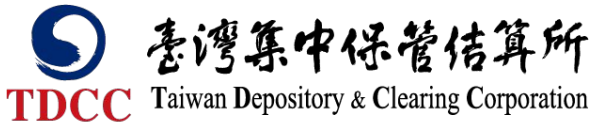
The Evolution of Enterprise DLT and Smart Contract Technology

Grahame Webb, Senior Product Manager, Digital Asset



Agenda

- Introduction to Digital Asset
- Why DLT and Smart Contract Technology Matters
- Innovation in traditional markets
- Innovation in new markets
- Smart Contracts with DAML
- Industry Adoption
- Proxy Services with DAML

Introduction

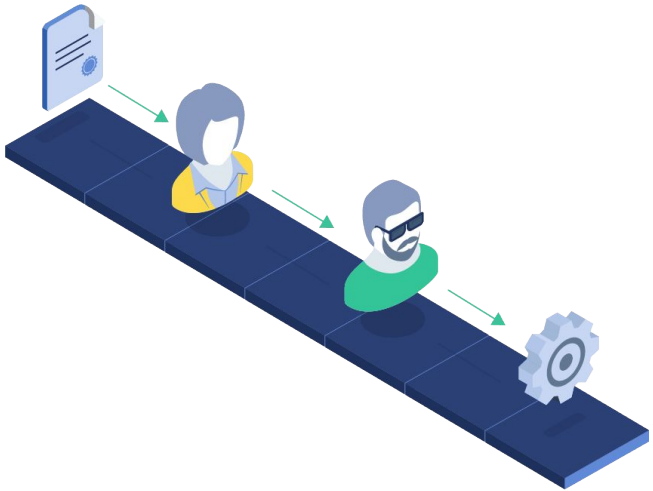
Digital Asset is a technology company that builds products based on Distributed Ledger Technology (DLT) for highly regulated institutions, such as financial market infrastructure providers, CCPs, CSDs, exchanges, banks, custodians, health insurers and their market participants.

Digital Asset

- We were founded in 2014 and now have over 180 employees across 6 countries
- We deliver flexible infrastructure for market participants to share processes and data securely, on a need-to-know basis, without the need for reconciliation
- We have raised over $115m from more than 15 strategic investors across the financial ecosystem
- In December 2017, the Australian Securities Exchange announced its intention to replace its post-trade clearing and settlement system with DA technology
- In November 2018, HKEX announced its work with Digital Asset on a post-trade allocation and settlement initiation platform for the Northbound Stock Connect program

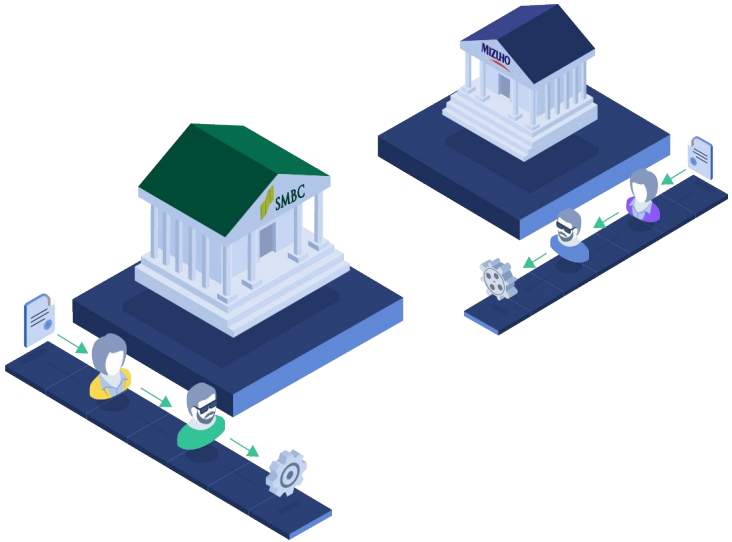
Why DLT and Smart Contract Technology Matters

Translating from regulations - to lawyer - to coder - to software - is hard, expensive, and error prone.



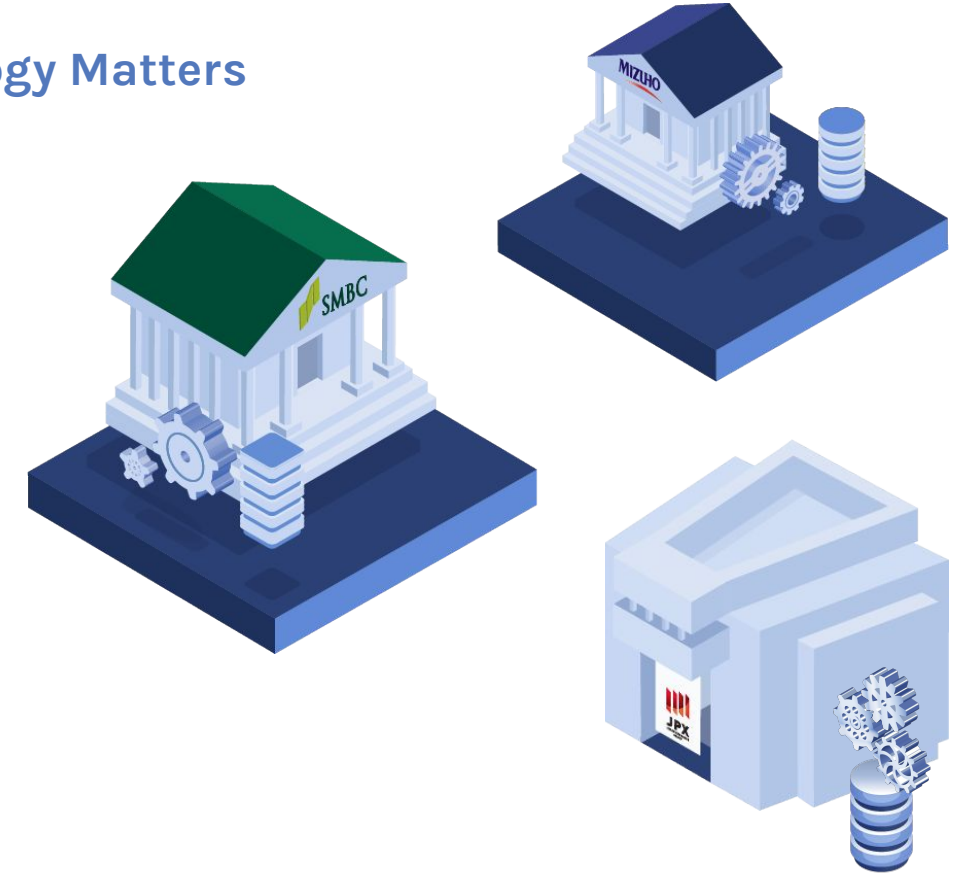
Why DLT and Smart Contract Technology Matters

And every institution is doing it differently.



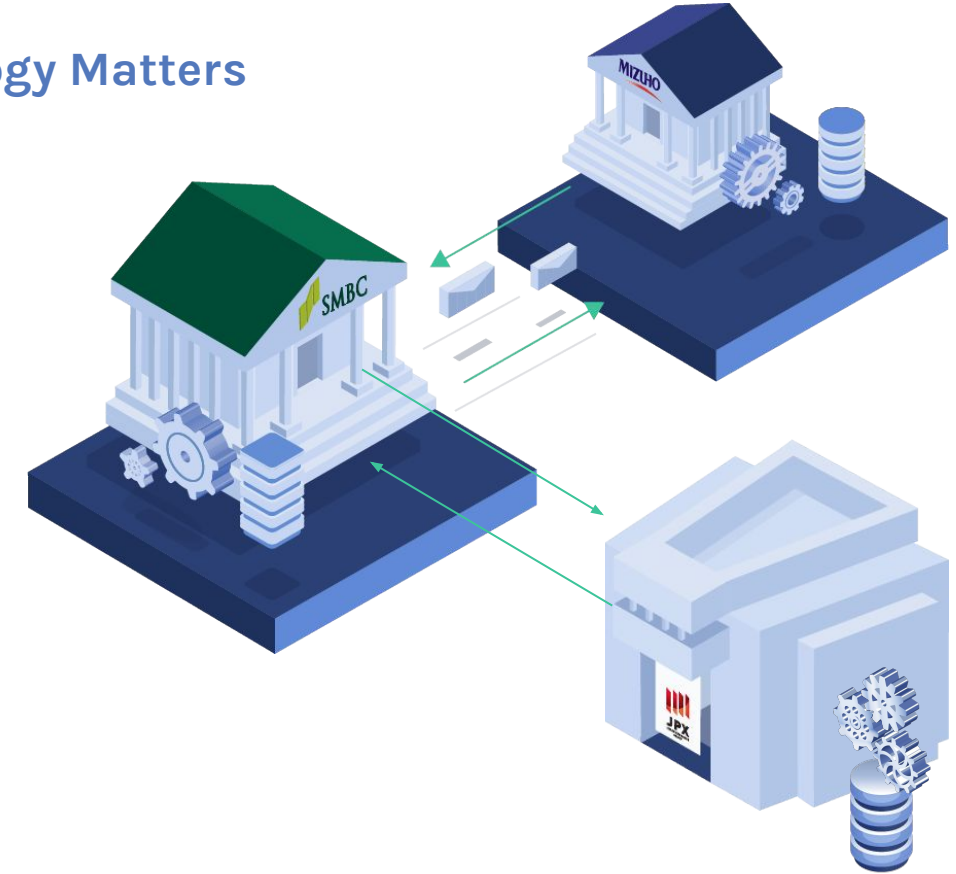
Why DLT and Smart Contract Technology Matters

Today, financial institutions are islands.



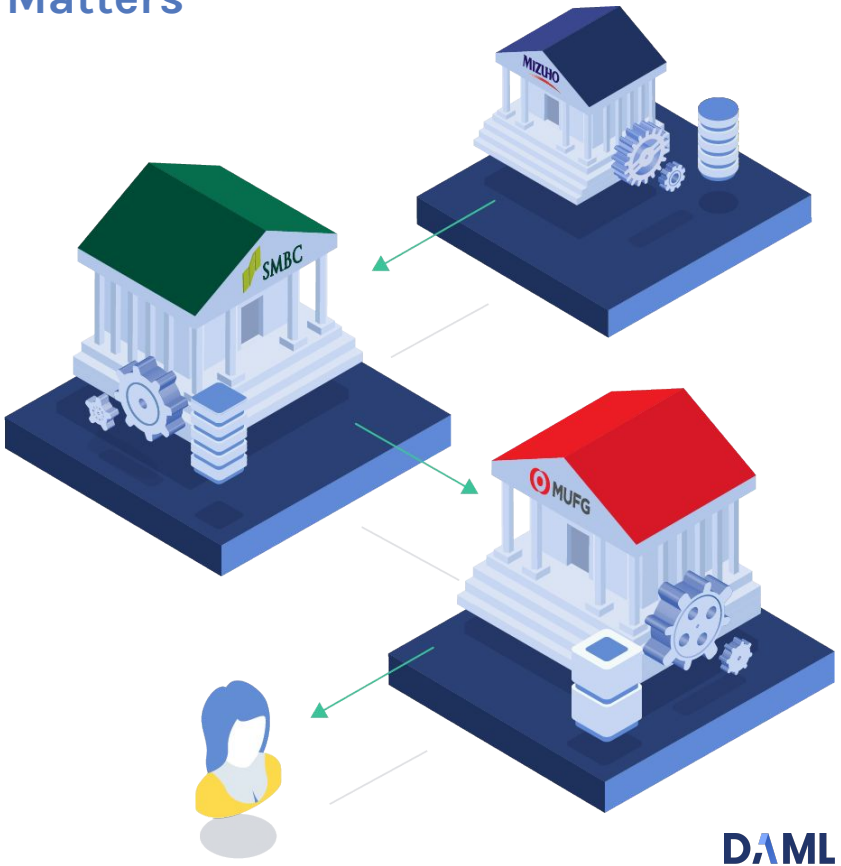
Why DLT and Smart Contract Technology Matters

Running asynchronous, message based systems that create operational cost.



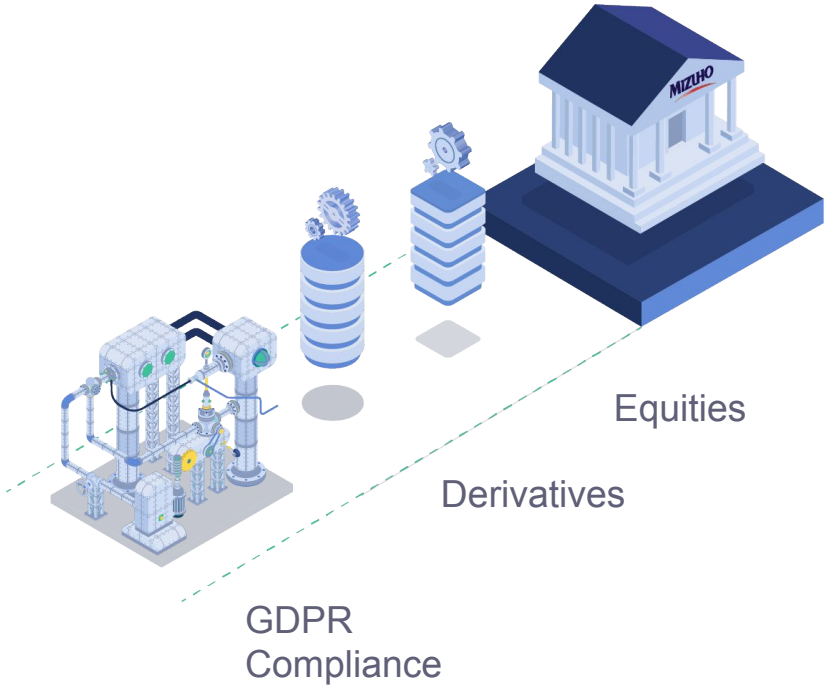
Why DLT and Smart Contract Technology Matters

Markets rely on complex, multi-party processes to deliver services for investors and issuers.



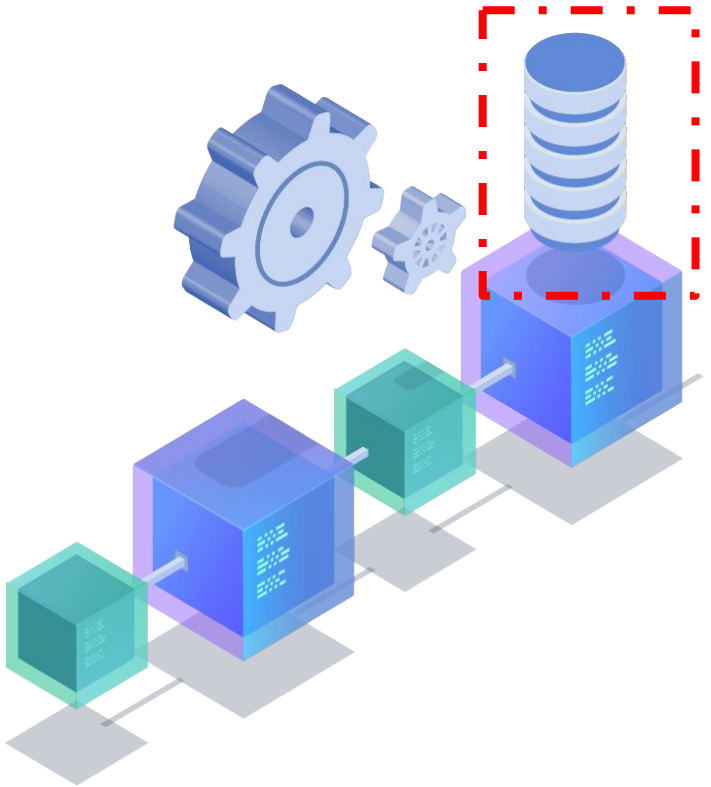
Why DLT and Smart Contract Technology Matters

Bespoke technology and data storage formats at each institution are not extensible.



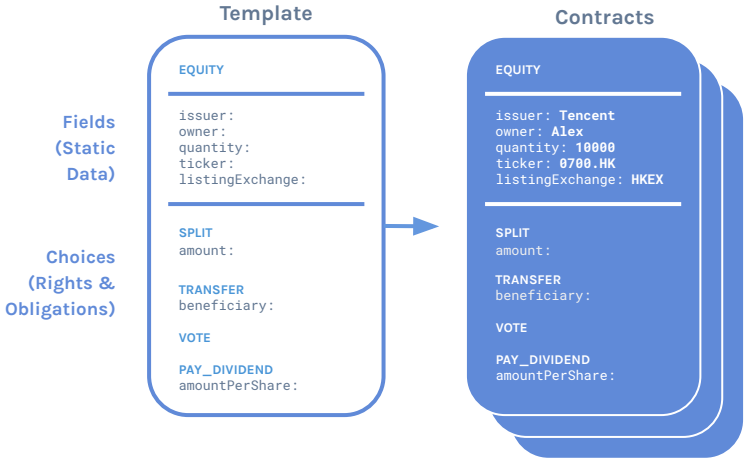
Why DLT and Smart Contract Technology Matters

Financial markets need privacy and confidentiality.

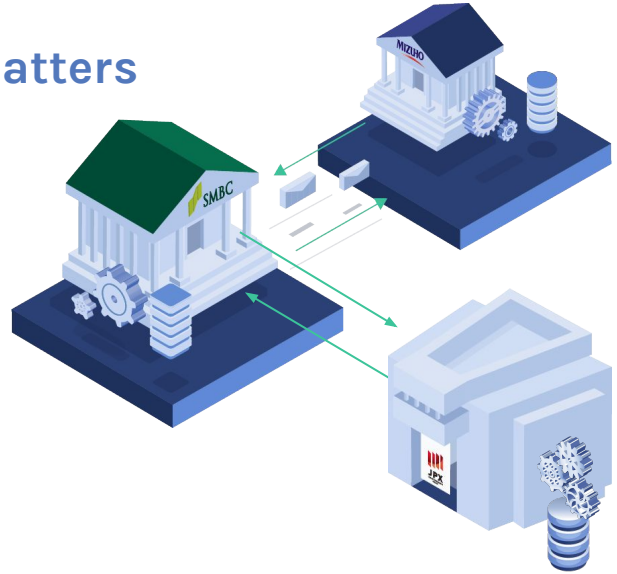


Why DLT and Smart Contract Technology Matters

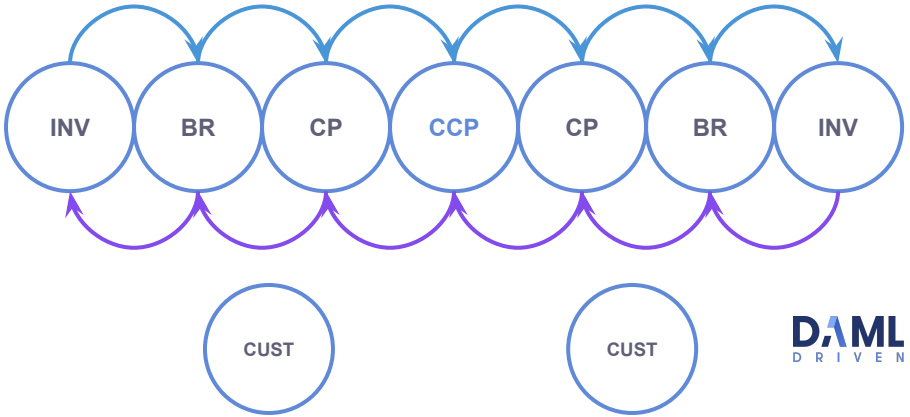
Financial markets need the right building blocks to be able to model any asset class, any workflow and the rights and obligations between parties.



Why DLT and Smart Contract Technology Matters



Financial markets need a state machine.



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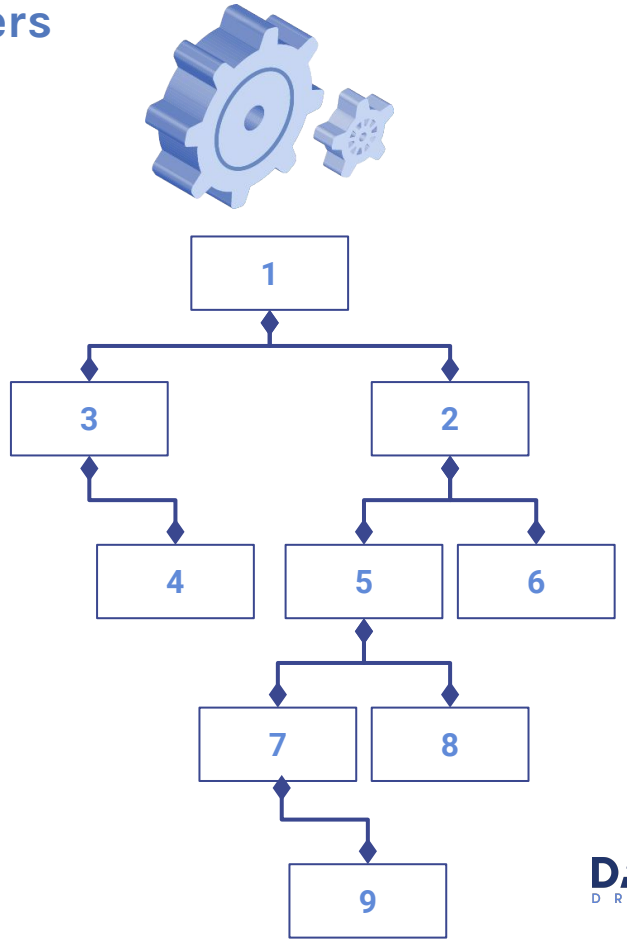
Why DLT and Smart Contract Technology Matters

Financial markets need automation to be predictable and bug-free.



Smart contracts enable innovation in traditional markets

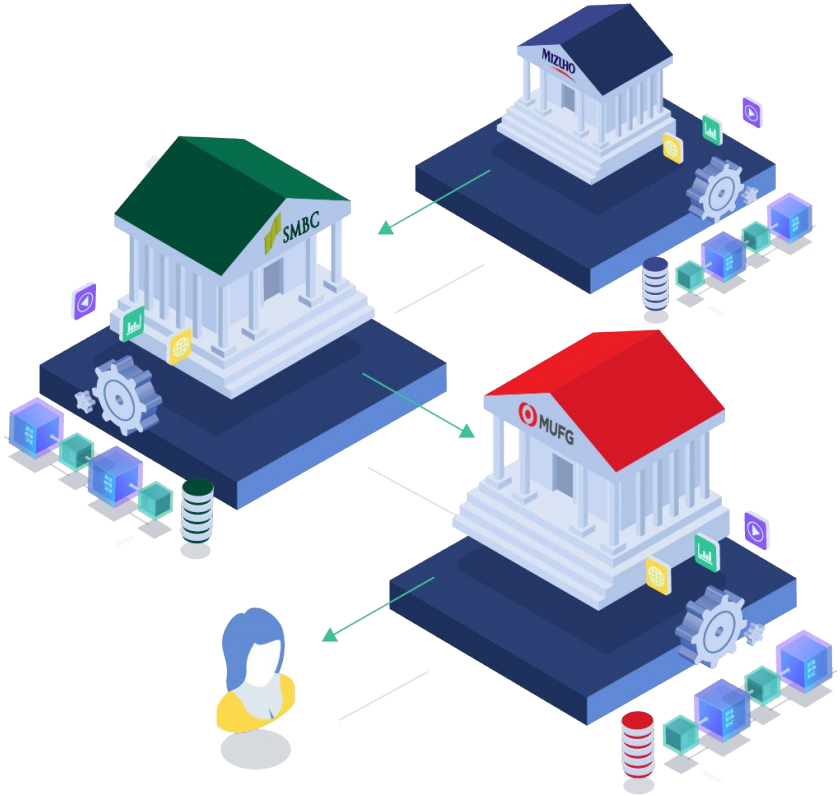
Shared asset and lifecycle event specifications across market

Consistent automation of workflows between capital markets participants

An extensible multi-asset platform for exchanges and their members

Real-time golden source data

Get entire picture with a birds-eye view (move beyond simple messaging)



Smart Contracts done right !

Bring new new products and services to market faster

Reduced cost to develop and deploy products & services

Remove technology vendor lock-in

De-risk technology choices/bet on the wrong horse

Migration/portability, e.g. write once, run anywhere

```
12          do create this with owner = newOwner
13  template TicketAgreement
14    with
15      organizer : Party
16      owner : Party
17    where
18      signatory organizer, owner
19  template TicketOffer
20    with
21      organizer : Party
22      buyer : Party
23      price : Decimal
24    where
25      signatory organizer
26      observer buyer
27      controller buyer can
28        Accept : ContractId TicketAgreement
29          with
30            cashId : ContractId Cash
31          do
32            cash <- fetch cashId
33            assert (cash.amount == price)
34            exercise cashId Transfer with
35              newOwner = organizer
36            create TicketAgreement with
37              organizer; owner = buyer
38
39  validateTicketPurchase = scenario do
40    issuer <- getParty "Issuer"
41    organizer <- getParty "Organizer"
42    buyer <- getParty "Buyer"
43    cash <- submit issuer do
44      create Cash with
45        issuer; owner = buyer; amount = 20.0
46    offer <- submit organizer do
47      create TicketOffer with
48        organizer; buyer; price = 20.0
```

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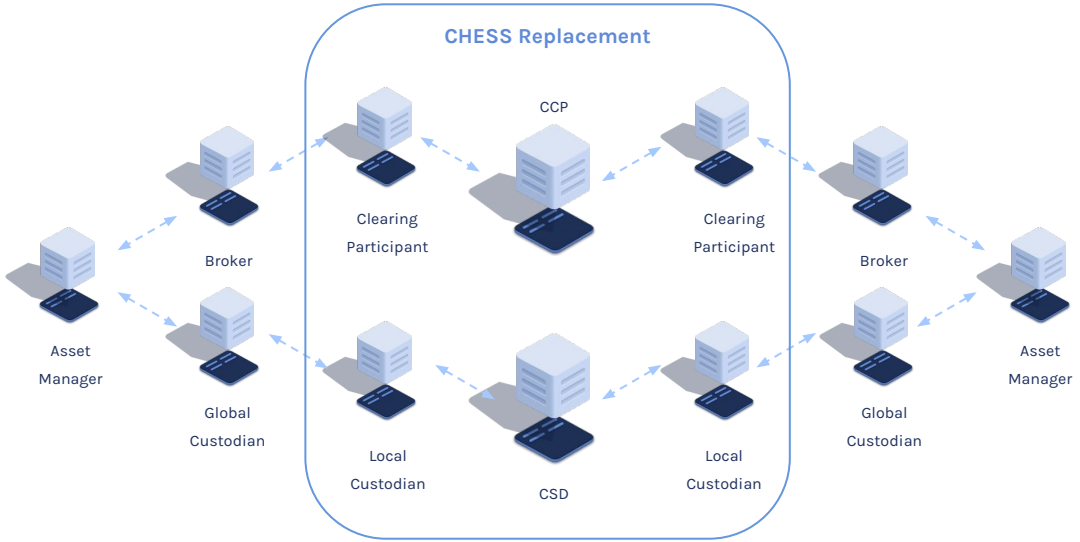
Industry Adoption

Summary

Since January 2016, DA has worked with ASX, the Australian Stock Exchange, on a project to completely replace its 20-year-old clearing and settlement system -- CHESS

Key Opportunities

1. Corporate actions efficiencies
2. Marketplace for applications
3. Real time access to clearing and settlements data



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Industry Adoption

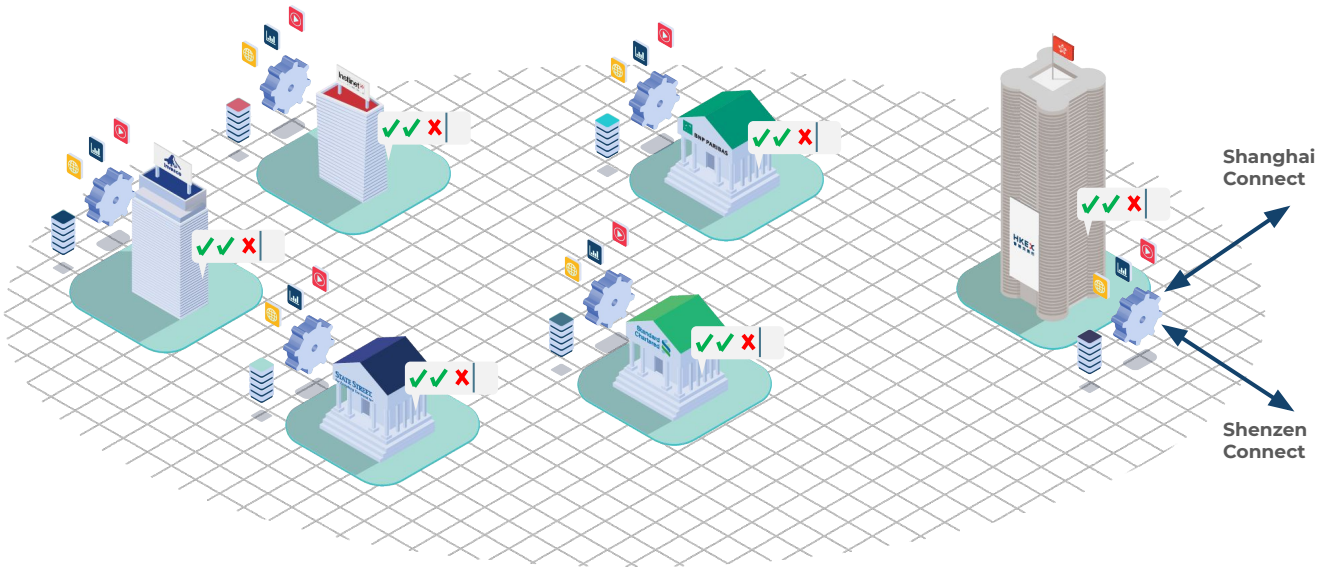
HKEX 香港交易所

Summary

In 2018, DA successfully completed a prototype with the Hong Kong Exchanges and Clearing Limited (HKEX) to bring the power of DAML to its post-trade allocation and processing platform for Northbound Stock Connect trading.

Key Opportunities

1. Tight settlement timeframe for mainland China A shares
2. Data synchronisation across multi-party workflow
3. Timely communication of trade status among participants in workflow



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Proxy Services with DAML

Voting is the most common and important way for shareholders to impact corporate governance

- Mergers and Acquisitions
- Takeovers
- Salary and bonuses of Management
- Golden parachute agreements
- Share structure

Proxy voting is fragmented and opaque

Reconciliation of votes and voting rights is burdensome and flawed

- No single source of immutable data
- Under or over voting due to errors in vote tabulation
- **Nominee, omnibus account structures make proxy chain complicated**

Communication is fragmented and costly

- Issuers face high costs to deliver proxy materials to all shareholders
- Short deadlines for participants to collect, reconcile and forward data
- Lack of confirmation chain
- Difficult cross-border voting (global proxy services)

Security of electronic voting systems are under heavy scrutiny

Ownership of securities can be complex

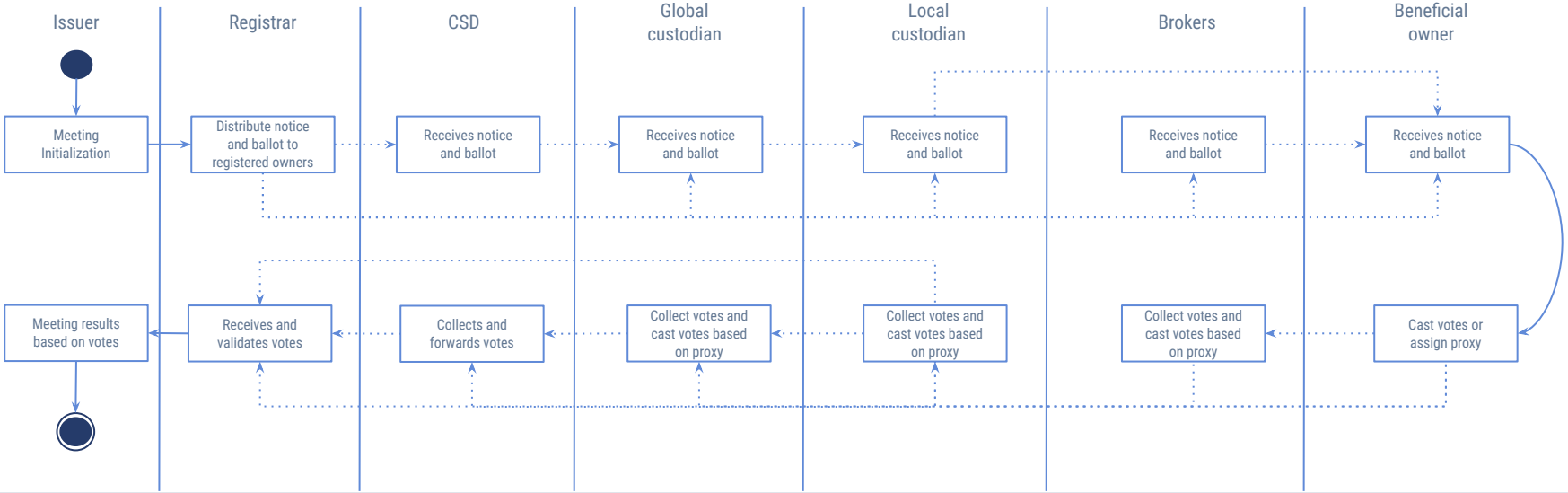
Beneficial owner

- Can surrender his legal ownership to a custodian (nominee company of the custodian)
- No need for direct communication with all companies, only through legal owner
- Retains voting rights, based on agreement with custodian

Legal owner (nominee company of custodian)

- Usually a custodian, keeping shares on a nominee account
- Omnibus (pooled) accounts
  - All securities are registered in the nominee company
- Segregated (designated) accounts
  - Customer hold their securities in a designated account, recorded by the registrar

Simplified process diagram of proxy voting (for registered securities)



Tasks: vote allocations, reconciliation of votes, distributing materials, meeting management

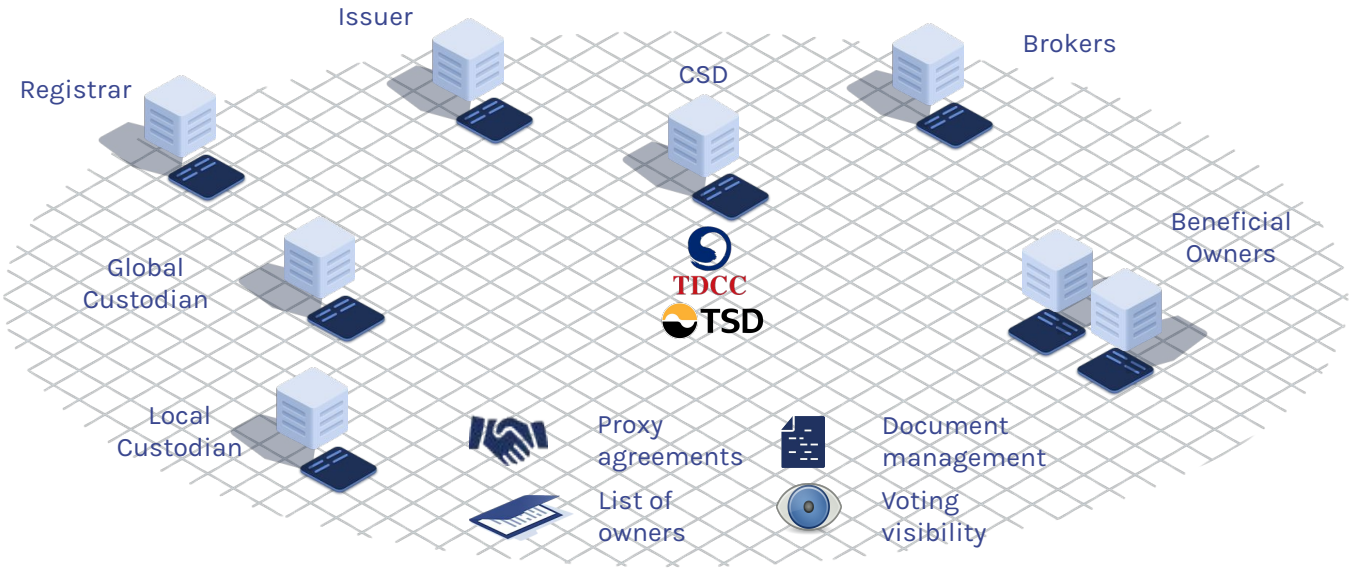
Intermediary (e.g: Broadridge): providing voting system and other services for above process

Proxy advisor: provide vote advisory service

Opportunities

Issuer (company)	Legal owner (custodians, broker-dealer, CSD)	Beneficial owner
• **Expensive process** to comply with legal obligations to distribute Proxy materials to legal owners • **Can't engage shareholders** in the interim voting process • **Lack of information** about interim results • **Over or under voting** due to incorrect voting right allocations • **Undetected errors** during tote tabulation • **Dominance of institutional investors**, due to low retail shareholder engagement	• **Resource intense activity** to vote on all company events • **Informing beneficial owners** and collect votes is tedious work • **Errors in vote allocation** between omnibus accounts, designated accounts and beneficial owners • **Fragmented proxy voting process**, collecting information from UBOs • **Necessary intermediary involvement** (e.g.: Broadridge or proxy advisor) • **Strict timelines** in proxy voting process	• **Cumbersome voting process** due to proxy allocations, or voting on its own • **Data gathering can be expensive** or required paying for proxy advisor • **Lack of confirmation** on votes cast • **No feedback** on meeting results • **No automatically binding agreement** based on vote results between the Issuer and Shareholder

Bringing value to all stakeholders with DAML smart contracts & DLT



- **Announce** Meeting
- **Notify** Registrar
- **Access** the list of Legal owners and distribute proxy materials to them.
- **Legal owners** can forward proxy materials to Beneficial owners
- Beneficial owners can **cast votes** or assign a proxy
- **Real-time** vote tabulation
- Vote **cancellation** and re-casting workflows
- Proxies can **assign** further proxies
- **Share types** can be set in the system with assigned voting rules
- Voting rights are calculated based on share types
- Document management features

Locations

New York
4 World Trade Center, 47th Floor
150 Greenwich St.
New York, NY, USA

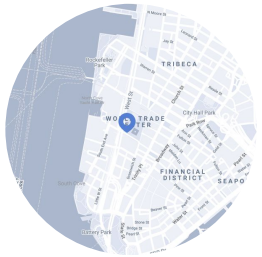
London
1 King William Street
London, UK

Sydney
Level 12, 20 Bridge Street
Sydney, Australia

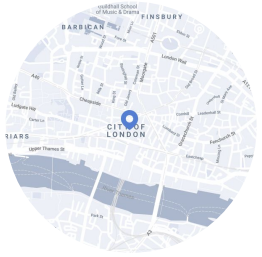
Budapest
Dohány UTCA 33
1074 Budapest, Hungary

Zurich
Thurgauerstrasse 40
8050 Zurich, Switzerland

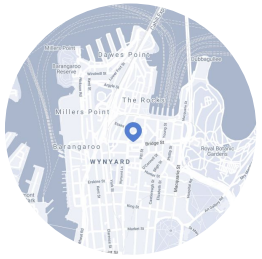
Hong Kong
Hong Kong Club Building, 3A
Chater Road Central, Hong Kong



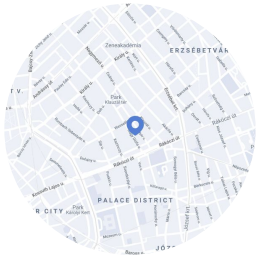
New York



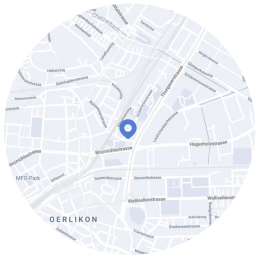
London



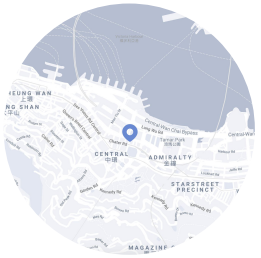
Sydney



Budapest



Zurich



Hong Kong

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