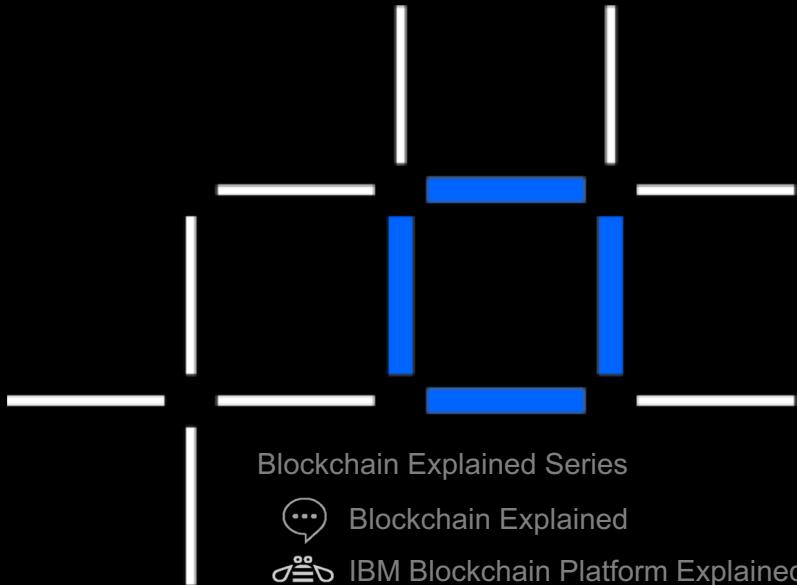


Blockchain Use Cases

IBM Blockchain Networks

Jin VanStee
Blockchain Z Tech Sales
jinxiong@us.ibm.com



Blockchain Explained Series

… Blockchain Explained

⌚ IBM Blockchain Platform Explained

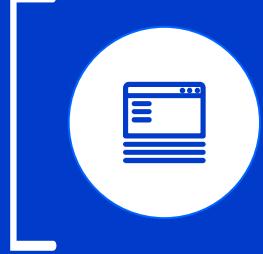
✅ **Solutions Explained**

🏡 Garage Explained

🔍 What's New

➔ Next Steps





IBM Solutions

- TradeLens
- World Wire
- Digital Identity
- Dispute Settlement



Your Solution

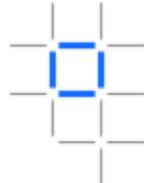




TradeLens



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

Search

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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Forbes

Billionaires Innovation Leadership Money Consumer Industry Lifestyle

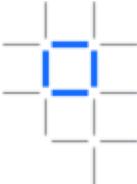
2,532 views | Aug 9, 2018, 07:01am

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.

IBM



The cost of global trade is estimated at \$1.8 trillion annually¹ 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

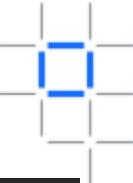


By reducing barriers within the international supply chain, global trade could increase by nearly **15%**, boosting economies and creating jobs²



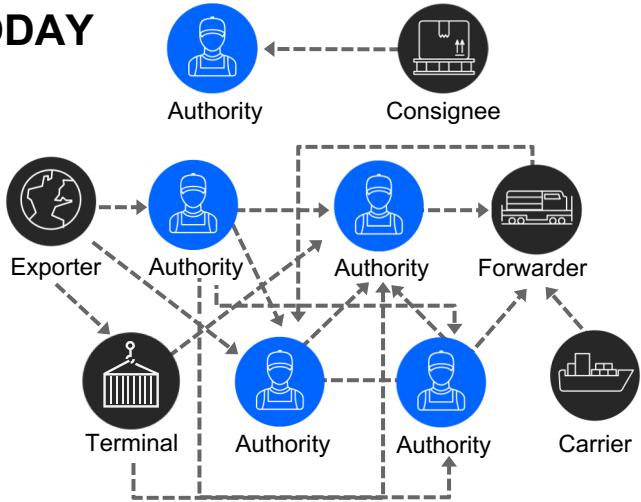
In many cases the administrative cost of moving a container is **higher** than the cost of physically moving it

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

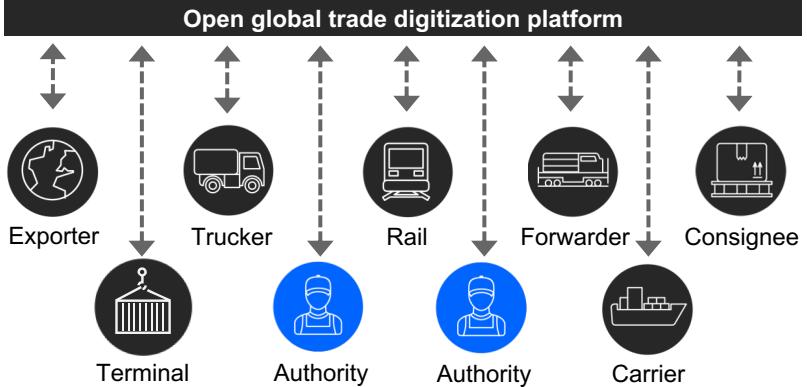


The case for a better way

TODAY

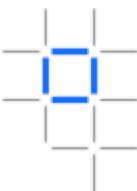


TOMORROW



- 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

- 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

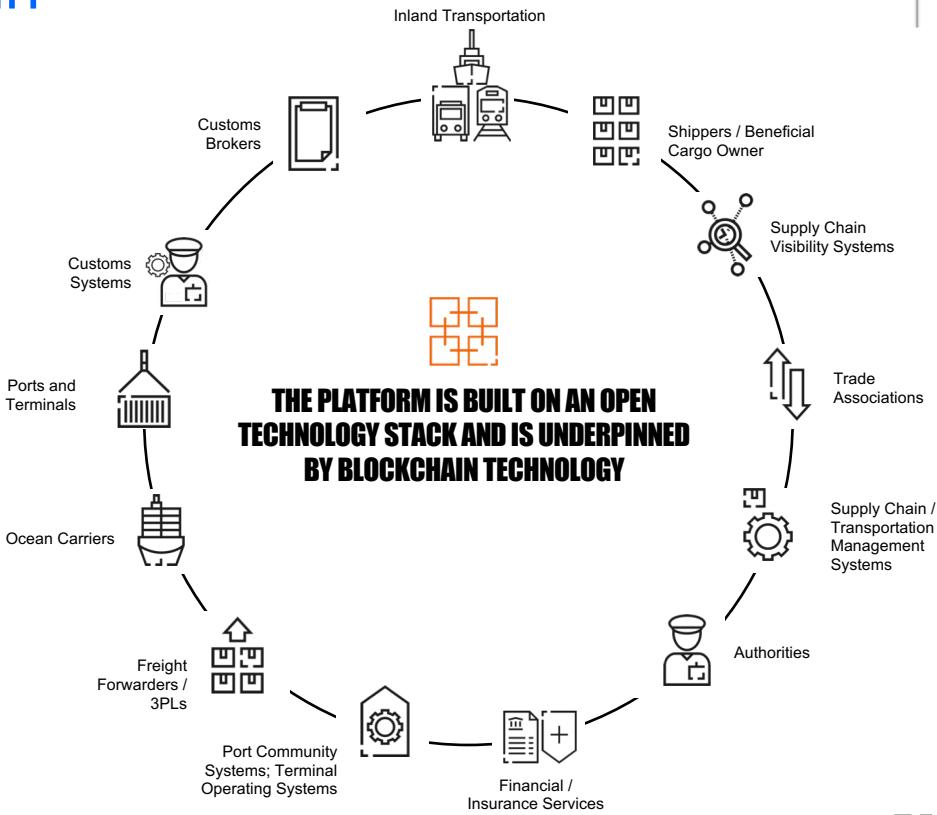
Provides for the seamless, secure sharing of real-time, actionable supply chain information across all parties to a trade - encompassing shipping milestones, cargo details, trade documents, the structured data embedded in trade documents, customs filings, sensor readings, and more

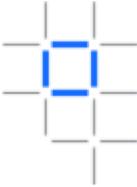
Fosters collaboration and trust

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

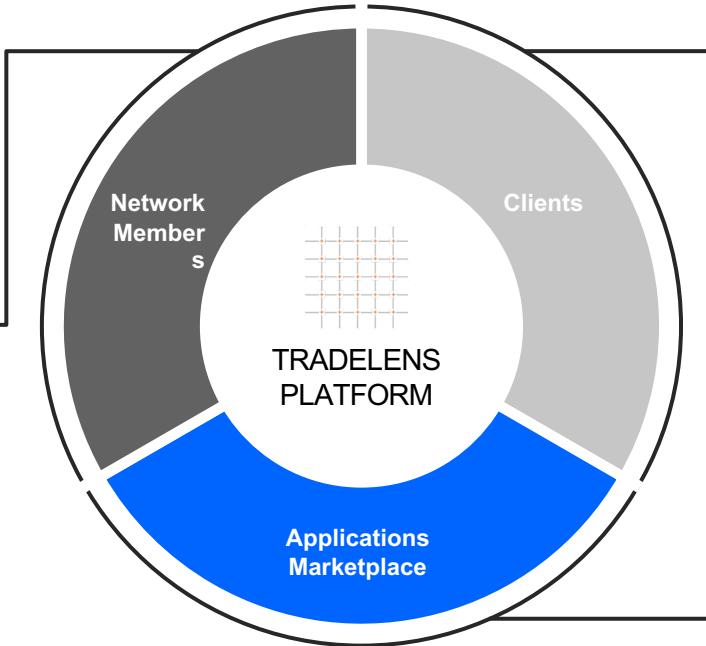




The TradeLens ecosystem

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

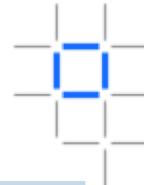


World Wire

IBM Blockchain



IBM Blockchain World Wire – the new global financial rail

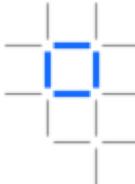


IBM is transforming cross-border payments with IBM Blockchain World Wire, the integrated network for real-time clearing and settlement. This new global financial rail allows banks and financial institutions to send and settle payments around the globe with finality in a matter of seconds, eliminating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

Let's settle
payments in
seconds —
not days

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



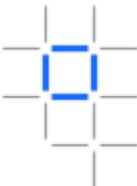
Cross-border payments rely heavily on traditional correspondent banking relationships – a process requiring multiple intermediaries – taking **days or even weeks to complete**



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



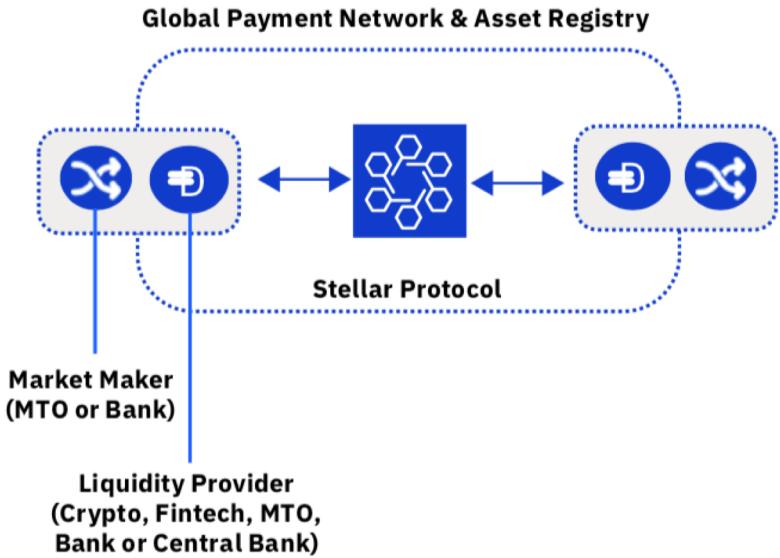
The IBM Blockchain World Wire difference

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

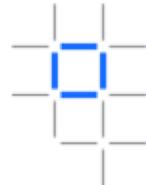
With IBM Blockchain World Wire, clearing and settlement with finality happens in near real-time. The solution uses digital assets to settle transactions, serving as an agreed-upon store of value exchanged between parties as well as integrating payment instruction messages.

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

IBM Blockchain



The Different Dimensions of our identity

1. Me as an individual:

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

Name

Age

Gender

Biometrics

Race

Family

Address

Birthplace

Nation

Education

Profession

Workplace

Hometown

Religion

Belongings

Beliefs

Hobbies



2. How I am represented:

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

National ID

Work ID

Driving ID

Address History

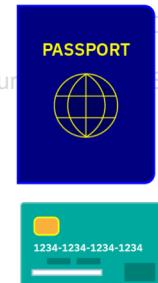
Social ID

Work History

Financial History

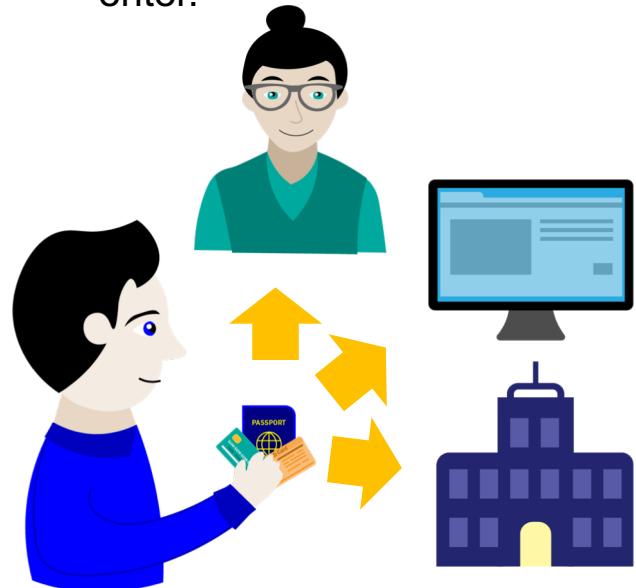


Driving History



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 solutions²

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 identities¹



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

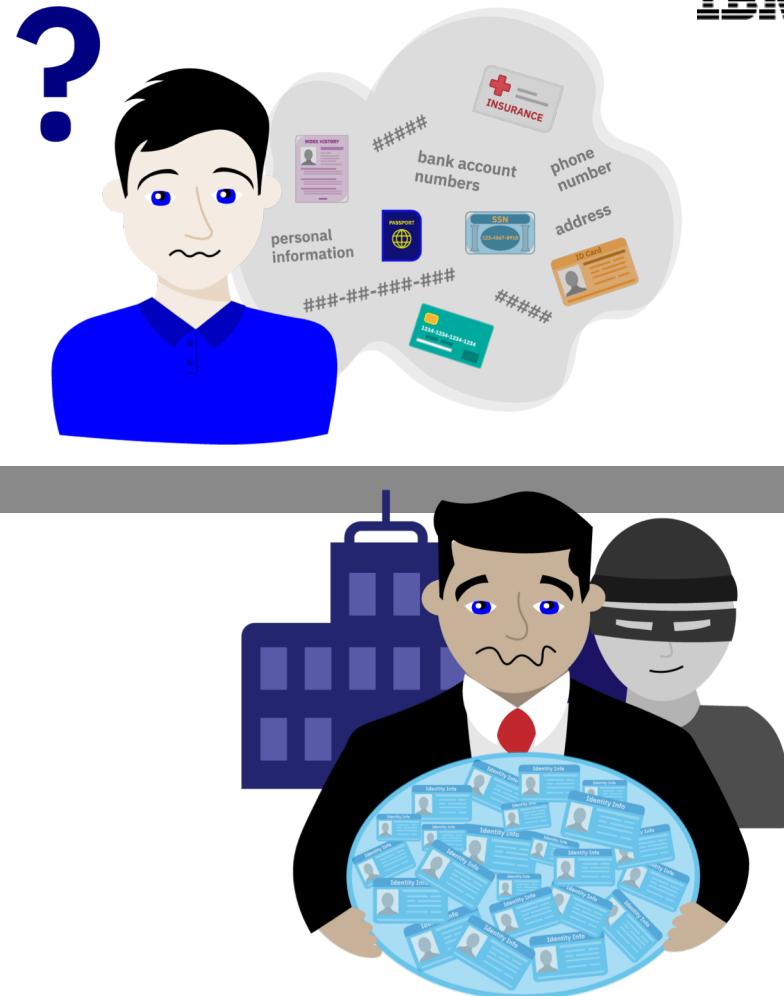
The Problem

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**

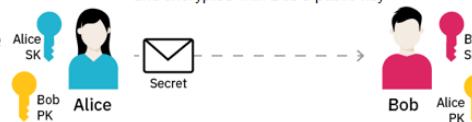
- Removal of centralized issuers allows identity to scale at the edges

Public Key Infrastructure (PKI)

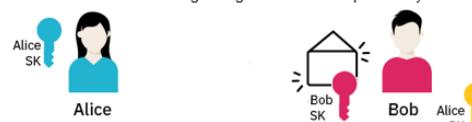
Alice has a secret she wants to share with Bob. They swap public keys and hold onto their private keys



Alice sends over the secret signed with her private key and encrypted with Bob's public key

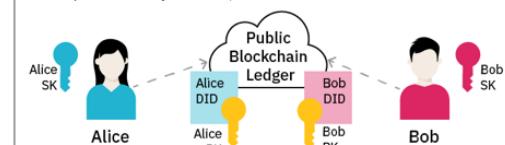


Bob can decrypt the message with his private key and validate Alice's digital signature with her public key

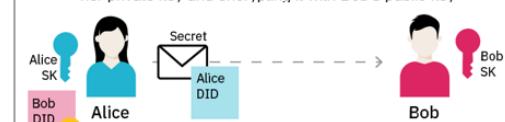


Decentralized PKI

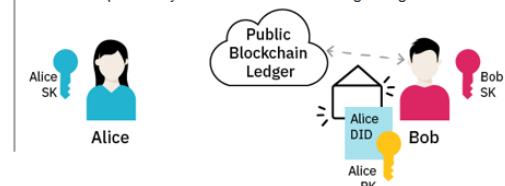
Alice and Bob register their unique identifiers with the public identity network, Bob then sends his DID to Alice



Alice sends her DID and the secret to Bob after signing it with her private key and encrypting it with Bob's public key

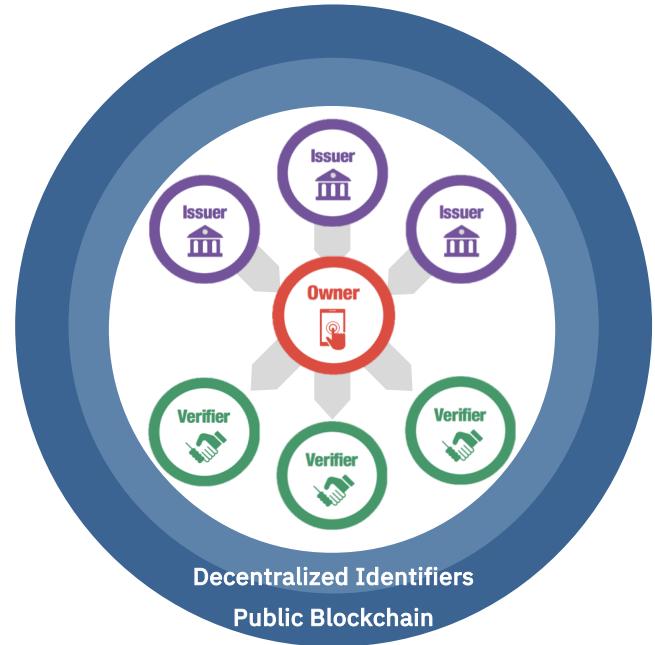


Bob validates Alice's DID and uses it to fetch her associated public key so he can confirm her digital signature



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 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 issuers, verifiers, and owners

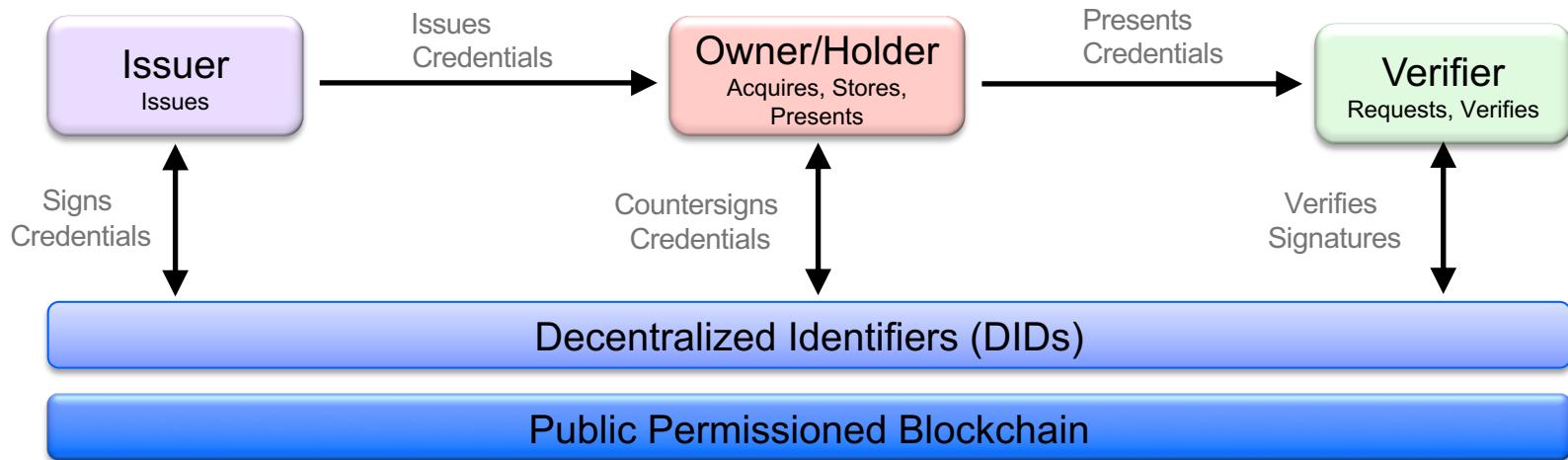


Decentralized Key Management

- 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

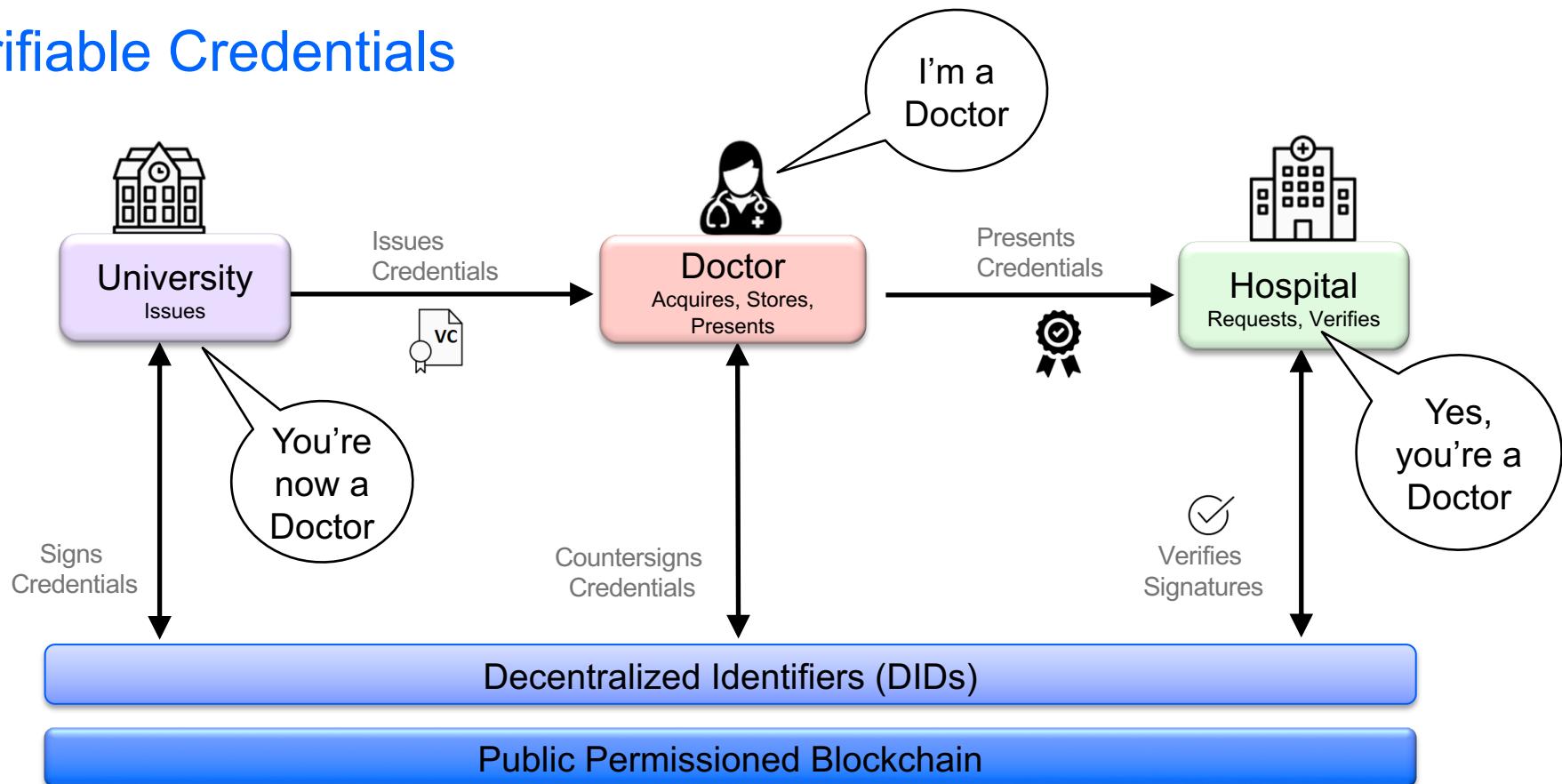


Decentralized Identity

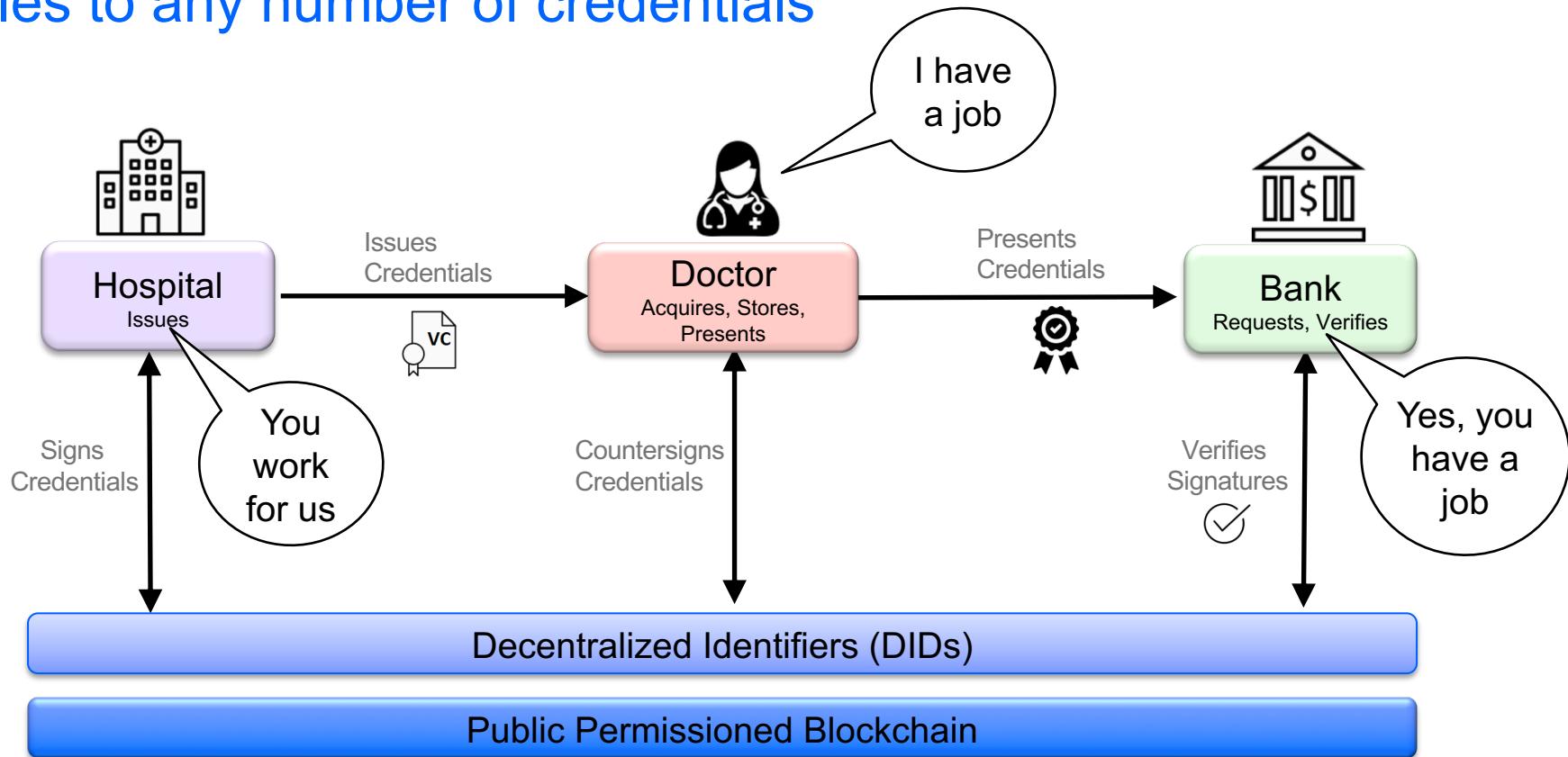


- All interactions between entities are point to point
- The public ledger serves as the distributed root of trust instead of CAs
- Credentials are accumulated over time through every peer to peer relationship

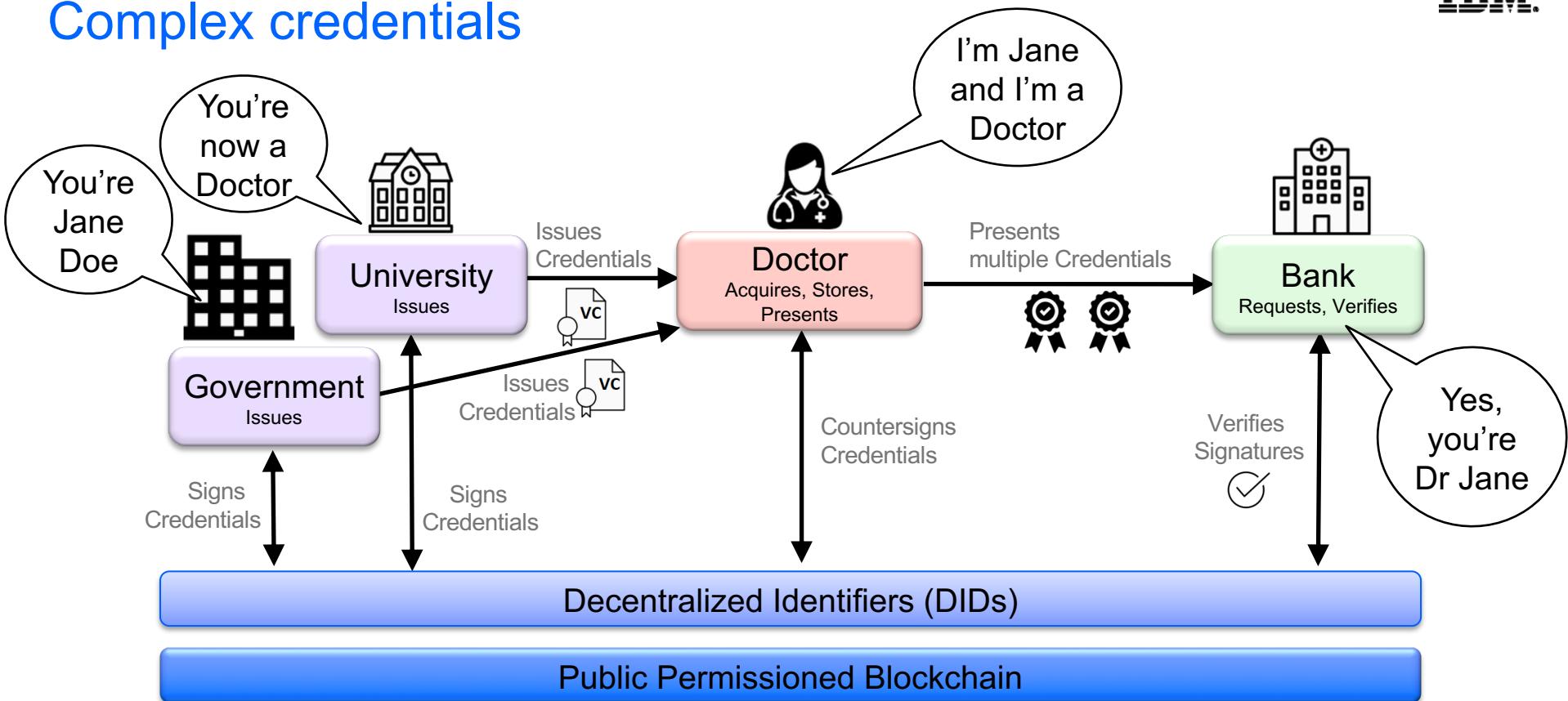
Verifiable Credentials



Scales to any number of credentials

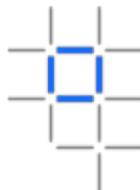


Complex credentials





Global Financing: Dispute Resolution



What?

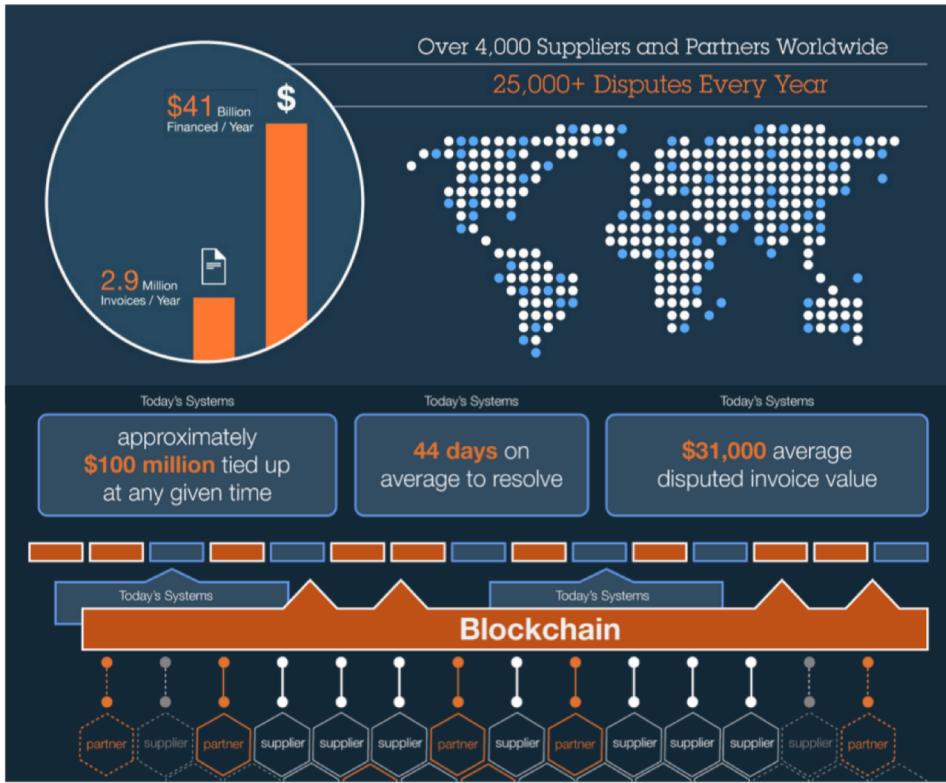
- IBM Global Finance provides a \$41bn channel financing per year. There are a number of disputes that take time to resolve and can lock up transactions costing time and money

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





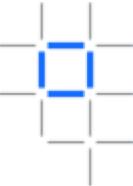
IBM Solutions

- Food Trust
- TradeLens
- World Wire
- Digital Identity



Your Solution





Good blockchain use-case or bad?

Food
Provenance

Holiday
Tracking
Tool

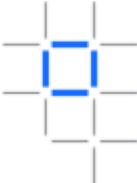
Know Your
Customer

Secure
Document
Store

Track Your
Child

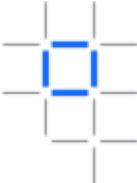
Electronic
Medical
Records





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



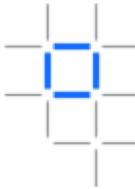
What makes a good first blockchain use case?

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

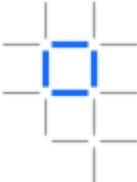
1. A limited scope, but still solves a real business problem
 - Minimum Viable Product in a few weeks of effort
2. A smaller business network
 - Usually without requiring regulators and consortia
3. Allows for scaling with more participants and scenarios
 - Consider shadow chains to mitigate risks

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

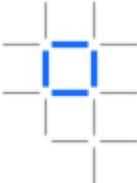
Day 2

[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.	Pain Points
Solution	Manage and track the paper trail of tens of millions of shipping containers across the world by digitizing the supply chain process	<ul style="list-style-type: none"> 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
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	

Benefits benchmarks - Value Tree		Baseline	Phase 1	Phase 2-3	Blockchain : Design Points	References
KPI's (e.g.)						
New revenue	# new value propositions	-	-	1 to 3	<ul style="list-style-type: none"> Find new value propositions to exploit the network effect between members 	
Improve client experience	Increase in customer satisfaction	-	5%	10%	<ul style="list-style-type: none"> Securely and transparently trace the container's path through the supply chain on the blockchain 	
	Increase in trade volumes	-	+5%	+15%	<ul style="list-style-type: none"> Add trust (Immutability and Provenance) around the Bill of Lading and other container paperwork 	ANO -1
	Cycle times (transit & shipping)	30 days	25 days	10 days	<ul style="list-style-type: none"> Automate the transit and shipping process with Smart Contracts reducing cycle times and delays 	
Reduce transport costs	Waste as % of total shipped	6%	5%	1%	<ul style="list-style-type: none"> No reconciliation or matching of documentation with near instant updates - eliminates the need for audit and verification 	ANO -2
	Fraud and errors as % of total costs	5%	4%	0.5%	<ul style="list-style-type: none"> Removes paper and intermediaries 	
	Documentation admin. as % of total costs	20%	15%	5%		

Thank you

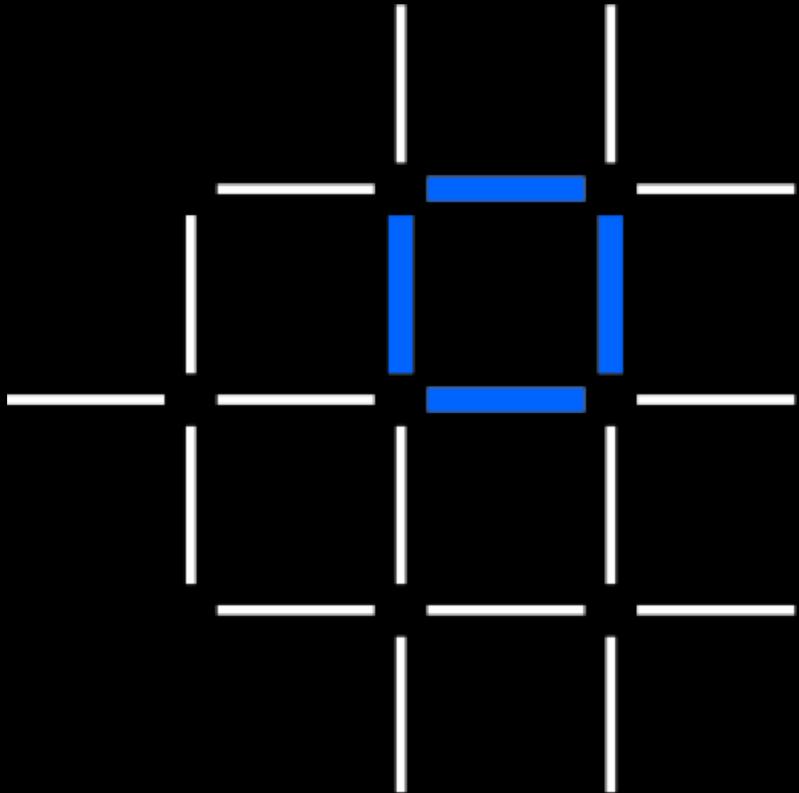
Jin VanStee

Questions? Tweet us or
go to ibm.com/blockchain

 @IBMBlockchain

 IBM Blockchain

 IBM Blockchain





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