

Blockchain & Money



Class 21

November 29, 2018

Class 20 Overview

- Readings and Study Questions
- Clearing and Settlement Services
- Blockchain Technology Applicability
- Blockchain Technology Projects
- Derivatives Common Domain Model
- Conclusions

Class 21 (11/29): Study Questions

- What are the opportunities of blockchain technology to lower costs and counterparty risks in the clearing, settlement and processing of financial transactions?
- Why have the applications proposed to date almost exclusively been focused on permissioned or private distributed ledger technology?
- What lessons might be drawn from the ongoing projects – ASX for equities, ISDA for swaps, others?

Class 21 (11/29): Readings

- 'Blockchain could save investment banks up to \$12 billion a year: Accenture' Reuters
- *'ISDA Publishes Digital Iteration of the Common Domain Model'* ISDA
- *'ASX's Proposed Distributed Ledger and the Future of Clearing and Settlement'* Leung, Medium

Optional

- 'Distributed ledger technology in payments, clearing, and settlement' Mills

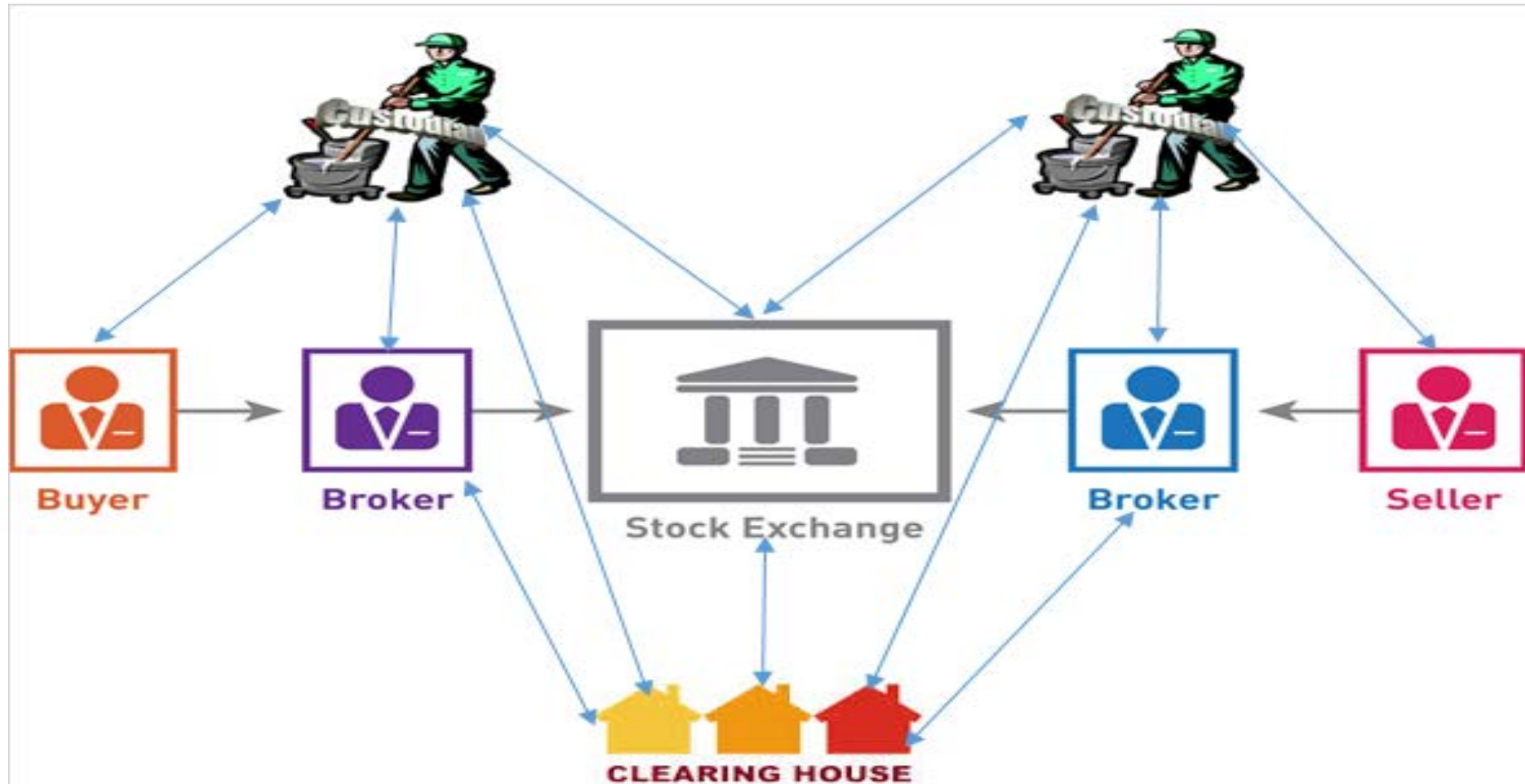
Final Projects: Assessing Use Cases

- What is the value creation proposition and 'pain point' is being solved?
- Which transactions and data needs recording?
- Which multiple stakeholders need write and read access to ledgers?
- Which costs of verification or networking can be reduced?
- What are competitors doing to address similar value propositions or markets?
- Why are append only logs and multiple party consensus the best solution?
- If permissionless applications, why is native token the best solution?
- What are tradeoffs of scalability, performance, privacy, security, & coordination
- Can permissioned blockchain or traditional Data Base adequately address use case?
- How can broad adoption be realized?
- What is the customer interface and how is it better than current interface?

Use Cases: Assessing Costs & Benefits

- **Costs of technical challenges and transition?**
 - What tradeoffs are necessary?:
 - scalability, performance, privacy, security, interoperability & coordination
 - Can Permissioned blockchain or Traditional Data Base adequately address use case?
 - How can broad adoption be realized?
- **Are *net* benefits sufficient?**

Securities Clearing Services



Clearing and Settlement

Execution

Buyer and seller enter into a legally binding agreement to transfer securities from the seller to the buyer in exchange for money from the buyer to the seller.

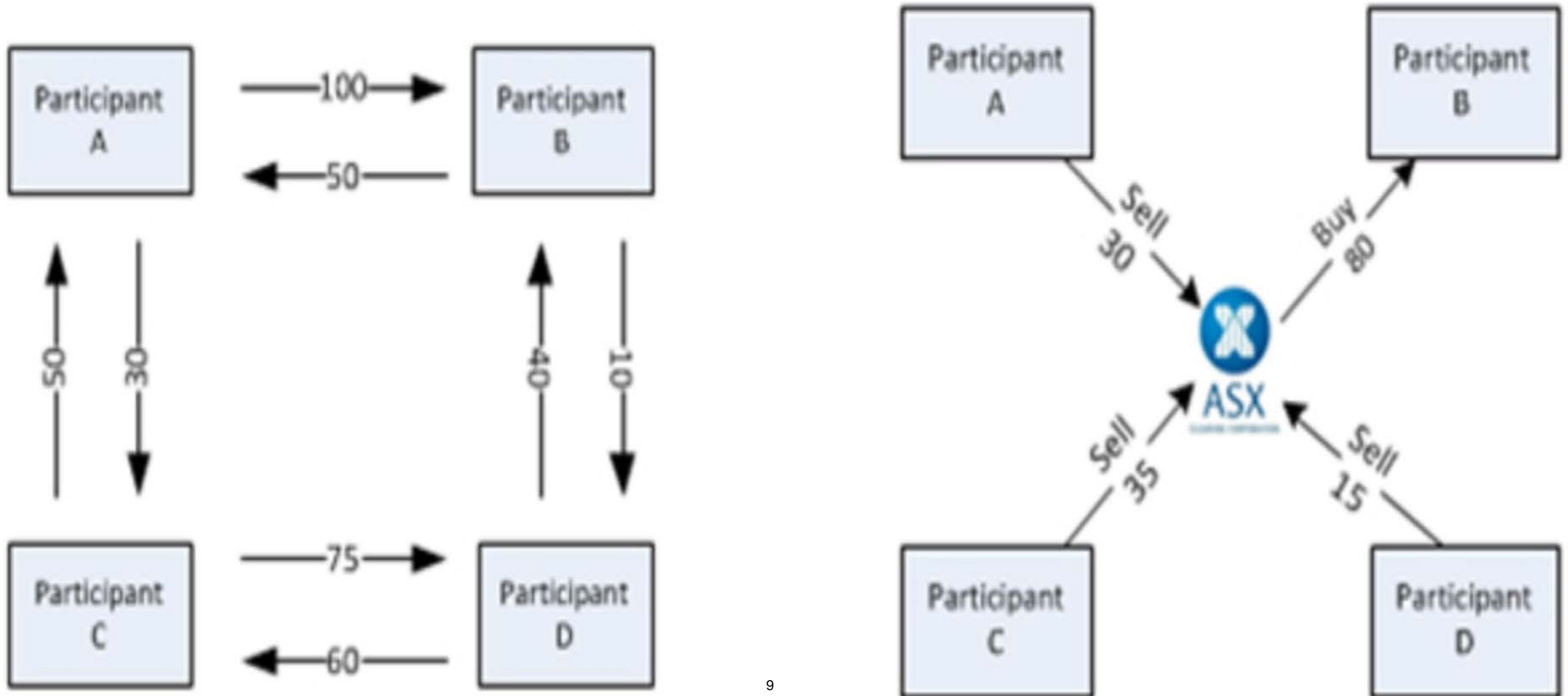
Clearing

Performing all of the necessary steps leading to the settlement, such as posting sufficient margin, and recording the transaction.

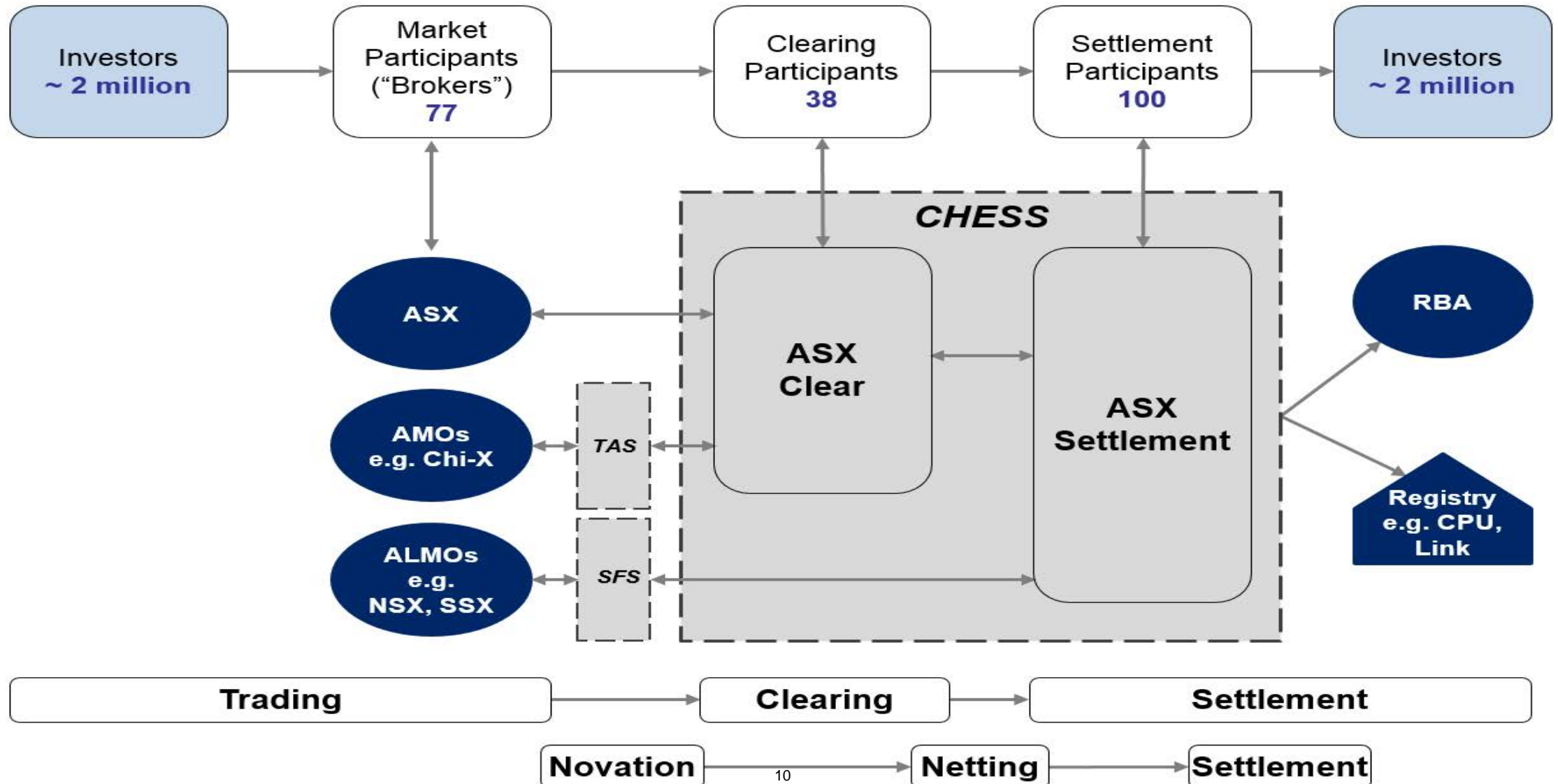
Settlement

The actual exchange of securities for money, when the securities are titled to the buyer and the money is transferred to the seller.

Clearing – Benefits of Netting

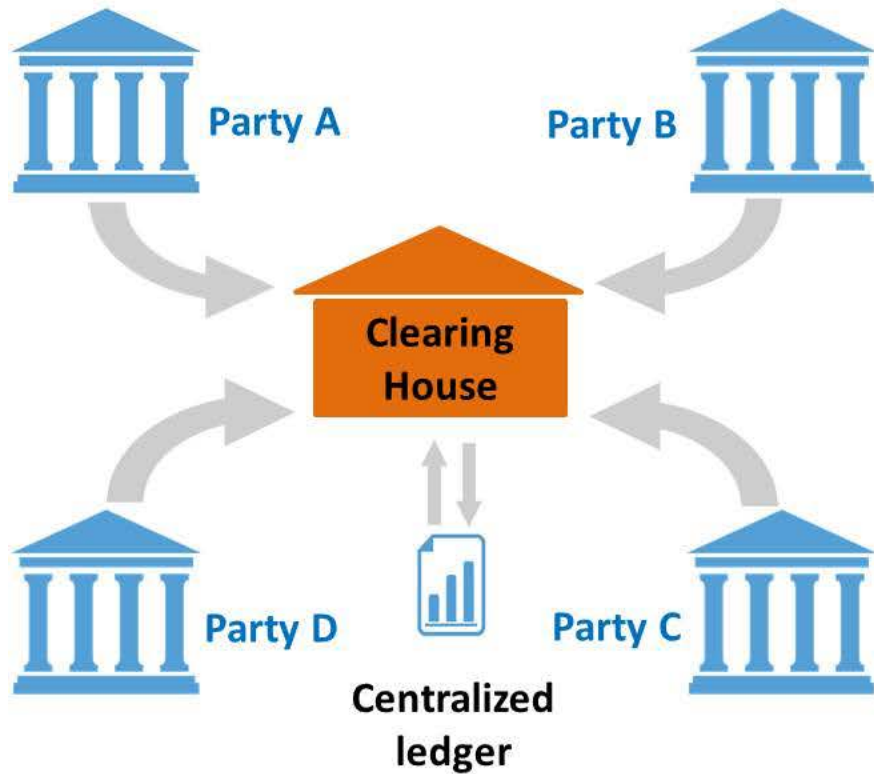


Australia Equities Clearing & Settlement - CHES

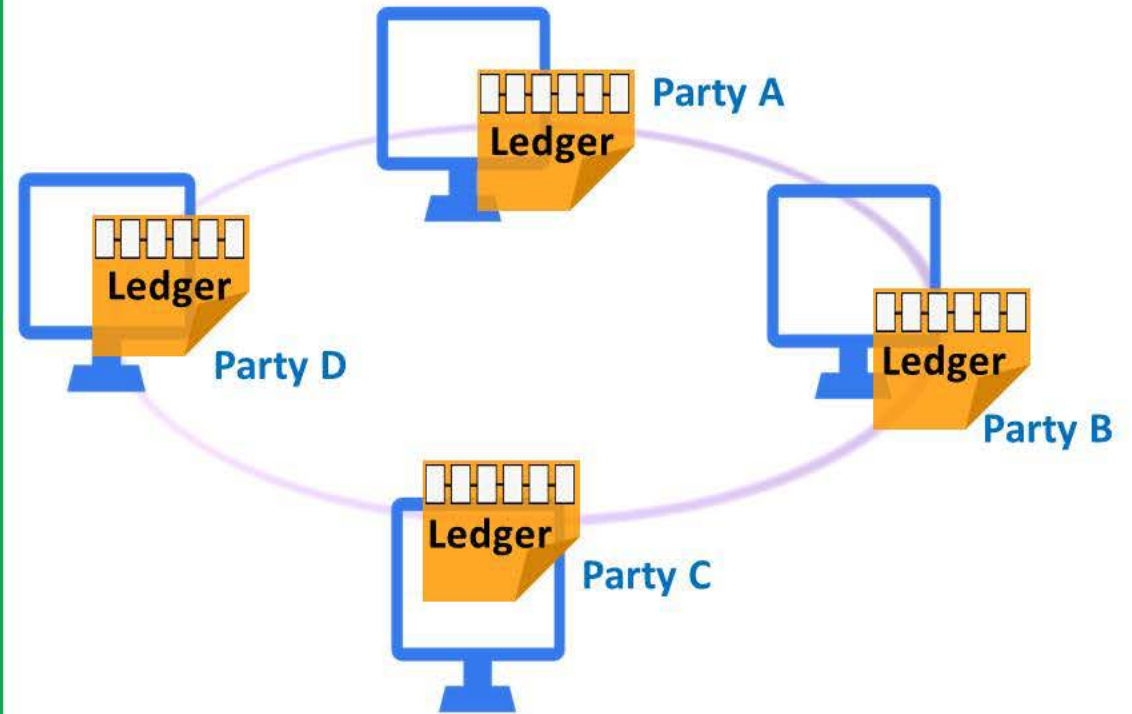


Blockchain Technology Application?

Conventional transaction clearance approach



Blockchain-based transaction clearance approach



Blockchain Technology Application?

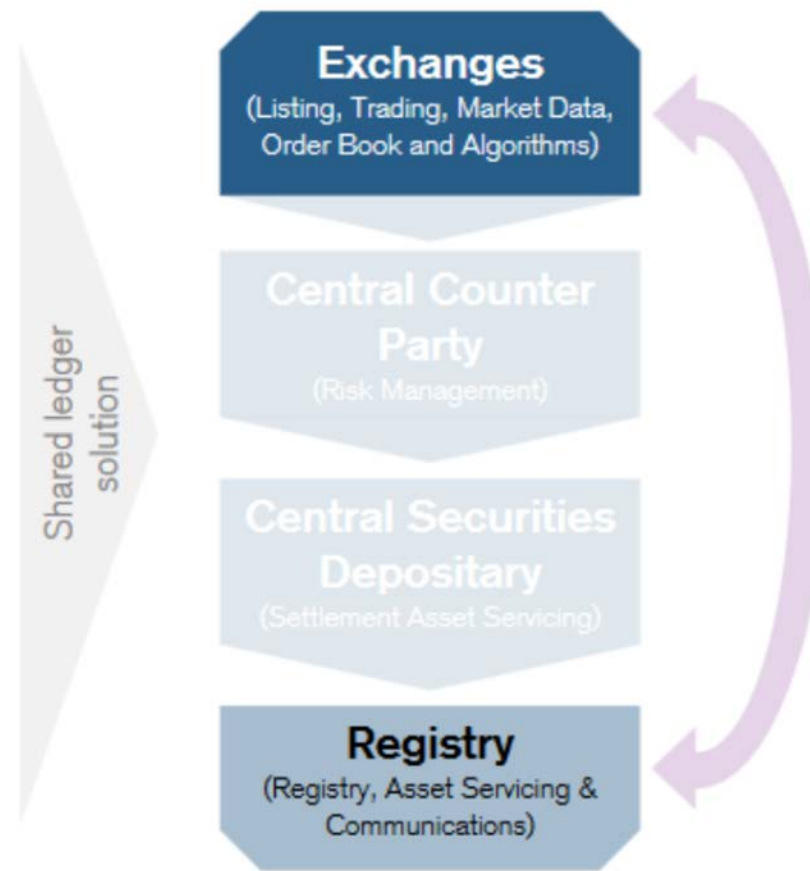
Traditional Architecture

Multiple centralised ledgers



Blockchain Architecture

Permissionless public ledger



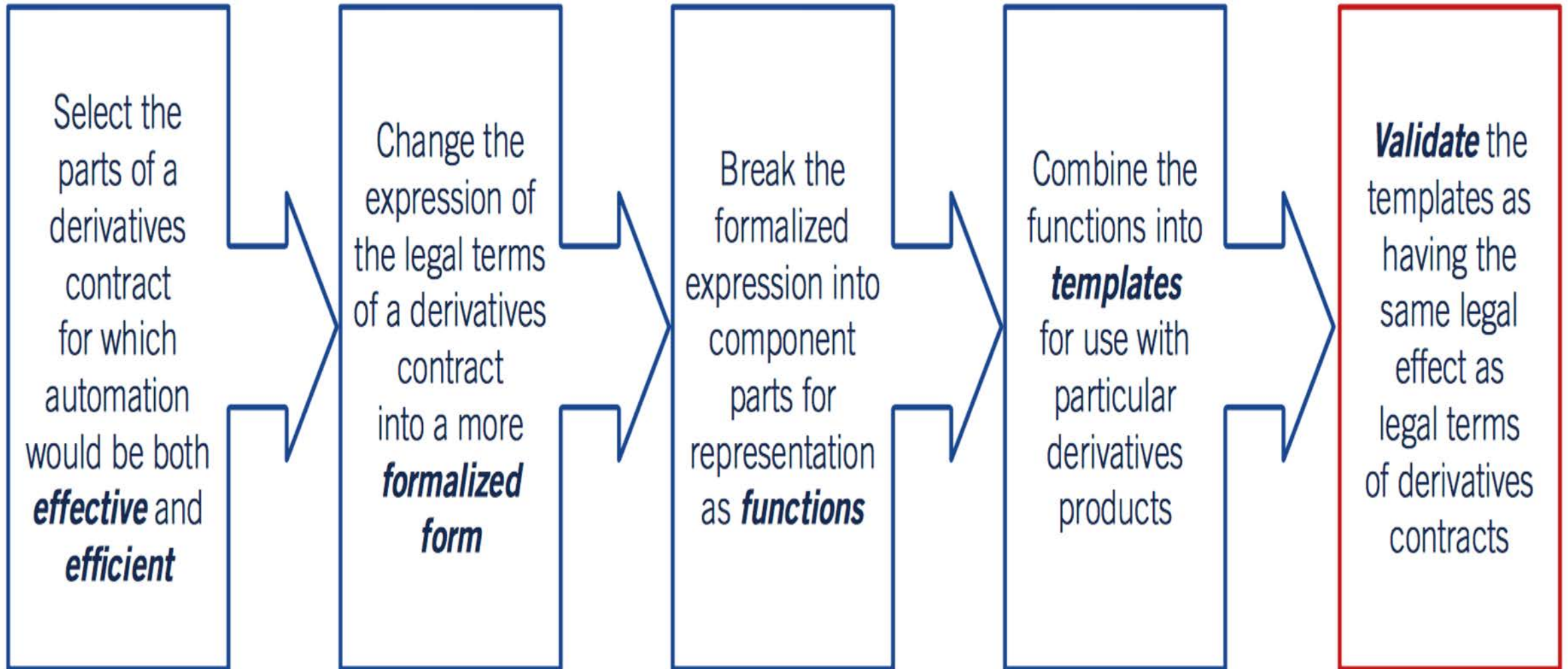
Blockchain Technology Projects

- Australia – ASX CHESS project with Digital Asset system (2016 – 21)
- Estonia – Tallinn Stock Exchange Exploring Proxy Voting & Registration (2018)
- India – SEBI, Blockchain Technology exploration announced (1/2018)
- Japan – Japan Exchange Group – Post Trade Matching Test (2017-18)
- US – NADAQ Linq private securities platform (2015) & Mutual Fund project (2018)

Derivatives Common Domain Model

- International Swap Dealers Association project
- Seeks to use Smart Contracts to Automate Contractual Terms
- Machine Readable standard representation of Events and Actions over the life of a Derivatives Trade
- Uses Java and JavaScript Object Notation
- CDM 1.0 includes 'new transaction', 'rate reset', 'partial termination', 'allocation', 'novation' and 'compression' events

Derivatives Common Domain Model



Spring 2019 Policy Course

- Public Policy & Private Sector (15.S66) Tuesday 5 – 8 pm
 - Explores the intersection of public policy and the private sector
 - Senior level public policy guests in discussion-based course
 - Key economic policy - technology, trade, tax, financial, and competitions policies
 - Tentative Guest Speakers - Sheila Bair, Sara Bianchi, Steve Moore, John Podesta, Sharis Pozen, & Miriam Shapiro
 - Taught with Simon Johnson

Spring 2019 Blockchain Technology Courses

- Blockchain Lab (15.S68) Tuesday 1 – 2:30 pm
 - Action Learning working on Digital Currency Initiative projects
 - With Simon Johnson, Neha Nerula, Michael Casey
- Emerging Blockchain Havens (15.228 B) H3 Monday 6 – 9 pm
 - Student Led trip to Estonia and Switzerland during Spring break & SIP weeks
- Crypto Finance (15.S04) H4 Tentatively Mon/Wed 10 – 11:30 am
 - With Antoinette Schoar and Leonid Kogan

Class 22 (12/4): Study Questions

- What attributes of trade finance and supply chain management might make this a ripe set of use cases for blockchain applications?
- What lessons might be drawn from the ongoing projects?

Class 22 (12/4): Readings

- ‘Trade Tech – A New Age for Trade and Supply Chain Finance’ World Economic Forum / Bain
- ‘How Banks Are Teaming Up To Bring Blockchain To Trade Finance’ CB Insights
- ‘Hong Kong, Singapore to link up trade finance blockchain platforms’ Reuters
- *‘Business Interest in Blockchain Picks Up While Cryptocurrency Causes Connoptions’ Wall Street Journal*
- ‘De Beers turns to blockchain to guarantee diamond purity’ Reuters

Conclusions

- Clearing and Settlement Systems critical to Capital Markets Roles
- There are still Many Counterparty Risks and Inefficiencies
- Traditional Systems have Multiple Parties Sharing & Reconciling Ledgers
- Australia and others Exploring and Working on Permissioned Applications
- Performance, Efficiency, Resiliency, Security, Privacy and Regulatory Compliance key to Adoption
- Blockchain Technology may Provide^{P1} Significant Benefits

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