



Making Blockchain Real for Shipping

Zelda Anthony, Head of Blockchain ASEAN



Agenda

- What is Blockchain?
- Why is Blockchain relevant for the shipping industry?
- How to get started on a Blockchain project

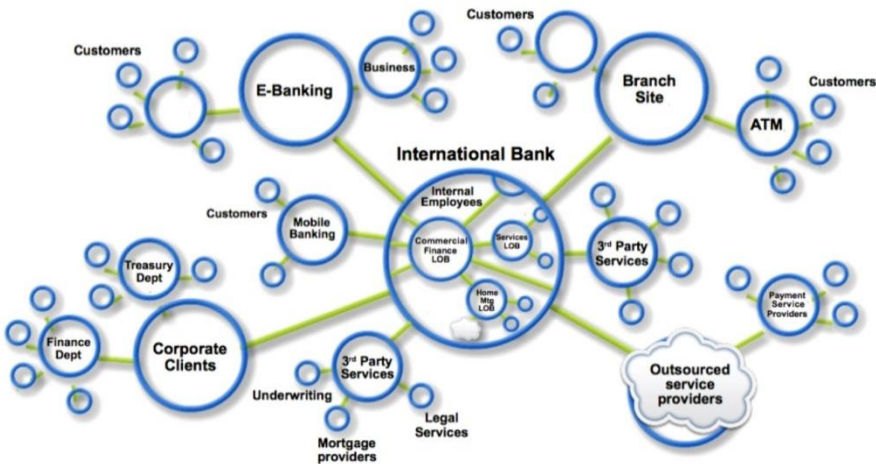
Blockchain concepts



Blockchain

Streamlines processes and establishes trust, transparency and accountability
Is a shared, immutable ledger for recording the history of transactions

Business networks, markets



Blockchain participants come together in a network

Assets



Tangible
eg. house

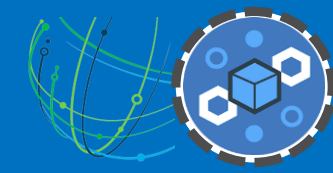
Intangible
eg. bonds, property titles, digital music

Assets are transferred across the network

Shared Ledger

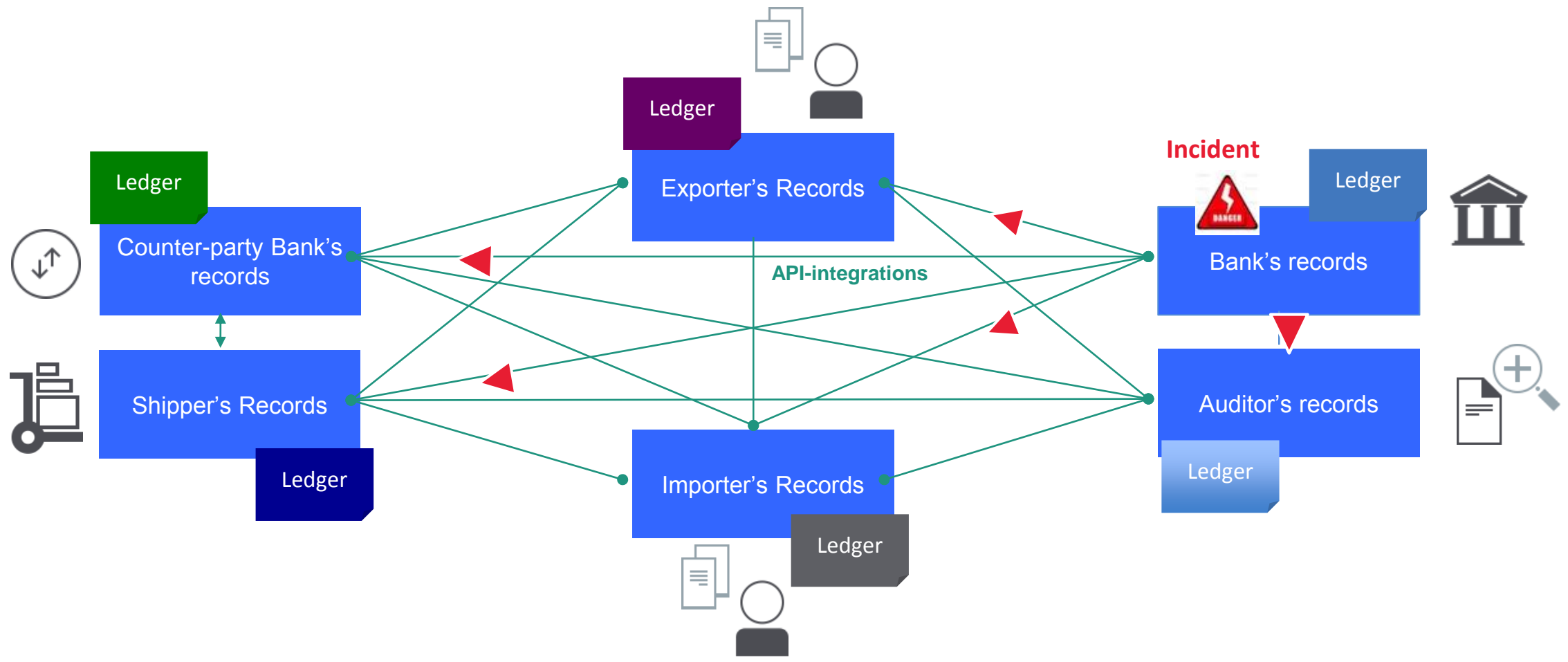


The system of record for business transactions

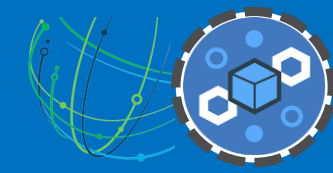


Problem - Monitoring asset ownership and transfers

eg. Supply Chain today

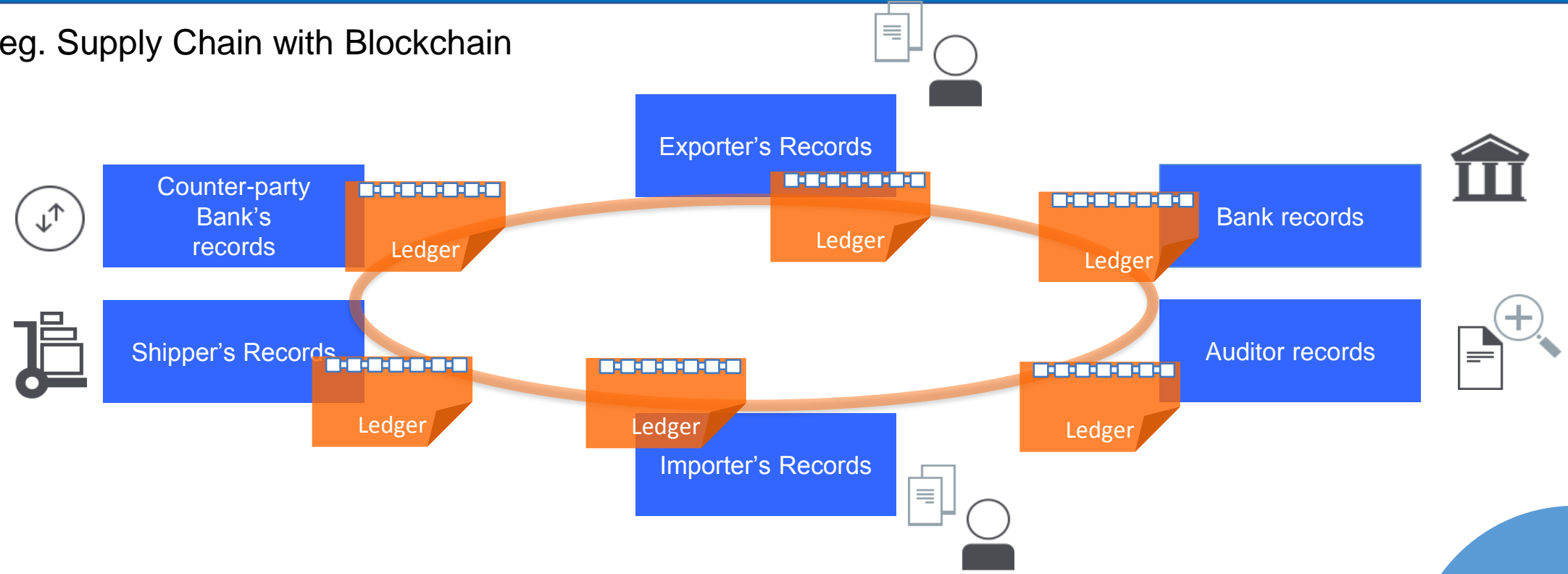


Expensive, Inefficient, Vulnerable



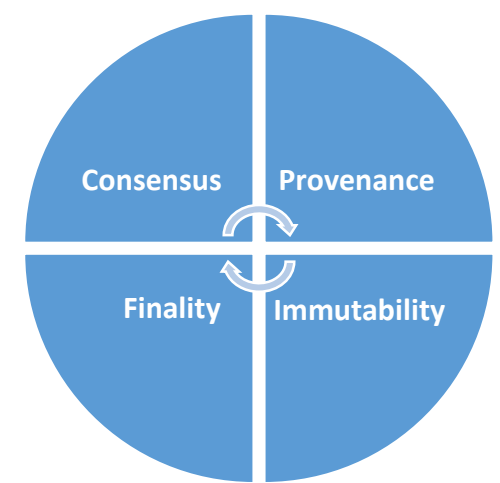
Solution – shared, replicated, permissioned ledger

eg. Supply Chain with Blockchain



- Each member of the network has an up- to-date copy of the encrypted ledger
- Members can read, write and validate transactions on the network
- New transactions are validated using a consensus process and committed to all ledgers
- Transactions create blocks which are linked into chains and cannot be altered

Trust, transparency, secure, tamper-proof



Blockchain concepts



Append-only distributed system of record shared across business network

Shared ledger



Smart contract



Business terms embedded in transaction database & executed with transactions

Ensuring appropriate visibility; transactions are secure, authenticated & verifiable

Privacy



Consensus



All parties agree to network verified transaction

... Broader participation, lower cost, increased efficiency

IBM Blockchain



- Streamlines processes and establishes trust, transparency and accountability
- A shared , immutable ledger for recording the history of transactions

- Linux Hyperledger Foundation – open: source, code, governance
- A permissioned network with known identities
- Distributed and secure
- Focused on improving B2B processes
- Not like Bitcoin which is public anonymous
- Cryptocurrency not involved



Enables...



**Multi-party,
Multi-system
Federation of
trust**



**Real-time
collaboration within
and across industries**

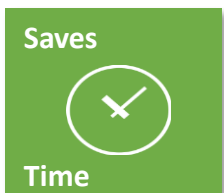


**Prevents/solves
disputes**

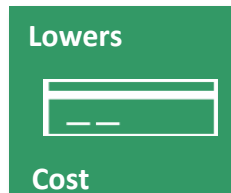


**Automates processes,
reduces paper**

Benefits...



**Saves
Time**
**Transaction
time from
days to near
instantaneous**



**Lowers
Cost**
**Overheads and
intermediary
costs**



**Global
Visibility**
**Instantaneous
global visibility**



**Reduces
Risk**
**Tampering,
fraud,
disputes**



IBM Blockchain Global Use Cases Cross Industry



Financial

KYC
Trade Finance
Cross currency payments
Mortgages

Banks spend \$270B on compliance per year. 15% of banks expect to have production blockchains in 2017.



Public Sector

Citizen Identity
Medical records
Medicine supply chain
Asset Registration

Estimates of 1.5B people worldwide who have no legal identity or proof of birth.



Retail

Supply chain
Loyalty programs
Information sharing (supplier – retailer)

Maersk - a shipment of goods from E. Africa to Europe can go through nearly 30 people / organizations including 200+ different interactions



Insurance

Claims processing
Risk provenance
Asset usage history
Claims file

Blockchain audit trail provides rich claims history that can be used for advanced analytics and fraud reduction



Manufacturing

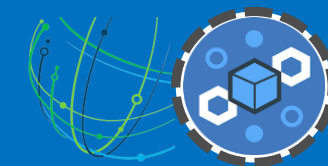
Supply chain
Product parts
Maintenance tracking

\$600B in fraud in global trade annually. 1/3 of all food produced globally is wasted.



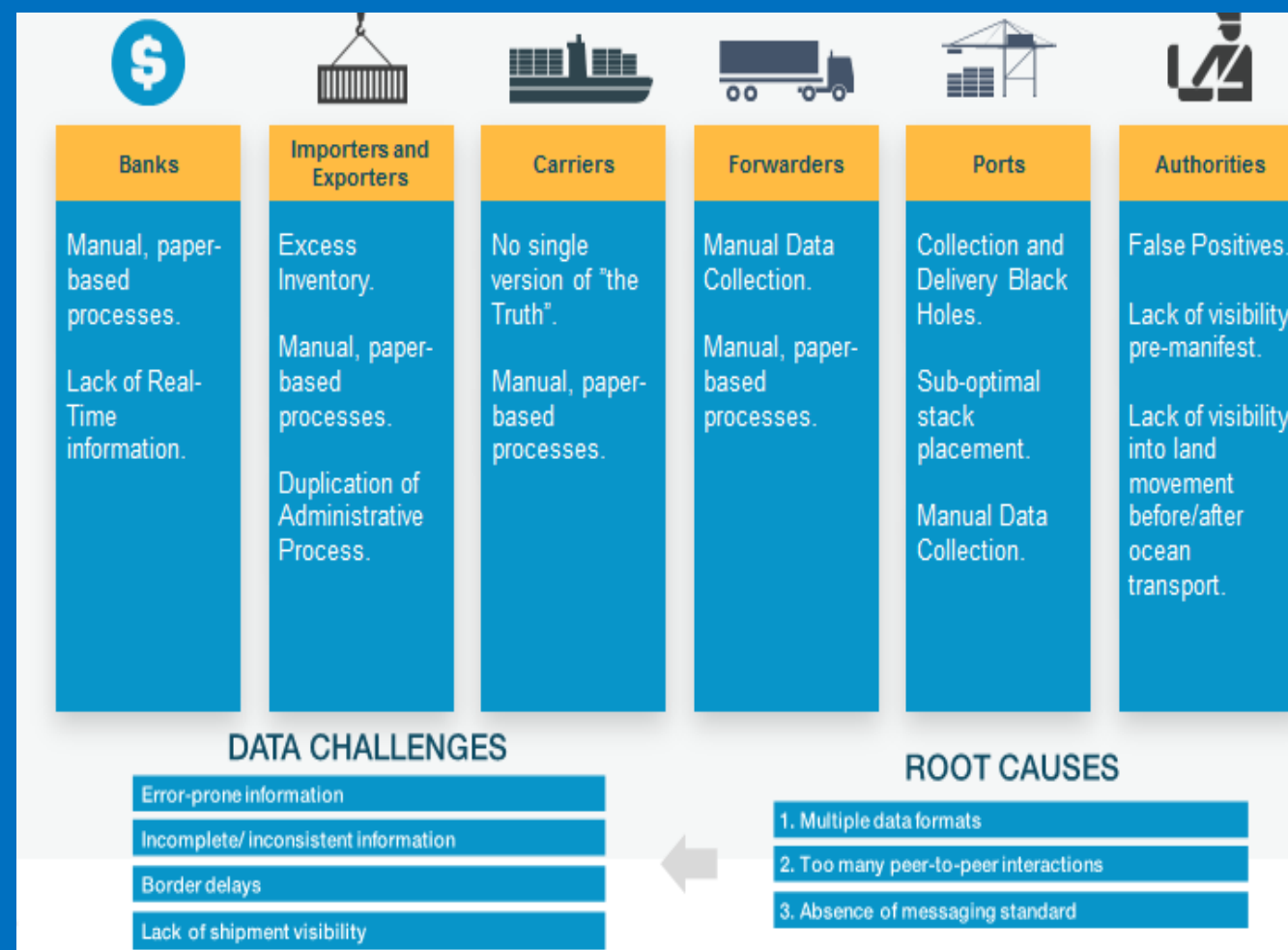
Agenda

- What is Blockchain?
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The Shipping Industry processes today

- Archaic processes
- Large amount of paper:
Sales contracts, charter party agreements, bills of lading, port docs, LCs, other vessel/cargo docs
- Lengthy and time-consuming
- Costly for all
- No visibility across the supply chain
- Open to errors, fraud and delays





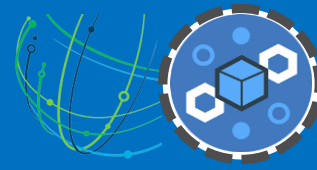
The Shipping Industry processes with Blockchain

- Faster processes and real-time updates
- Higher accuracy: automation
- Full transparency, reduced counterparty risk
- Increased security: encryption, immutability
- Cost savings: removing paper, errors, delays and fraud

Increased industry collaboration



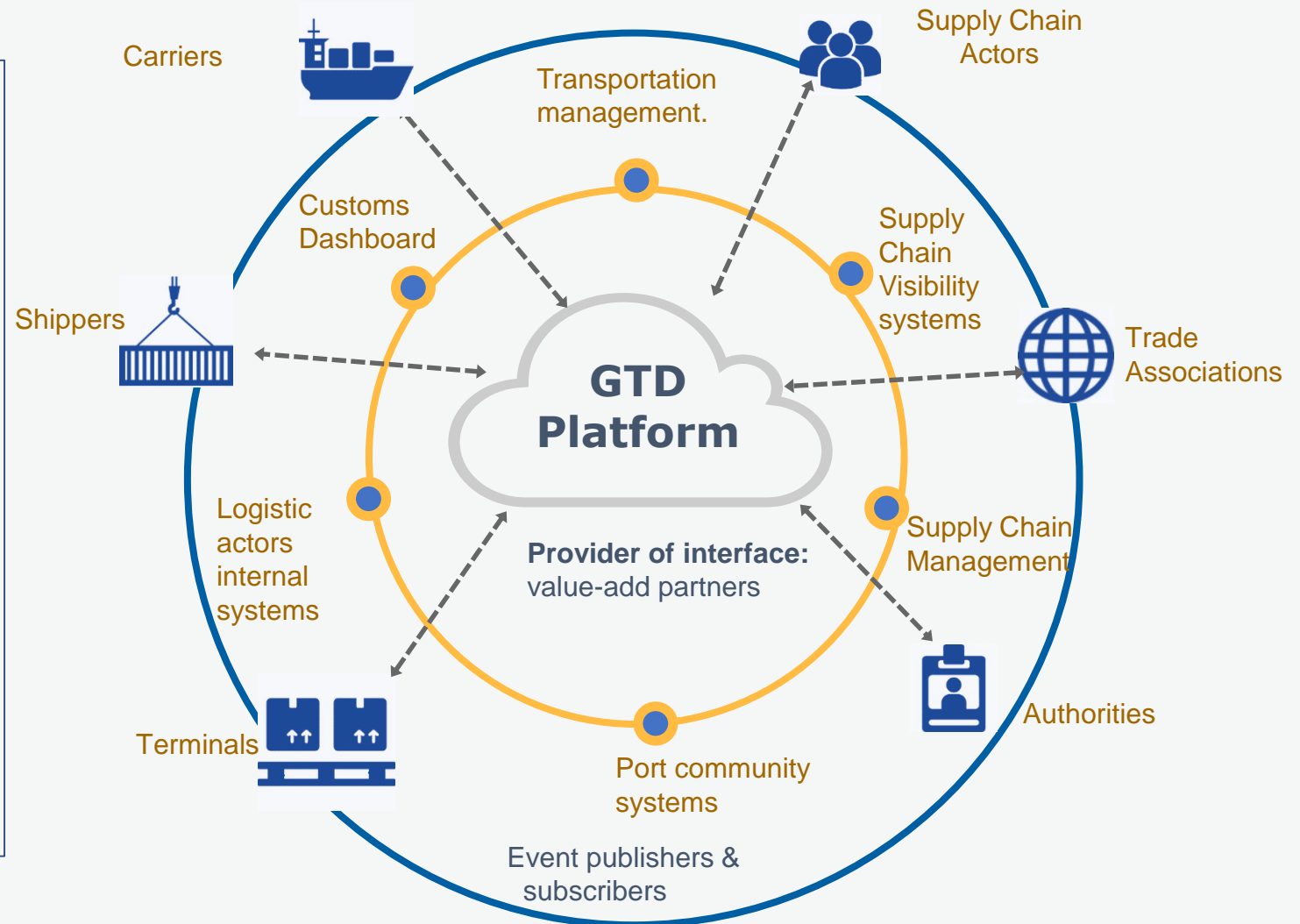
Maersk-IBM: Global Trade Digitization (GTD) solution



An open, extensible platform for sharing shipping events, messages, and documents across all the actors and systems in the supply chain ecosystem.

Important principles

- Detailed information remains under the control of the owner
- Neutral
- Fault Tolerant
- Everyone can work in their own systems



IBM Blockchain Video - Maersk / IBM GTD Solution



IBM and Maersk Demo Cross-Border Supply Chain Solution on Blockchain - YouTube

IBM Blockchain for Trade Logistics

Bank of Kenya Kenyan Growers Co. Port of Mombasa Port of Rotterdam Rotterdam Customs Dutch Market Bank of Holland

Export Authorities

KBA KEPAS HCSA CUSTOMS FREIGHT FORWARDER

Exporter's View

Packing List

Signature required

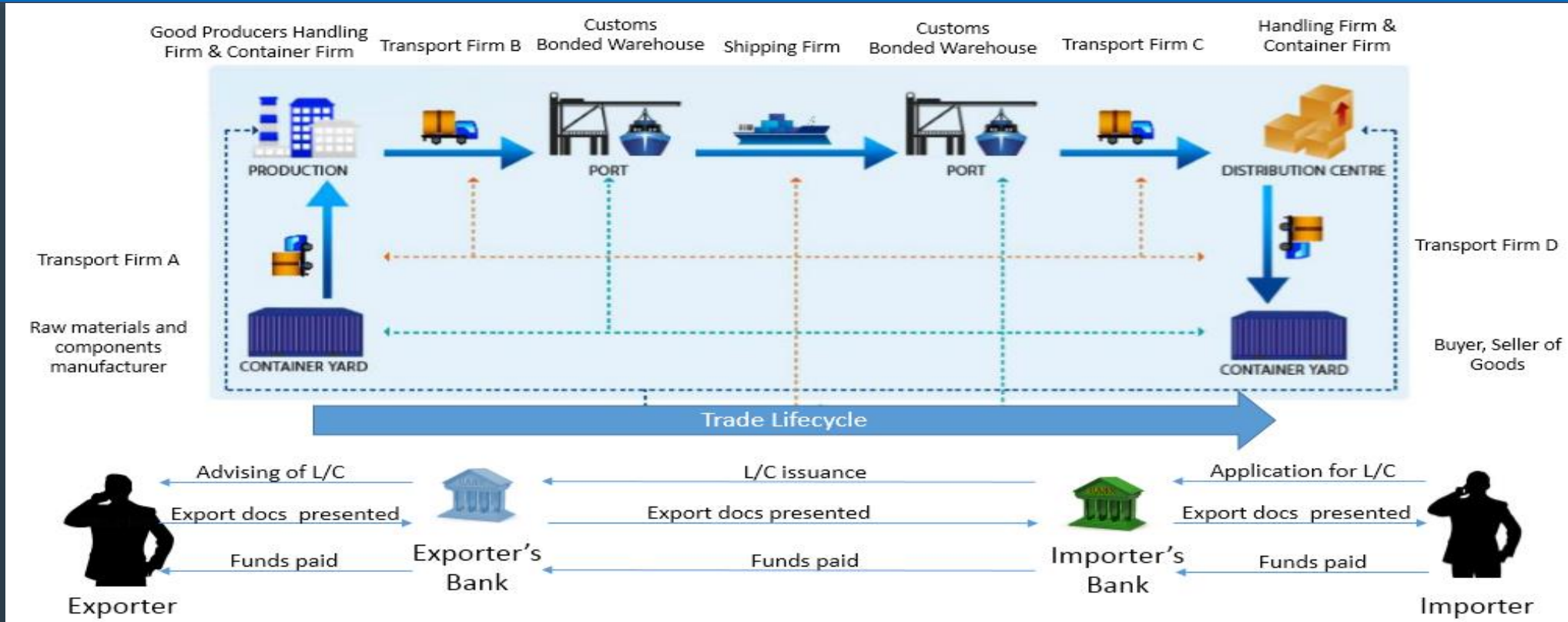
packing-list.pdf

Submit

Download

<https://www.youtube.com/watch?v=tdhpYQCWnCw>

IBM Blockchain - Trade Finance



Supplier

- Financing is expensive (Cash in Advance v Open Account)
- Delay in Payment

Finance

- Time-intensive Process based on paper docs
- Requires intermediaries (at times, several banks)
- Error and delay prone
- Currency Fluctuation
- Fraud/Regulatory Compliance

Logistics

- Significant manual intervention
- Limited visibility and automation
- Un-Optimized schedules at the ports, inefficient loading/unloading time
- Empty containers lead to low utilization

IBM Blockchain Video - Trade Finance



<https://www.youtube.com/watch?v=JEYO8RuS4fM>

IBM Blockchain: Food traceability with Walmart China



Relevant for: product recall, pharmacy, luxury goods, merchandising fraud, government compliance, 'organic' food, etc.



Problem

- Product recalls cost major \$\$, time, and impact the brand
- Consumers demanding transparency on where and how their products are made
- Governments require more information about corporate supply chains – there can be penalties for non-compliance

Solution

- Blockchain enables the safe digital transfer of property across the end to end supply chain, with full transparency
- Opportunity for additional IOT (sensors, etc.) to add value

Benefits

- verifiable, preventing any party from altering
- efficiencies through greater transparency
- consumers can make informed purchases
- governments get reliable information

<https://www.youtube.com/watch?v=SV0KXBxSoio>

IBM Blockchain: Everledger - Securing the Diamond Trade



What?

- Track diamonds across supply chain from mine to retail

How?

- Shared ledger for storing digital certification with supporting material

Benefits

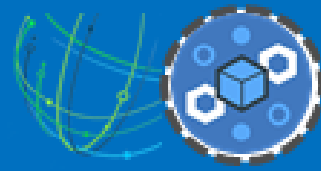
1. Protect against the occurrence of fraud, theft, trafficking and black markets
2. Assist in the identification and reduction of synthetic stones being labelled as authentic
3. Increase speed of transparency for cross border transactions for insurance companies, banks and claimants



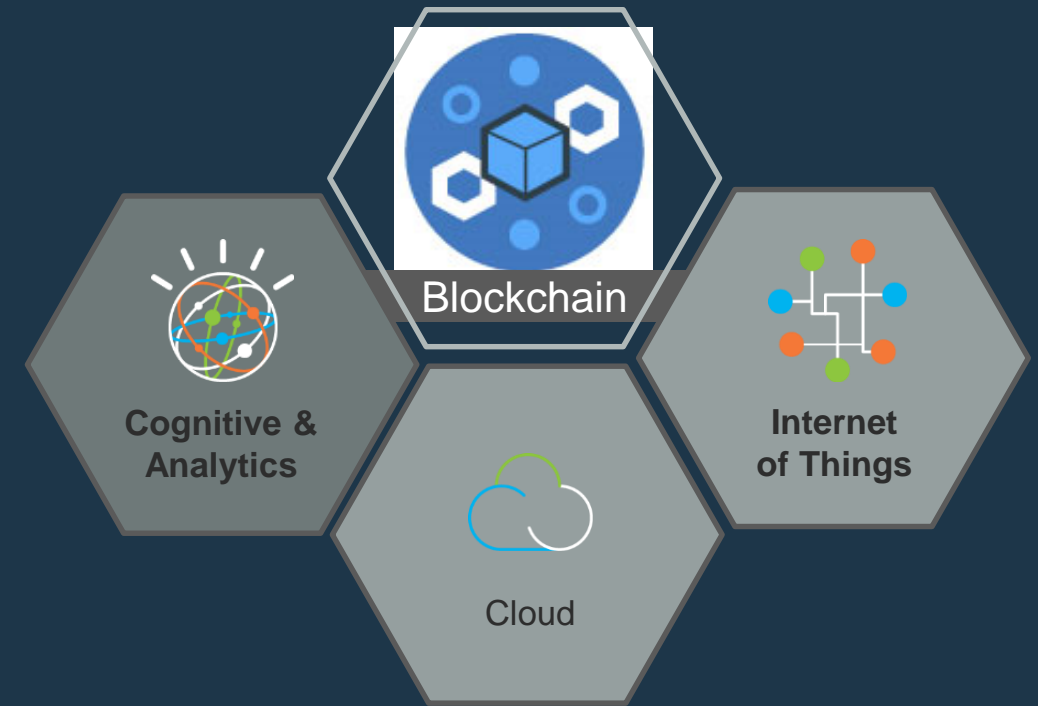
<https://www.youtube.com/watch?v=hHkc-DH0ep4>



Blockchain in combination with other technologies



- The inherent trust and security of Blockchain will encourage the increased use of **Cloud** as the infrastructure platform of choice
- The capability of Blockchain to store data from multiple sources will encourage the sharing of sensor information from the **Internet of Things**
- The use of Blockchain across an industry or business network will accelerate the use of the shared data from the ecosystem driving **self learning cognitive systems**, behavior analytics and pattern recognition



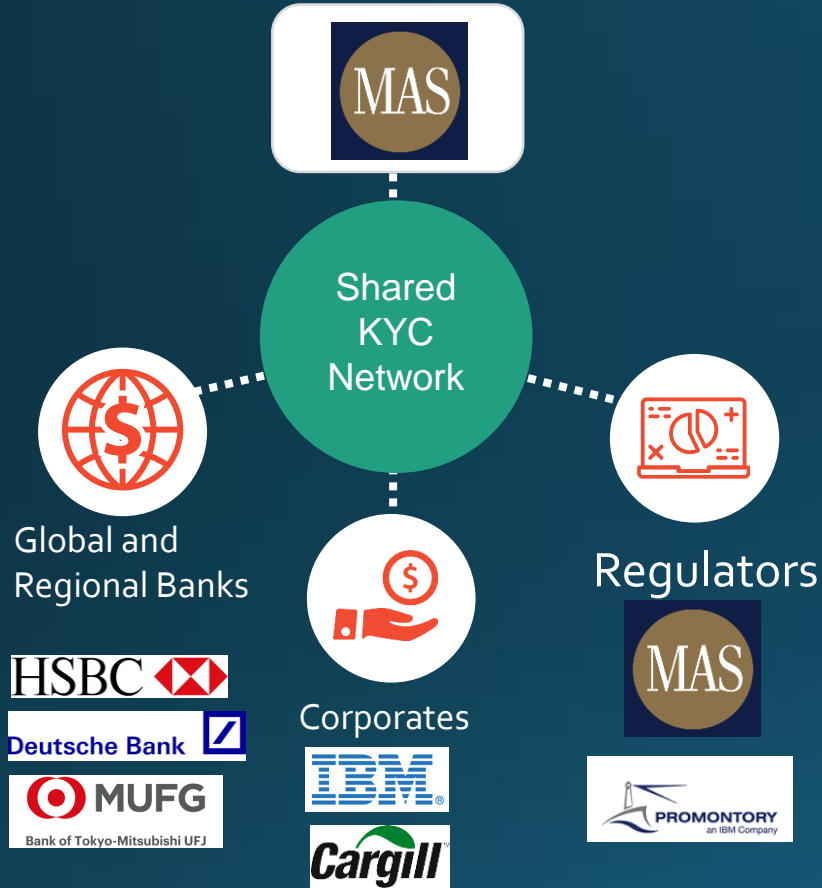


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ICBI Singapore – Collaboration in Trade and Finance

Finance Ecosystem



Trade Ecosystem



Services Ecosystem



Project Ubin - re-inventing RTGS

1st Research wide Fabric Performance workshop

Education: Blockchain course at NUS

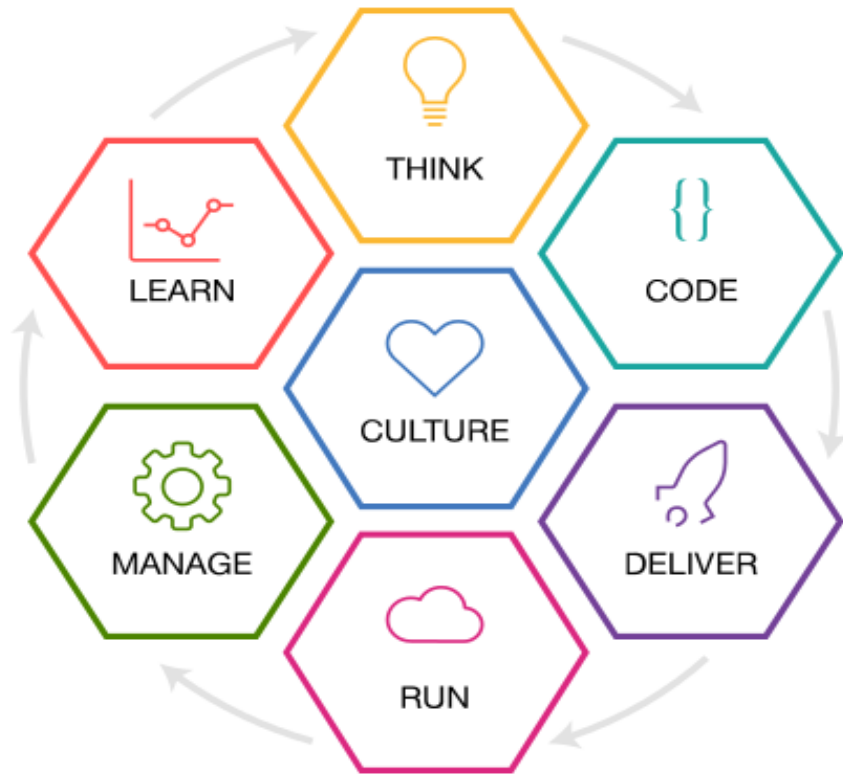
Ecosystem Engagement: Universities, Fintechs, Footprint expansion



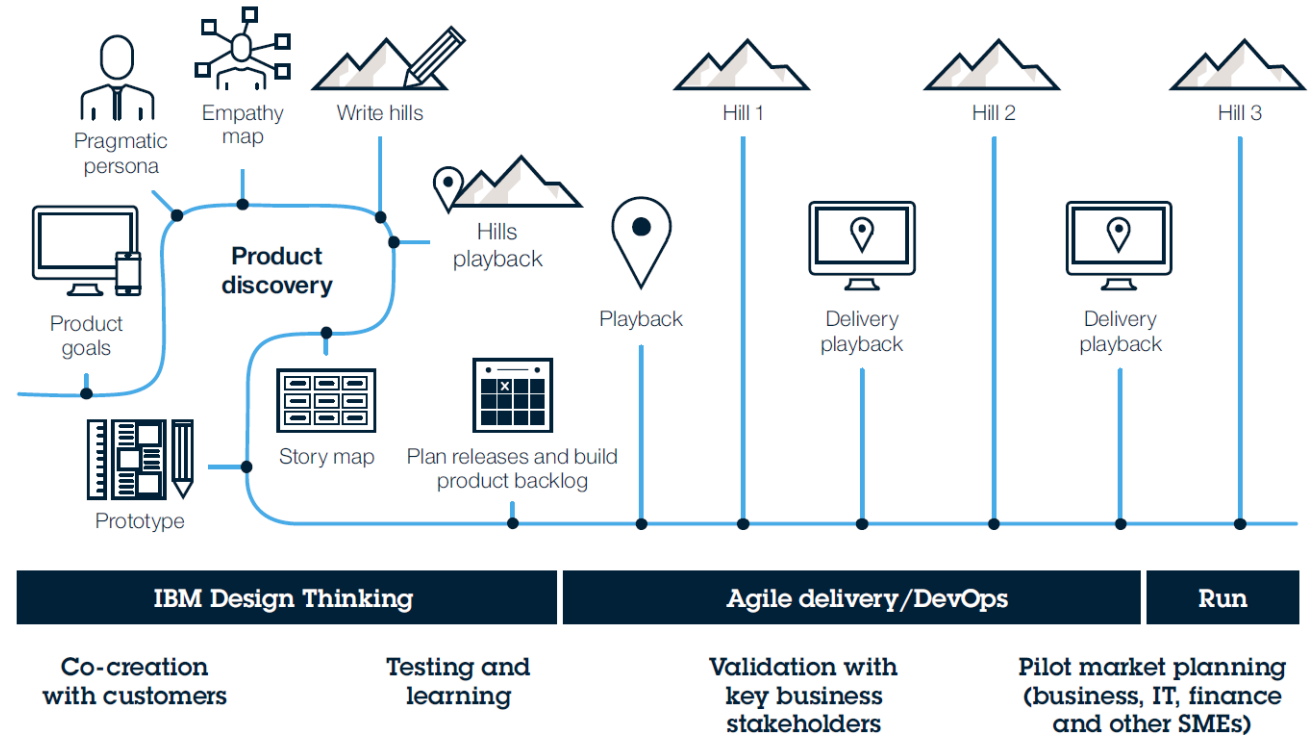
IBM method for implementing blockchain projects in an agile manner



IBM Blockchain Innovation Method

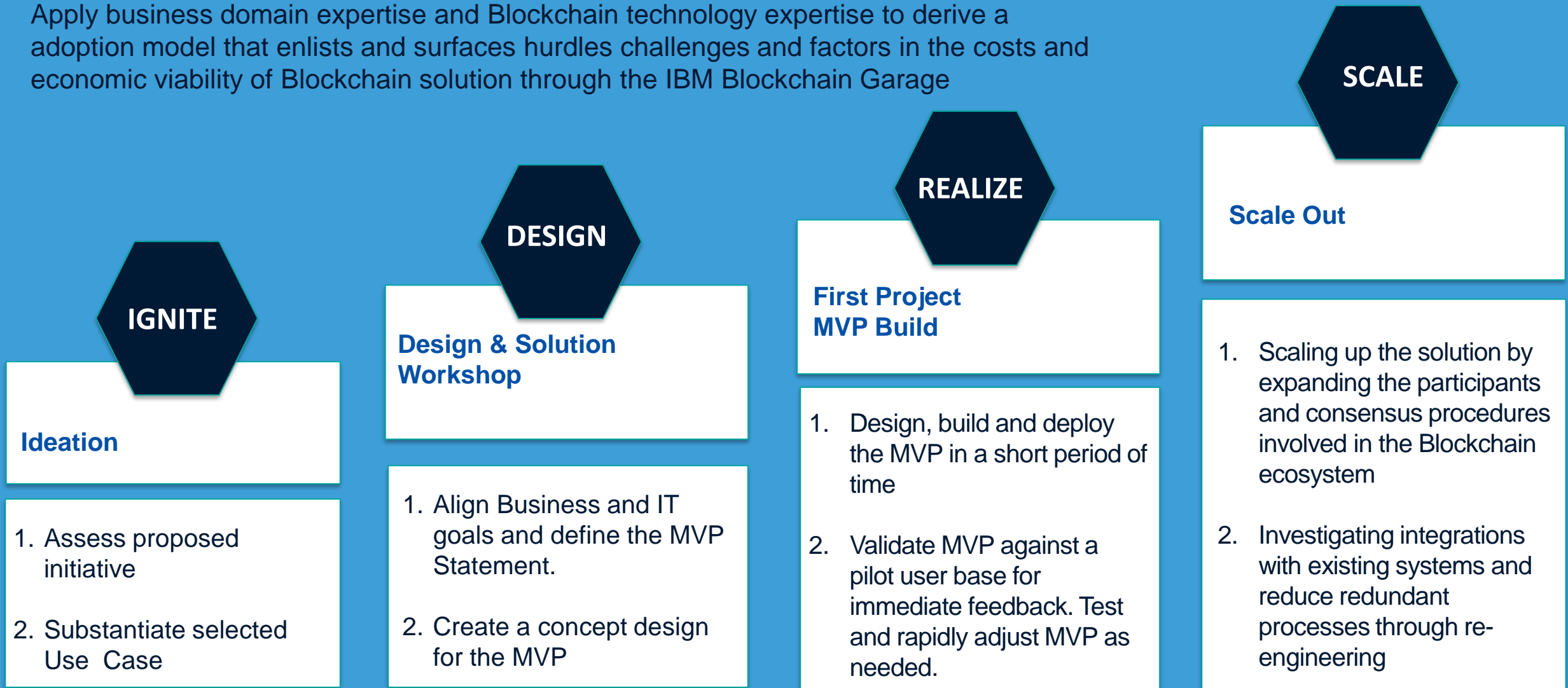


IBM Tools, People & Assets



Getting started with Blockchain with IBM Blockchain Garage Engagement

Apply business domain expertise and Blockchain technology expertise to derive a adoption model that enlists and surfaces hurdles challenges and factors in the costs and economic viability of Blockchain solution through the IBM Blockchain Garage





THANK YOU!

Contact me for more information

Zelda@sg.ibm.com