# Blockchain Use Cases

IBM Blockchain Networks

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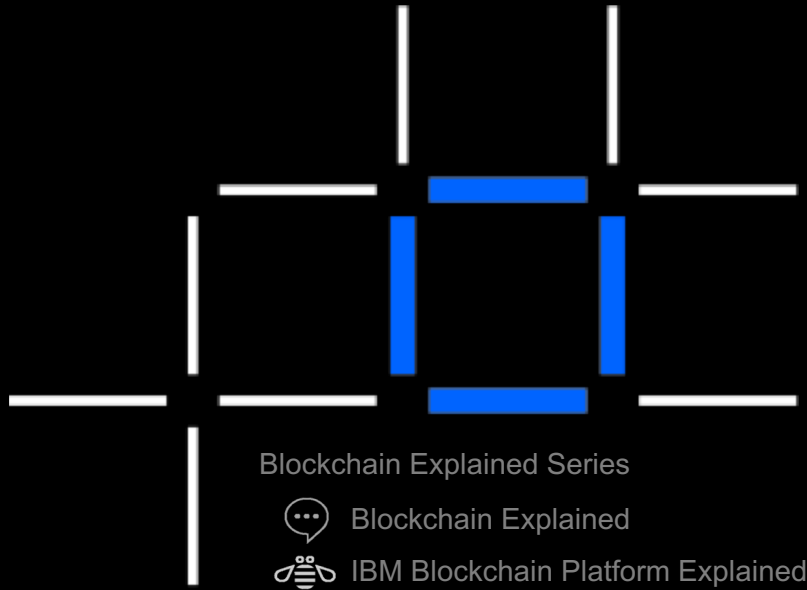


Blockchain Explained Series

- Blockchain Explained
- IBM Blockchain Platform Explained
- **Solutions Explained**
- Garage Explained
- What's New
- Next Steps

V0.3, 10 October 2018

IBM **Blockchain**

IBM

IBM Solutions

- TradeLens
- World Wire
- Digital Identity
- Dispute Settlement

Your Solution

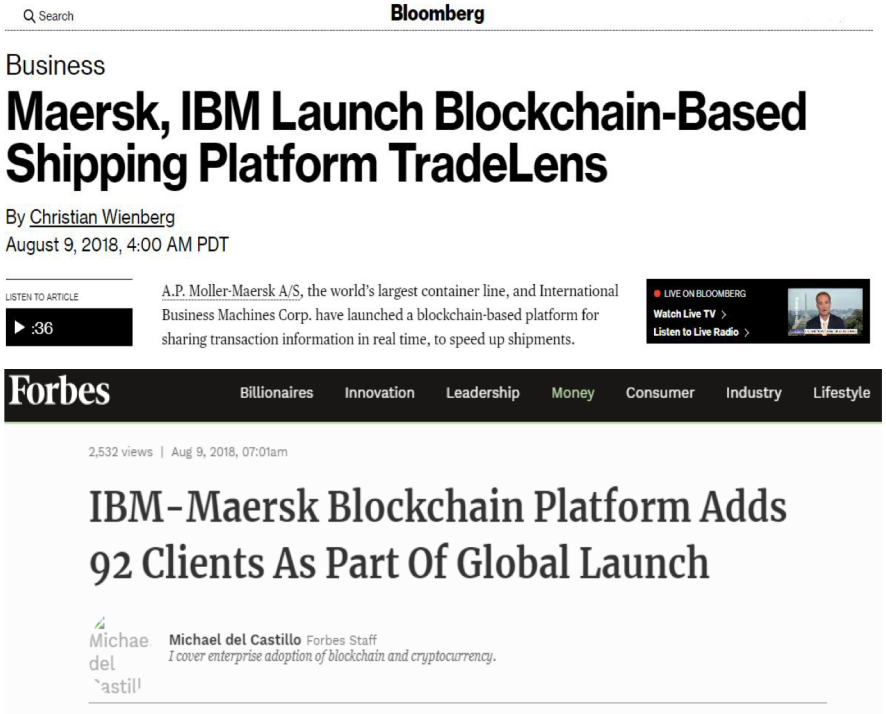
TradeLens

IBM **Blockchain**

# IBM and Maersk have launched TradeLens

## An open and neutral supply chain platform poised to transform the industry

- TradeLens is built for the industry and offers benefits to trade participants from across the supply chain ecosystem
- Responding to industry feedback, IBM and Maersk have revised the approach and are proceeding under a Collaboration Agreement, which offers greater flexibility and responsiveness to industry feedback
- An Industry Advisory Board will help to shape the platform and drive standards
- Maersk Line and Hamburg-Sud are participants under the same terms as other network members
- Core platform components are available today under an Early Adopter program; full release remains on target for Q4 2018



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Bloomberg

Business

**Maersk, IBM Launch Blockchain-Based Shipping Platform TradeLens**

By Christian Wienberg

August 9, 2018, 4:00 AM PDT

LISTEN TO ARTICLE :36

A.P. Moller-Maersk A/S, the world's largest container line, and International Business Machines Corp. have launched a blockchain-based platform for sharing transaction information in real time, to speed up shipments.

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Billionaires Innovation Leadership Money Consumer Industry Lifestyle

2,532 views | Aug 9, 2018, 07:01am

**IBM-Maersk Blockchain Platform Adds 92 Clients As Part Of Global Launch**

Michael del Castillo Forbes Staff

*I cover enterprise adoption of blockchain and cryptocurrency.*

# The cost of global trade is estimated at $1.8 trillion annually[1] with potential savings from more efficient processes of ~10%

More than **$16 trillion** in goods are shipped across international borders each year

**80%** of the goods consumers use daily are carried by the ocean shipping industry

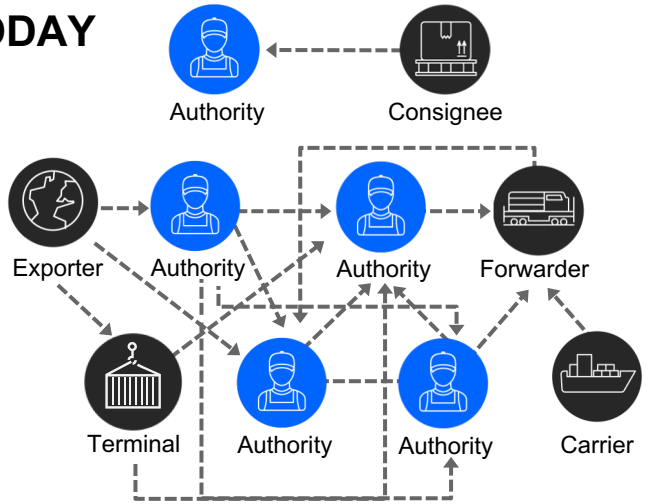
By reducing barriers within the international supply chain, global trade could increase by nearly **15%**, boosting economies and creating jobs[2]

In many cases the administrative cost of moving a container is **higher** than the cost of physically moving it

1) Maersk Strategy Group (May 19, 2016) based on World Bank data for World Trade Costs
2) The World Economic Forum: Enabling Trade Valuing Growth Opportunities 2013

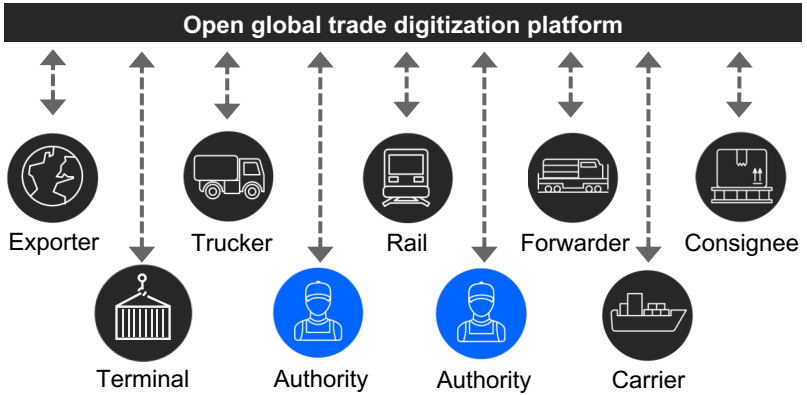
# The case for a better way

## TODAY




- Inconsistent information across organizational boundaries and “blind spots” throughout the supply chain hinder the efficient flow of goods
- Complex, cumbersome, and costly peer-to-peer messaging
- Manual, time-consuming, paper-based processes
- Risk assessments often lack sufficient information; clearance processes subject to fraud
- The administrative cost of handling a container shipment is comparable to the cost of the actual physical transport

## TOMORROW




- Instant, secure access to end-to-end supply chain information; single source of the truth
- Assurance of the authenticity and immutability of digital documents
- Trusted cross-organizational workflows
- Better risk assessments and fewer unnecessary interventions
- Far lower administrative expenses and elimination of costs to move physical paper across international borders

# The TradeLens Platform

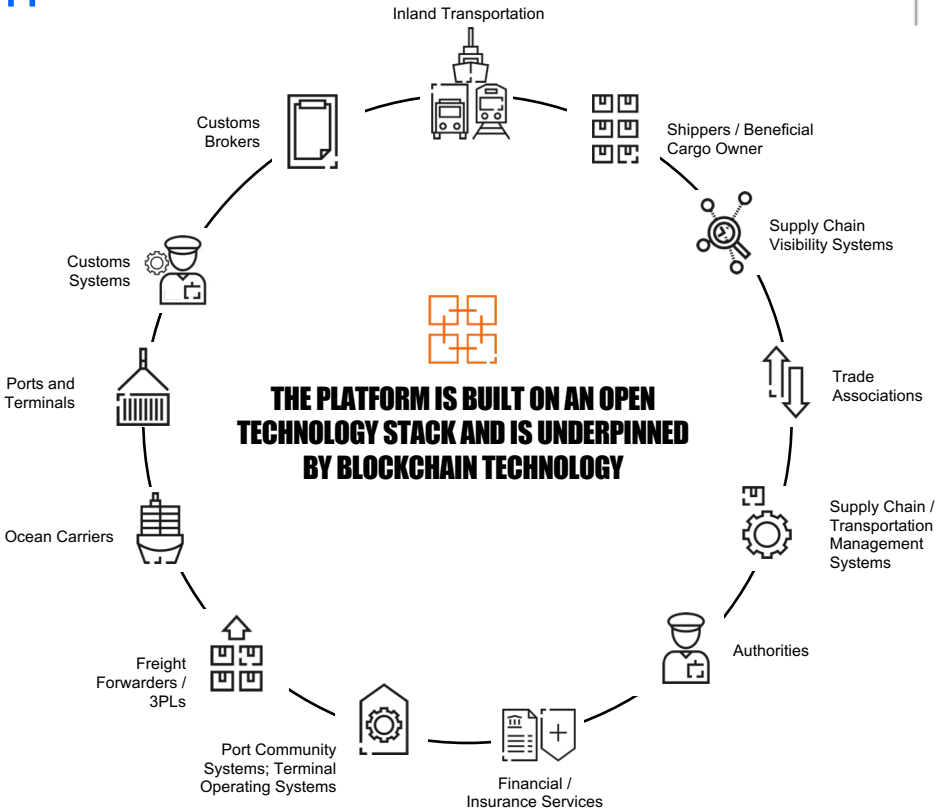
## Digitizing the global supply chain

**Connects the ecosystem**
Brings together all parties in the supply chain - including traders, freight forwarders, inland transportation, ports and terminals, ocean carriers, customs and other government authorities, and others - onto a Blockchain-based platform with a secure permission and identity framework

**Drives true information sharing**
Provides for the seamless, secure sharing of real-time, actionable supply chain information across all parties to a trade - encompassing shipping milestones, cargo details, trade documents, the structured data embedded in trade documents, customs filings, sensor readings, and more

**Fosters collaboration and trust**
Enables the digitization and automation of the cross-organization business processes integral to global trade, including import and export clearance, with Blockchain ensuring secure, auditable, and non-repudiable transactions

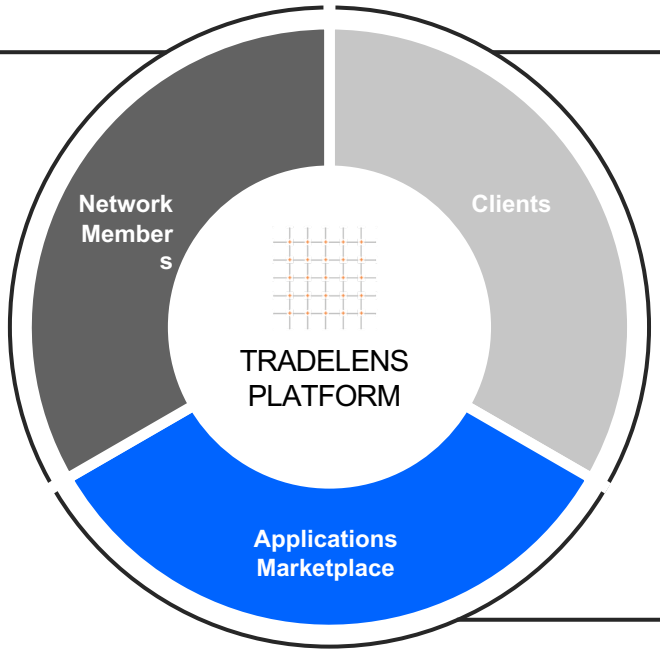
**Spurs innovation**
Lays the foundation for ongoing improvement and innovation through an open, non-proprietary API, the use of standards and promotion of interoperability, and the launch of an Applications Marketplace that parties can use to build and deploy TradeLens-powered applications for themselves, their partners, and their customers



# The TradeLens ecosystem

**Provide and gain access to end-to-end supply chain information**

- Ocean carriers
- Ports and terminals
- Government authorities
- Inland transportation
- 3rd party data providers




**Primary consumers and beneficiaries of the platform**

- Shippers (BCOs, retailers, manufacturers, etc.)
- Freight forwarders, customs brokers, 3PL
- Network Members
- Financial institutions

**Offer value added services to the ecosystem through a platform marketplace**

- TradeLens offerings
- Offerings from third party ISVs
- Offerings from Network Members and Clients

# World Wire

IBM **Blockchain**

# IBM Blockchain World Wire – the new global financial rail

IBM is transforming cross-border payments with IBM Blockchain World Wire, the integrated network for real-time clearing and settlement. This new global financial rail allows banks and financial institutions to send and settle payments around the globe with finality in a matter of seconds, eliminating enduring challenges that have long hampered the cross-border payments industry.

Today's international payments systems are plagued by multiple intermediaries across multiple regions, each with their own rules, regulations, and practices. This makes cross-border payments and transactions costly, time-consuming, complicated and restrictive.

# Current international payments


Correspondent banking fees, pre-funding requirements and exotic currency exchanges are just a few factors that continue to inflate the true **cost of cross-border payments** and transactions

Cross-border payments rely heavily on traditional correspondent banking relationships — a process requiring multiple intermediaries — taking **days or even weeks to complete**

Privacy and security concerns have given rise to new, often competing regulatory requirements — **increasing the complexity of the governance structures** among disparate payment systems, inhibiting coordinated change

The involvement of multiple intermediaries creates a complex web of procedures **hindering end-to-end visibility** of cross-border payments — often resulting in error-prone and faulty transactions that must be reconciled later

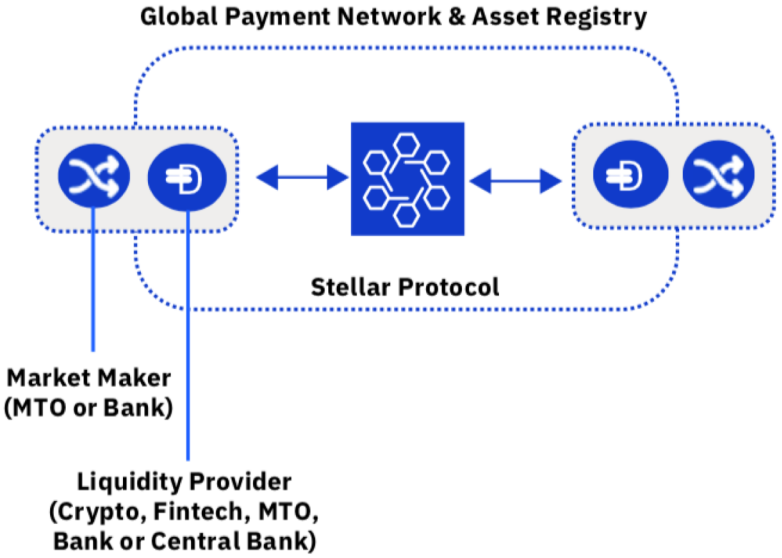
# The IBM Blockchain World Wire difference

Sending money across borders today requires a series of intermediaries for both clearing and settlement, each adding time and cost to the process.

With IBM Blockchain World Wire, clearing and settlement with finality happens in near real-time. The solution uses digital assets to settle transactions, serving as an agreed-upon store of value exchanged between parties as well as integrating payment instruction messages.

It all means funds can now be transferred at a fraction of the cost and time of traditional correspondent banking.

Find out how to seamlessly integrate IBM Blockchain World Wire into your cross-border payment systems at https://ibm.com/blockchain/solutions/world-wire today.



# The IBM Blockchain World Wire benefits

**24/7**

Payment support regardless of size, origination, destination, or asset type

Higher visibility for streamlined transactions with reduced disputes and reconciliation needs

Enhanced regulatory compliance through improved transparency

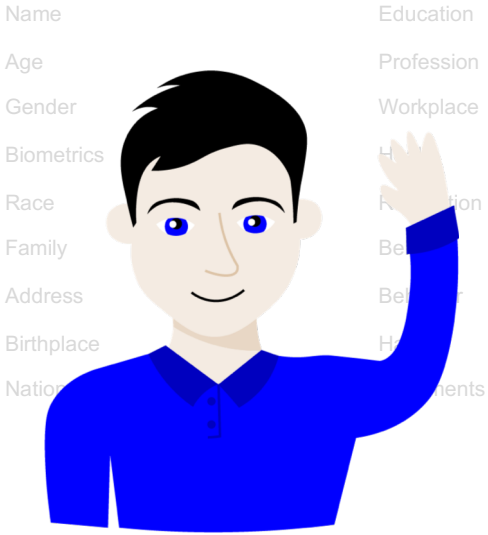
Secure network with interaction and eligibility criteria as well as robust access controls

# Identity

# The Different Dimensions of our identity

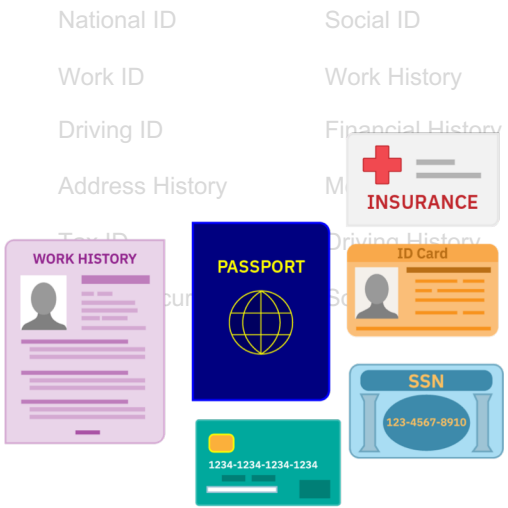
1. Me as an individual:

**Identity:** Unique traits associated with an individual; the owner of personal identification information.



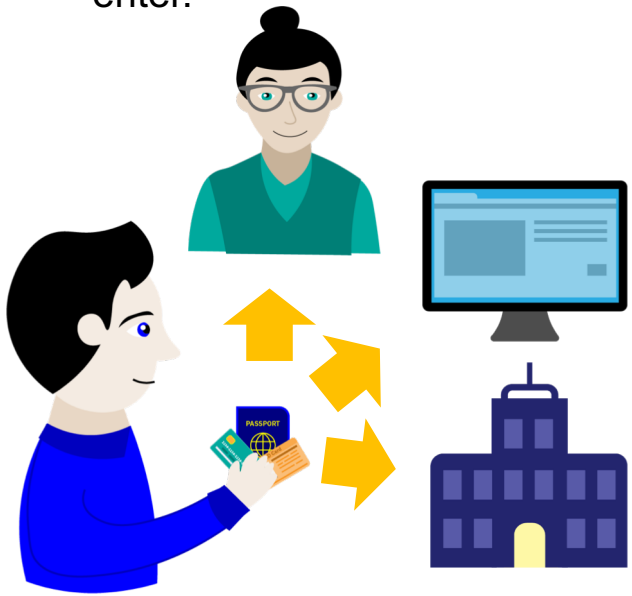

2. How I am represented:

**Identity Renderings:** Digital or physical (paper/plastic) instrument as defined by providers.




3. How I interact:

**Identity Interactions:** Situational usage such as pay, identify, participate, enter.



# The Facts

Cyber attacks cost businesses as much as $400 billion a year.[2]

Banks spend $1 billion a year on identity management solutions[2]

1339 breaches of data stores of individual names, Social Security, drivers license number, medical record, or financial records in 2017 in the US alone.[1]


175M records breached in 2017 that exposed millions of people's identities[1]

*It could have been your identity.*

[1] http://www.idtheftcenter.org/images/breach/2017Breaches/DataBreachReport_2017.pdf
[2] https://www.wired.com/beyond-the-beyond/2017/07/global-cybercrime-costs-trillion-dollars-maybe-3/
[3] https://www.accenture.com/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Dualpub_9/Accenture-Future-Identity-Banking.pdf

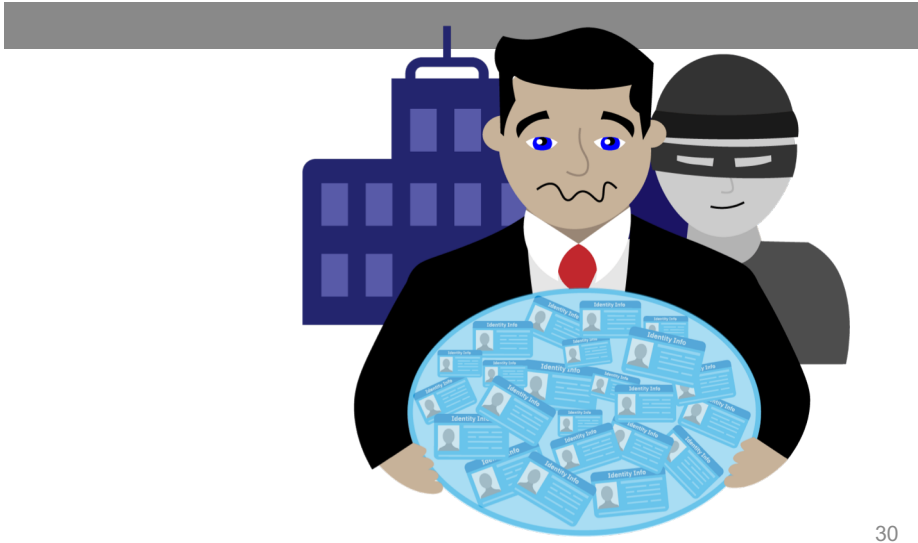
# The Problem

Online identity systems are **broken**…

Today, **individuals and organizations are not in control over their identity**. Personal information is often shared without our awareness and is honeypot of personal data for hackers to exploit.

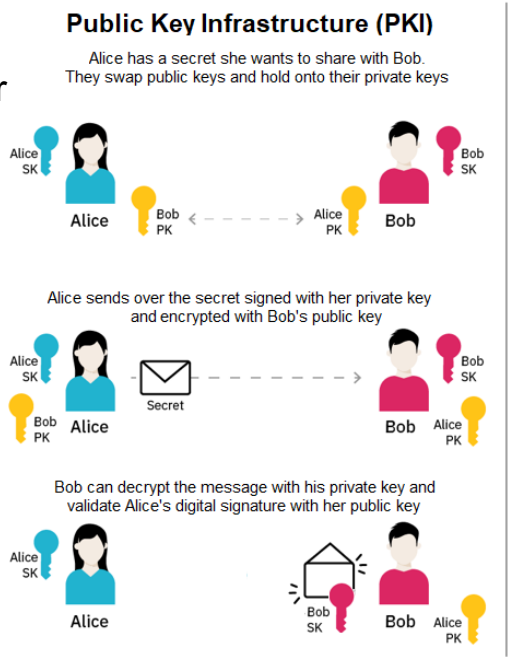
**Enterprises and traditional data aggregators realize the shift to decentralization**

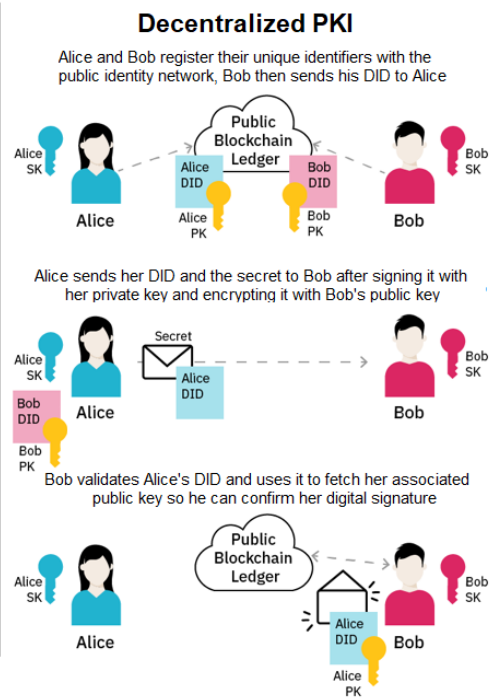
- Costly
- Liability
- Difficult to establish trust

# Decentralized Identity for trust & privacy at scale

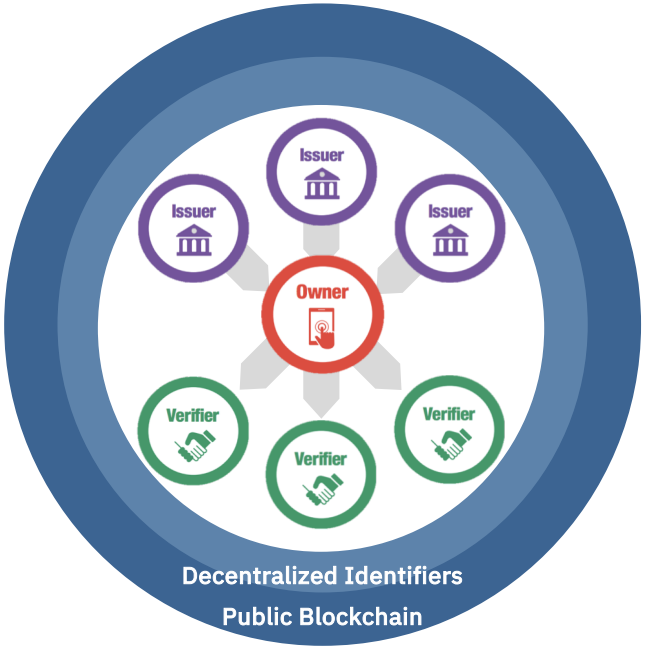
- Blockchain enables **trust**
  - Users can verify the identity of a person, organization or thing on the public ledger
  - Users create and manage cryptographic identities; no central certificate authority
- Blockchain provides **privacy**
  - Zero knowledge proofs disclose only the information that needs to be shared
- Blockchain provides **scale**
  - Removal of centralized issuers allows identity to scale at the edges



# Sovrin is a self-sovereign identity network

- Sovrin pushes identity to the **edge of the network**
- A decentralized approach that establishes trust and puts the **end user** in control
  - Every person, organization, and thing has a digital wallet to control the flow of their identity
  - No PII is stored on the public ledger!
- Cryptographic, point to point exchange of identity
  - Based on **Hyperledger Indy** technology




sovrin
identity for all

# Sovrin Identity Concepts

## Decentralized Identifier (DIDs)

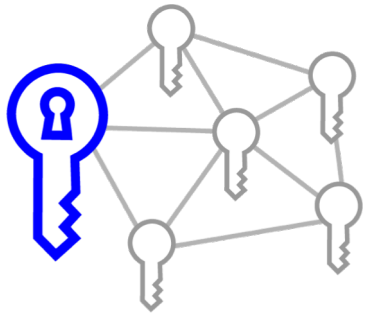
- User owned and governed
- New type of identifier for verifiable, self sovereign identity
- Fully under the control of person, institution, or thing
- URL to relate an identity for a trusted interaction with a subject
- Standardization for universal identifiers

## Verifiable Credentials

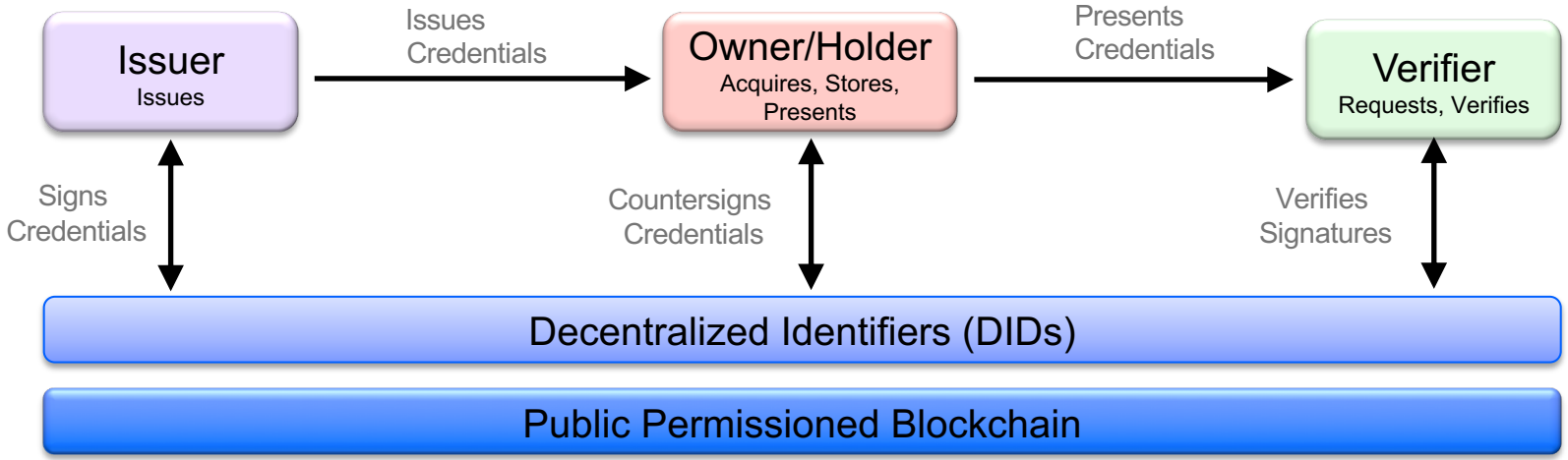
- Cryptographically backed statements of truth
- Standard way of defining, exchanging, and verifying digital information
- Ecosystem of issues, verifiers, and owners


## Decentralized Key Management

- User permissioning
- Entities own their own keys and have a “public key” ring for those they interact with
- “Public key” rings are used to resolve and verify interactions through DIDs

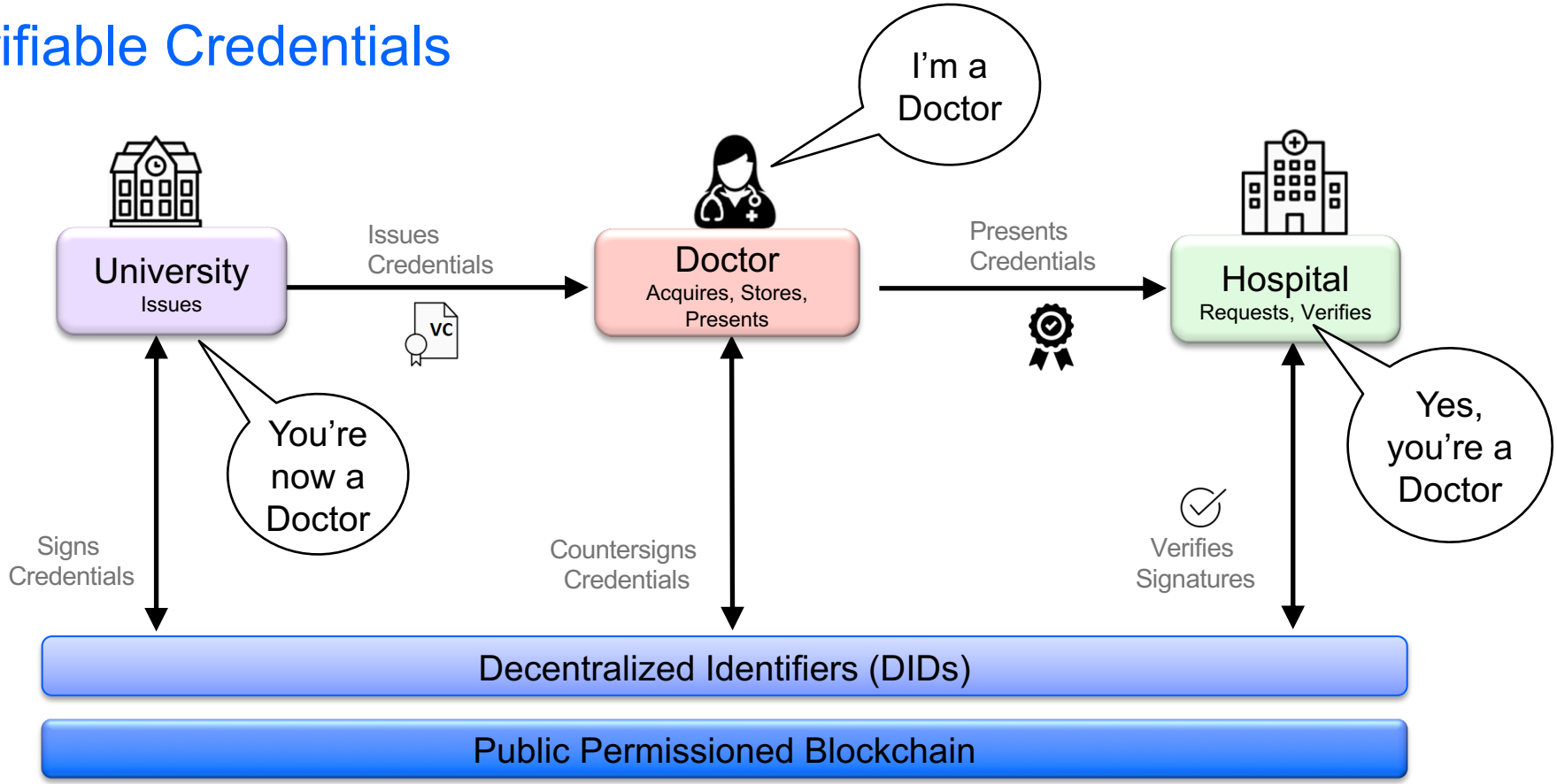


# Decentralized Identity

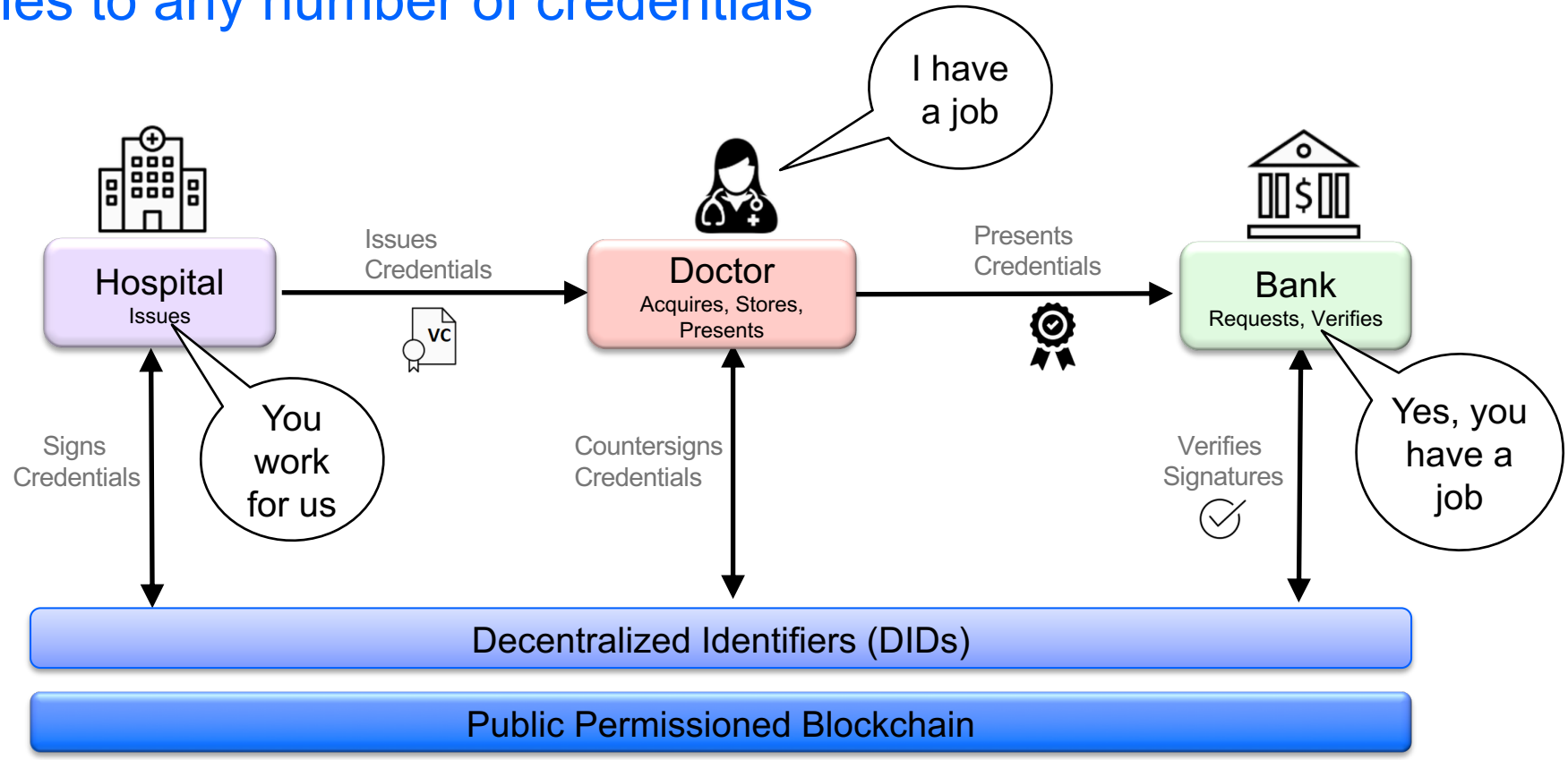



- All interactions between entities are point to point
- The public ledger serves as the distributed root of trust instead of CAs
- Credentials are accumulated over time through every peer to peer relationship

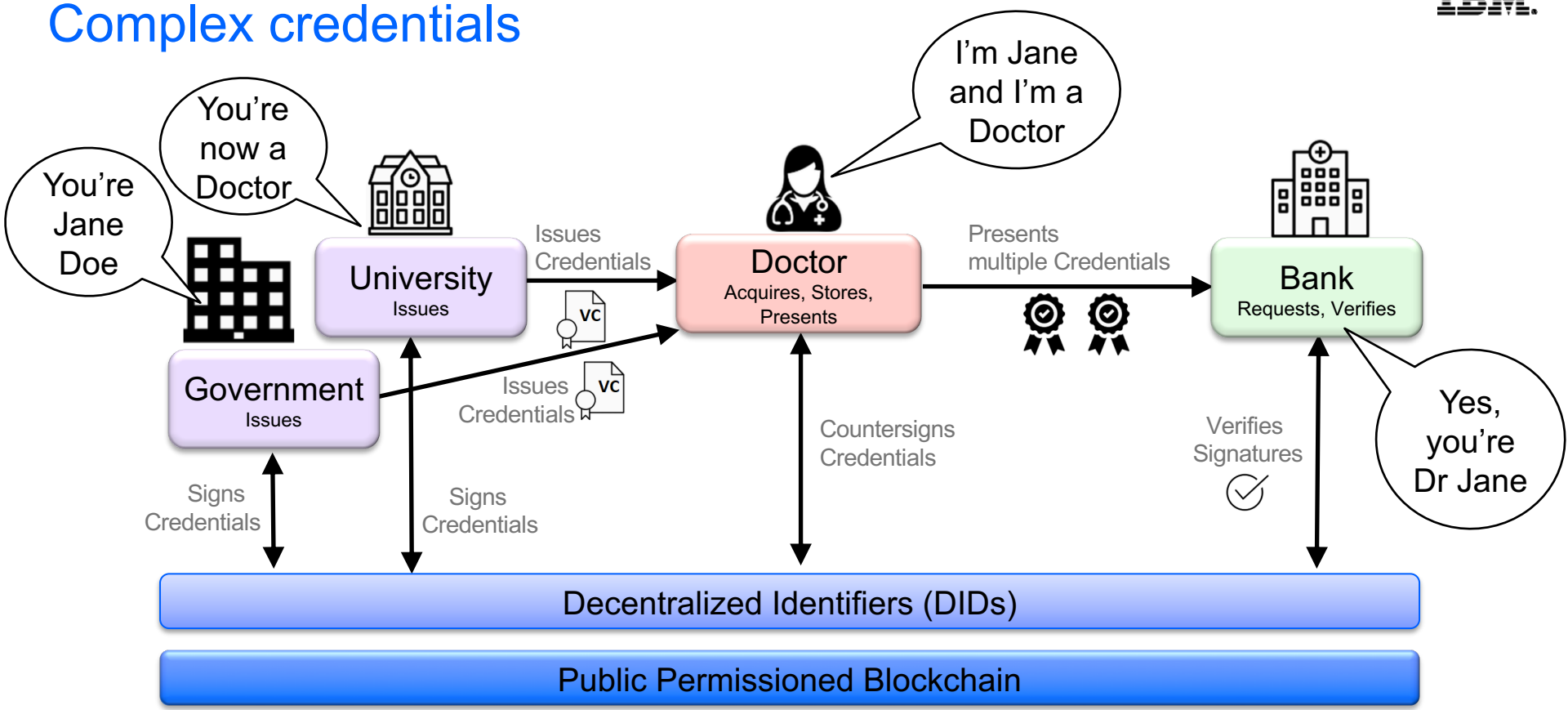
# Verifiable Credentials



# Scales to any number of credentials



# Complex credentials



# Global Financing: Dispute Resolution

## What?

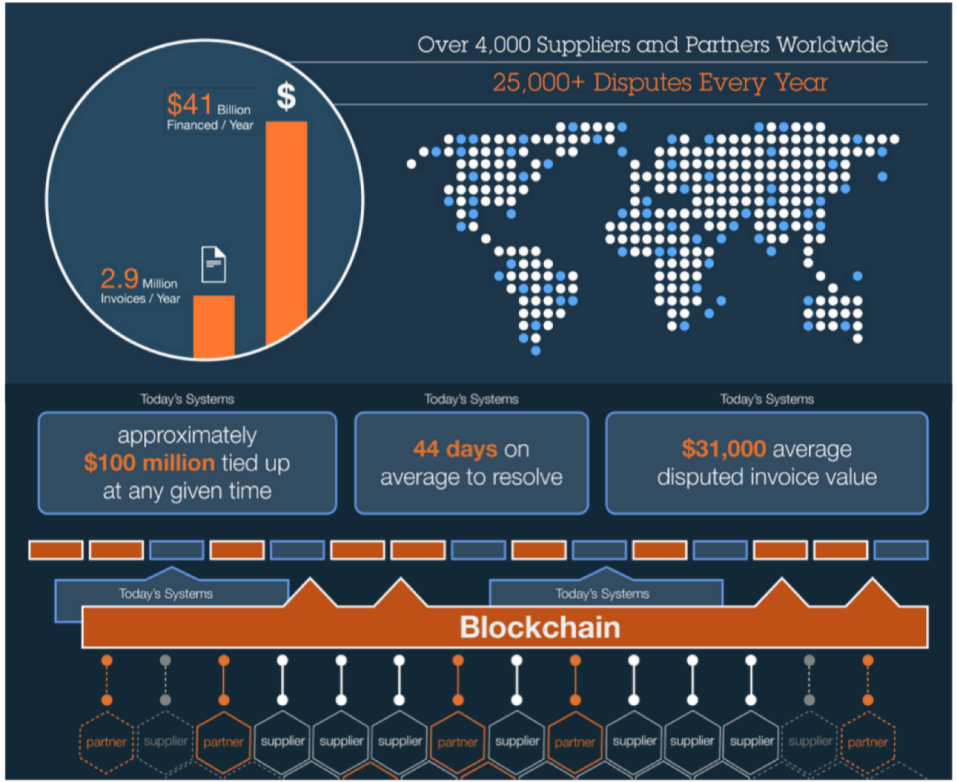
- IBM Global Finance provides a $41bn channel financing per year. There are a number of disputes that take time to resolve and can lock up transactions costing time and money

## How?

- Blockchain provides visibility and provenance end-to-end across supply chain

## Benefits

- Reduced dispute resolution time by 75%
- Released working capital from $100m
- Combine IGF and Supplier info to further expand benefits further
- In production since Sept 2016



IBM Solutions

- Food Trust
- TradeLens
- World Wire
- Digital Identity

Your Solution

# Good blockchain use-case or bad?

Food Provenance

Holiday Tracking Tool

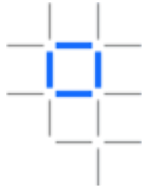
Know Your Customer

Secure Document Store

Track Your Child

Electronic Medical Records

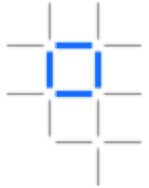
# What makes a good blockchain use case?



- Identifying a good blockchain use-case is not always easy!
  - However there should always be:

1. A business problem to be solved
   - That cannot be more efficiently solved with other technologies
2. An identifiable business network
   - With Participants, Assets and Transactions
3. A need for trust
   - Consensus, Immutability, Finality or Provenance

# What makes a good first blockchain use case?



– First use-cases are even more difficult to identify!

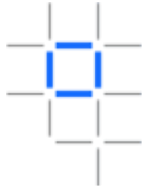
1. A limited scope, but still solves a real business problem
   - Minimum Viable Product in a few weeks of effort

2. A smaller business network
   - Usually without requiring regulators and consortia

3. Allows for scaling with more participants and scenarios
   - Consider shadow chains to mitigate risks

Start small, succeed and grow fast!

# Sample questions to ask for the selected use case:



1. What is the specific business problem / challenge that the first project will address?
2. What is the current way of solving this business problem?
3. Assuming the business problem is large, what specific aspects of this business problem will be addressed?
4. Who are the business network participants (organizations) involved and what are their roles?
5. Who are the specific people within the organization and what are their job roles?
6. What assets are involved and what is the key information associated with the assets?
7. What are the transactions involved, between whom, and what assets are associated with transactions?
8. What are the main steps in the current workflow and how are these executed by the business network participants?
9. What is the expected benefit of applying blockchain technology to the business problem for each of the network participants?
10. What legacy systems are involved? What degree of integration with the legacy systems is needed?

# It is important to ideate potential use-cases

## Day 1

| [A] Use Case | |
|---|---|
| Blockchain Recap | 30 |
| Use Case Selection | 30 |
| Blockchain Fit | 20 |
| Business Network | 15 |

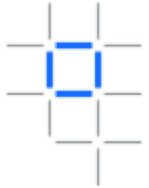
| [B] User | |
|---|---|
| Design Thinking | 30 |
| Empathy Mapping | 45 |
| As-is Experience | 45 |
| Explore Possibilities | 30 |
| Focus Outcomes | 15 |

## Day 2

| [C] Hills | |
|---|---|
| Formulating Hills | 60 |
| Playback Hills | 15 |
| Refine Hills & Check Fit | 35 |
| Prioritize Hills | 15 |

| [D] Going Agile | |
|---|---|
| Storyboarding | 45 |
| First Project Method | 30 |
| Sprint Zero | 20 |
| Non-functional Details | 15 |
| Action Plan | 20 |

# Assessing Business Value



- It can be difficult to accurately quantify investment case for blockchain

- Things to consider:
  - Existing Pain Points
  - Scope – participants, assets, transactions
  - Benefits: baseline, minimum viable ecosystem (MVE) & mature network
  - Blockchain Design Points
  - References

Blockchain Value Design (BVD) activity will help elaborate these items!

# Template – example only (Cross Border Supply Chain)

| | |
|---|---|
| Problem | 90% of goods in global trade are carried by the ocean shipping industry each year. Costs associated with trade documentation processing and administration are estimated to be up to 20% the actual physical transportation costs. |
| Solution | Manage and track the paper trail of tens of millions of shipping containers across the world by digitizing the supply chain process |
| Participants | Supplier, couriers (*2), customs (*2) , ports (*2), shipper and retailer …. |
| Asset & Trust | Need for trust around paperwork associated with a container |
| Transactions | Supplier prepares to ship, release container to courier, load to ship, clear customs, retailer receipt |

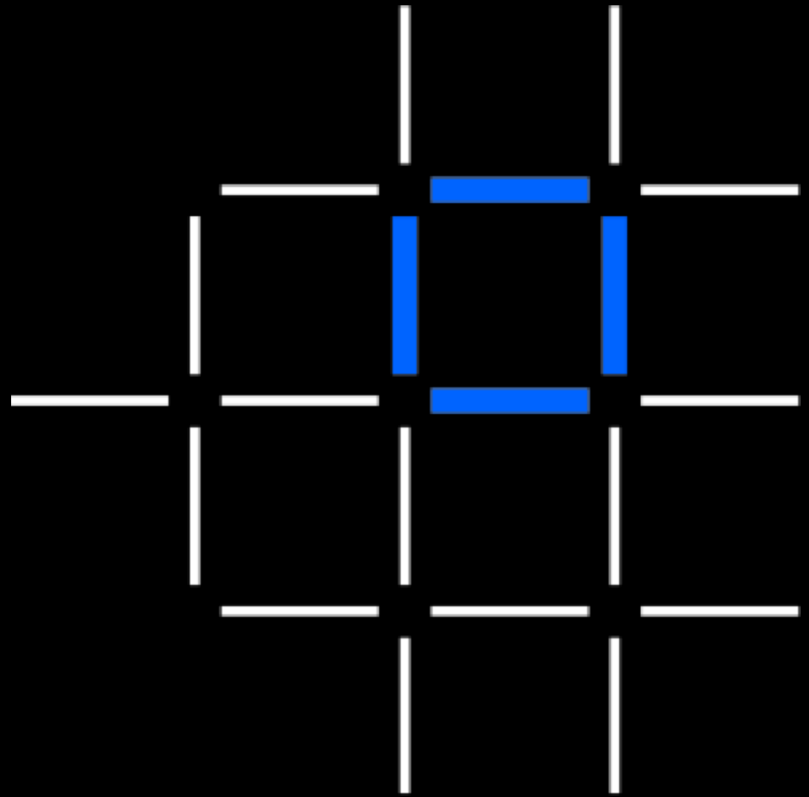
**Pain Points**

- Transport remains highly dependant on a flood of paper that is never digitised
- Shipping information must pass through many hands, increasing potential for delays in transport.
- One shipment can require sign-off from 30 unique organizations and up to 200 communications.
- One lost form or late approval could leave the container stuck in port
- The entire process can take more than one month..
- Fraudulent changes may be made to the Bill of Lading

| Benefits benchmarks<br>- Value Tree<br>KPI's (e.g.) | | Baseline | Phase 1 | Phase 2-3 | Blockchain : Design Points | References |
|---|---|---|---|---|---|---|
| New revenue | # new value propositions | - | - | 1 to 3 | • Find new value propositions to exploit the network effect between members | |
| Improve client experience | Increase in customer satisfaction | - | 5% | 10% | • Securely and transparently trace the container's path through the supply chain on the blockchain<br>• Add trust (Immutability and Provenance) around the Bill of Lading and other container paperwork<br>• Automate the transit and shipping process with Smart Contracts reducing cycle times and delays<br>• No reconciliation or matching of documentation with near instant updates - eliminates the need for audit and verification<br>• Removes paper and intermediaries | ANO -1<br>ANO -2 |
| | Increase in trade volumes | - | +5% | +15% | | |
| | Cycle times (transit & shipping) | 30 days | 25 days | 10 days | | |
| Reduce transport costs | Waste as % of total shipped | 6% | 5% | 1% | | |
| | Fraud and errors as % of total costs | 5% | 4% | 0.5% | | |
| | Documentation admin. as % of total costs | 20% | 15% | 5% | | |

# Thank you

*Jin VanStee*



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