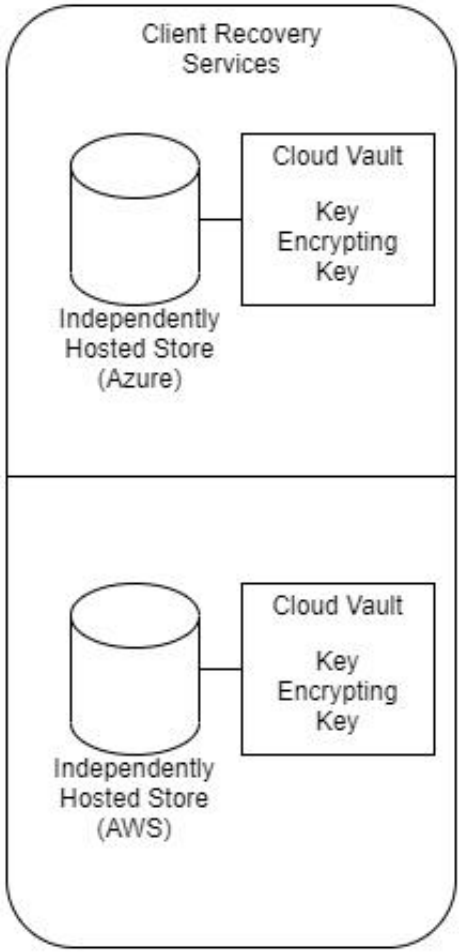
Bank's In-house Applications

Trading, Lending, etc.

MPC Signing Sequence

Wallets are signed using 2 of X or 3 of X (for Vault) signing sequence. Both Transaction Engine and Identity/Policy Engine must sign to initiate a transaction. Policy is enforced via Identity/Policy Engine signature.





1. Actor logs in using Mobile App via Identity Service receiving Access Token
2. Using Mobile App, Actor requests transaction via Transaction Engine API. Actor's Access Token is validated.
3. Transaction Engine initiates transaction event via MPC provider & publishes to Event Bus.
4. Identity Service detects signing event from bus, validates legitimacy of Access token, consults with Policy governing transaction (if any), and if approved, signs transaction to meet 2 of X standard.
5. If needed (Vault Wallets), Actor signs transaction using Independent Signing Service (usually on mobile device)

Recap of Demonstration

- Demonstrated custody features and interplay with broker-dealers and transfer agents for the purposes of:
  - Simultaneous on-chain/off-chain record-keeping and reporting functionality (immutable transaction history resides in control locations governed by the SEC)
  - Reversibility of lost, stolen, or misappropriated value
  - Business continuity and disaster recovery (blockchain outage, forking, etc.)

- Leveraging blockchain to enable instant trade clearing and on-demand settlement
  - Reconciliation of ownership records and encumbrance in a diverse ecosystem
  - Intrinsic compliance – smart assets with embedded rules provide accountability, policy enforcement, fraud detection at global scale

- Future Phases (for discussion/demonstration):
  - Virtual Asset Travel Rule Reporting
  - Onboarding, enrollment & escrow
  - Automated reporting, suspicious activity detection, & audit capabilities
  - Zero Knowledge Proof (ZKP), self-sovereign identity, transaction privacy, & regulatory (+regulator) oversight
  - Collateral, risk management, balance sheet exposure, & insurance

Many thanks for your attention

Q&A

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John Hensel – COO – john@securrency.com