

Blockchain Immersion Workshop

Dublin, OH

IBM Blockchain

Presenters:



Jin VanStee



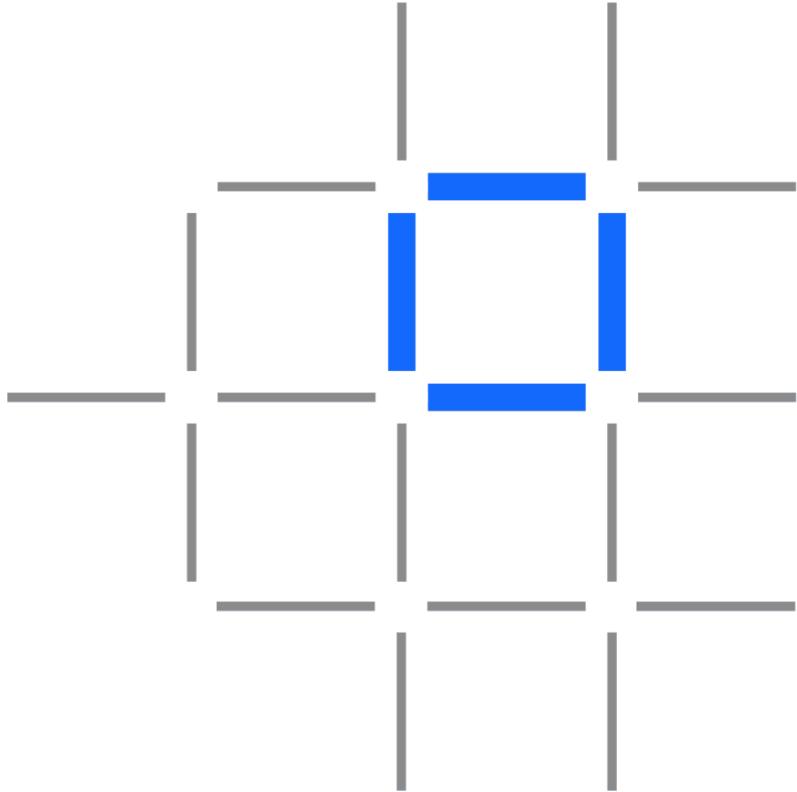
Austin Grice



Barry Silliman

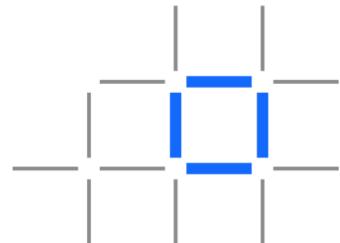


Steven Bodie



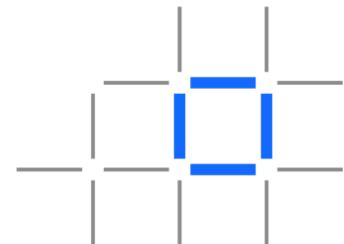
Workshop Agenda – Day 1

- Blockchain Introduction
- Vehicle Lifecycle Demo
- Blockchain Composed – Hyperledger Composer
- LAB: Composer Playground
- LUNCH
- LAB: Composer Smorgasbord
- Blockchain Deep Dive
- Wrap up Day 1



Workshop Agenda – Day 2

- IBM Blockchain Platform Explained, demo
- Hyperledger Fabric Installation Overview
- LAB: Hyperledger Fabric Installation & Verification
- LUNCH
- LAB: Marbles Smart Contract and UI
- Hyperledger Explorer Overview
- LAB: Hyperledger Explorer Installation & Usage
- Blockchain Integrated
- Next Steps





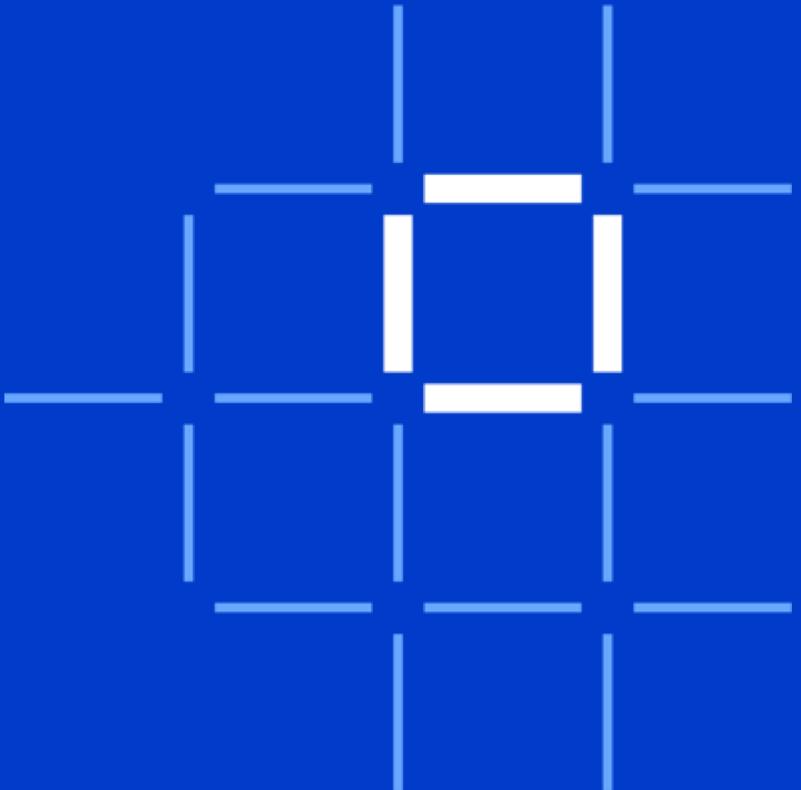
What is Blockchain?



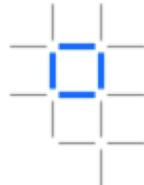
Why is it relevant for
our business?



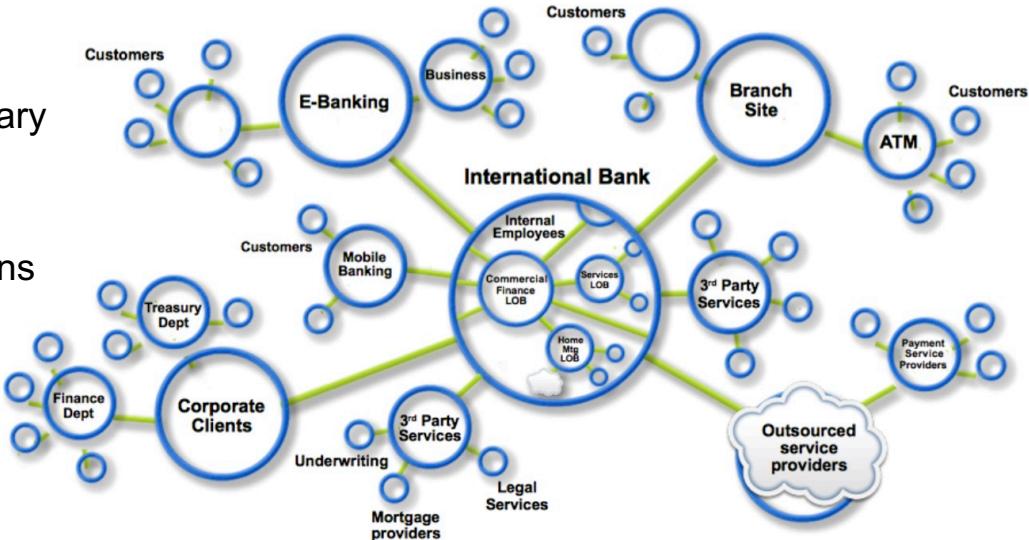
How can IBM help us
apply blockchain?



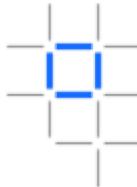
Business networks, wealth and markets



- **Business Networks** benefit from connectivity
 - Participants are customers, suppliers, banks, partners
 - Cross geography and regulatory boundary
- **Wealth** is generated by the flow of goods and services across business network in transactions and contracts
- **Markets** are central to this process:
 - Public (fruit market, car auction), or
 - Private (supply chain financing, bonds)



Transferring assets, building value



Anything that is capable of being owned or controlled to produce value, is an asset



Two fundamental types of asset

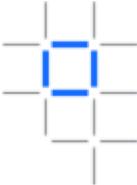
- Tangible, e.g. a house
- Intangible, e.g. a mortgage

Intangible assets subdivide

- Financial, e.g. bond
- Intellectual, e.g. patents
- Digital, e.g. music

Cash is also an asset

- Has property of anonymity

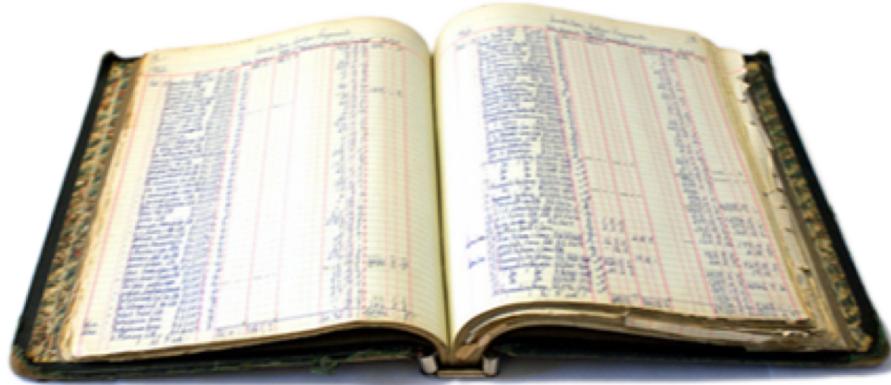


Ledgers are key

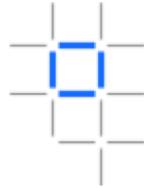
Ledgers are THE system of record for a business.

Businesses will have multiple ledgers for the multiple business networks in which they participate.

- **Transaction:** an asset transfer onto or off the ledger
 - John gives a car to Anthony (simple)
- **Contract:** the conditions for a transaction to occur
 - If Anthony pays John money, then car passes from John to Anthony (simple)
 - If car won't start, funds do not pass to John (as decided by third party arbitrator) (more complex)



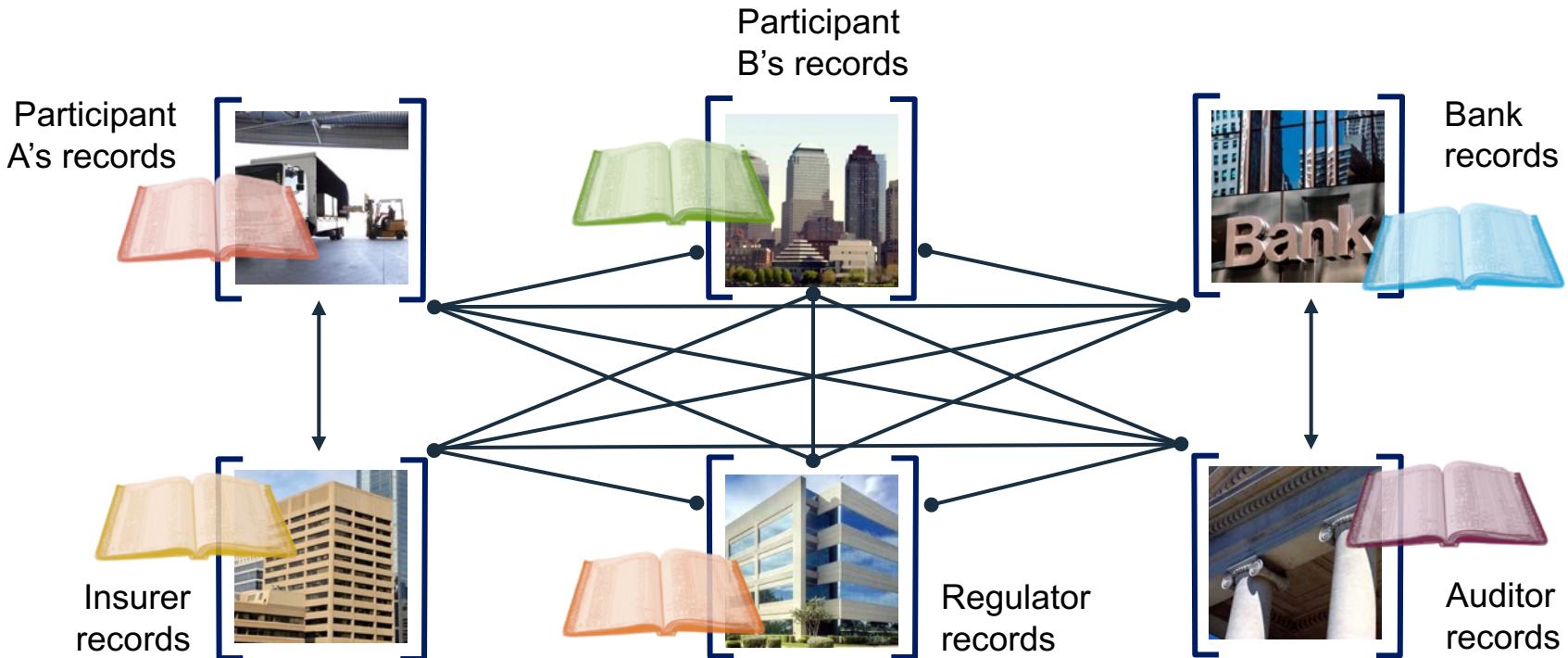
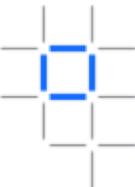
Introducing Blockchain for Business...



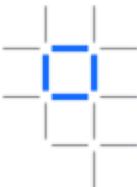
Shared,
replicated,
permissioned
ledger

**Blockchain
for
Business**

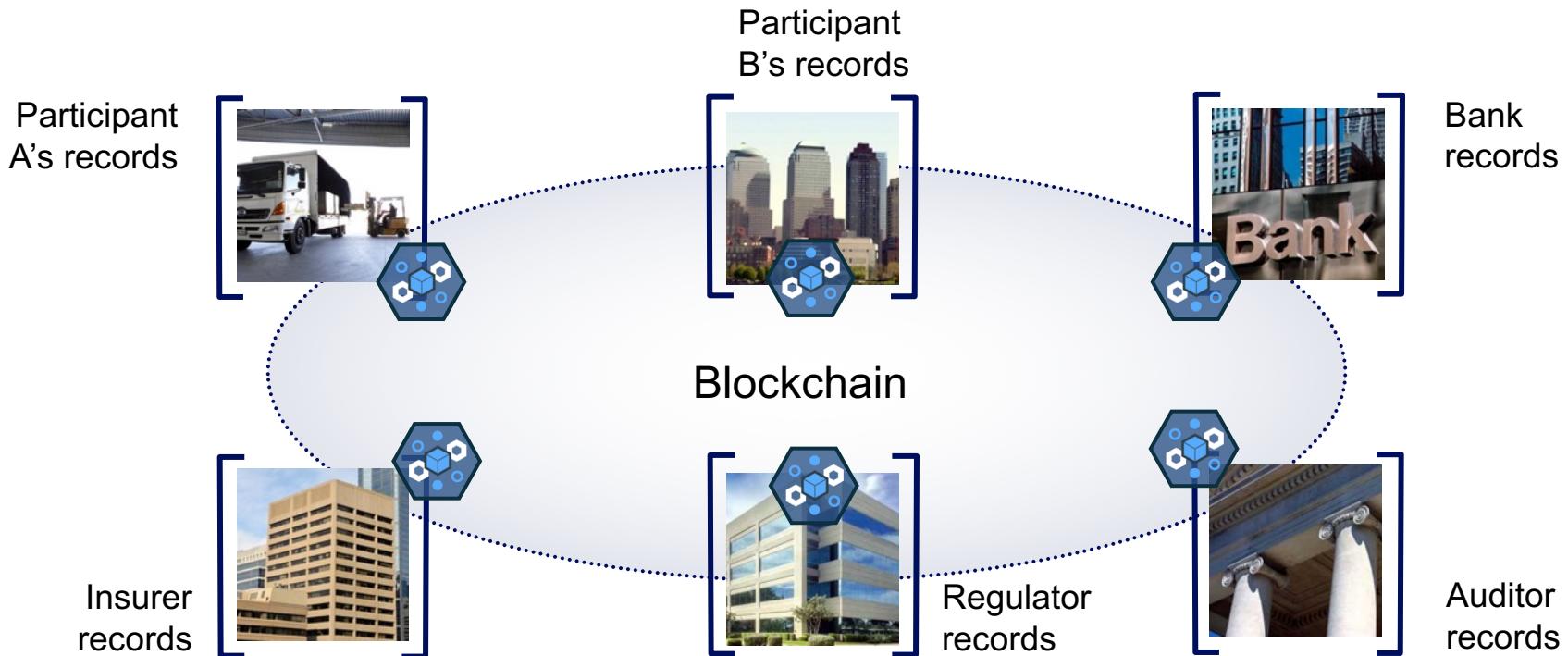
Problem...



... inefficient, expensive, vulnerable

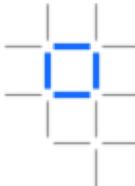


A shared, replicated, permissioned ledger ...



... with consensus, provenance, immutability and finality

Other types of blockchain exist

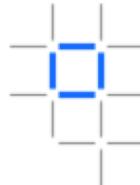


is an example of an unpermissioned, public ledger:

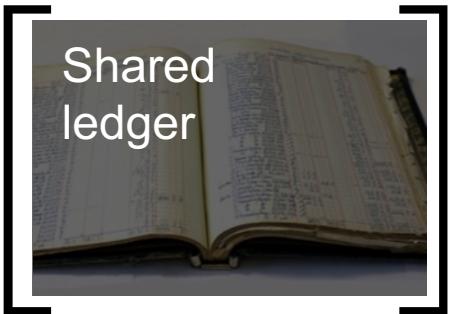
- The first blockchain application
 - Defines an unregulated shadow-currency
 - Resource intensive
-
- **Blockchains for business** are generally permissioned and private, and prioritize:
 - Identity over anonymity
 - Selective endorsement over proof of work
 - Assets over cryptocurrency



Blockchain for business engenders trust



Append-only
distributed system of
record shared across
business network



Shared
ledger



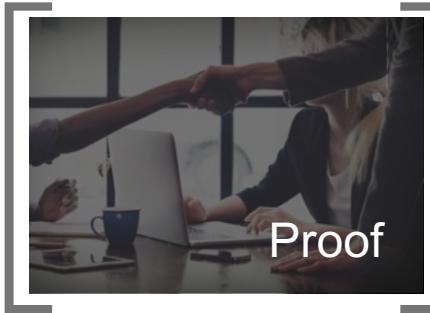
Smart
contract

Business
terms
executed with
transactions

Transactions
are secure with
appropriate
visibility



Privacy



Proof

Transactions are
provably endorsed
by relevant
participants



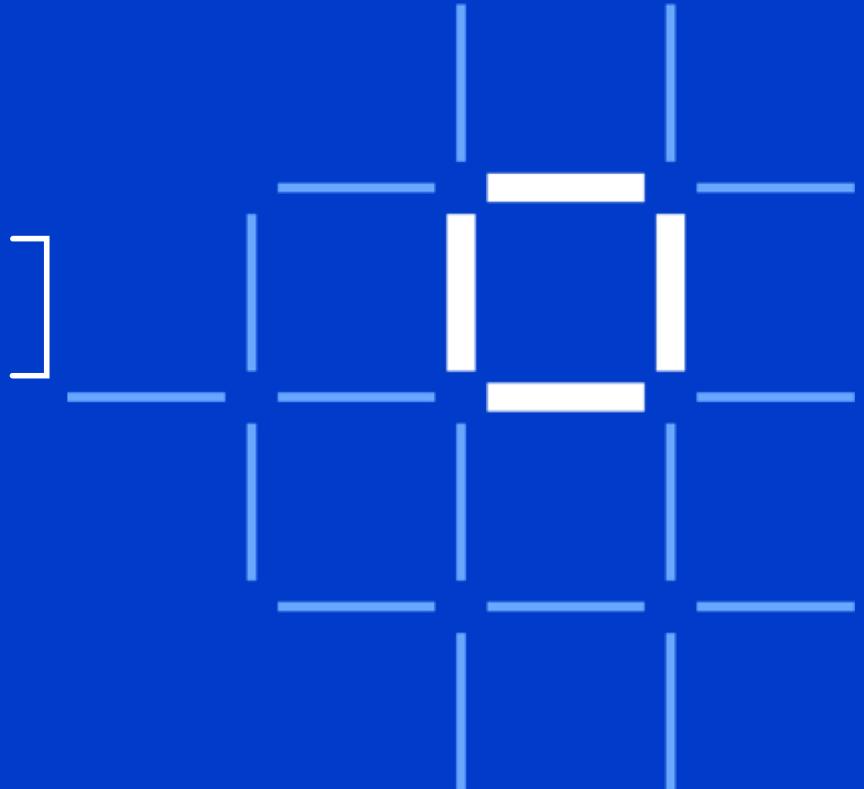
What is Blockchain?



Why is it relevant for
our business?



How can IBM help us
apply blockchain?



Example: Shared reference data



What	• Competitors/collaborators in a business network need to share reference data, e.g. bank routing codes, medical codes • Each member maintains their own codes, and forwards changes to a central authority for collection and distribution • An information subset can be owned by organizations	Benefits
How	• Each participant maintains their own codes within a Blockchain network • Blockchain creates single view of entire dataset	1. Consolidated, consistent dataset reduces errors 2. Near real-time access to reference data 3. Naturally supports code editing and code transfers between participants

Example: Supply chain



What

- Provenance of each component part in complex system hard to track

- Manufacturer, production date, batch and even the manufacturing machine program

How

- Blockchain holds complete provenance details of each component part

- Accessible by each manufacturer in the production process, the aircraft owners, maintainers and government regulators

Benefits

1. Trust increased, no authority "owns" provenance
2. Improvement in system utilization
3. Recalls "specific" rather than cross fleet

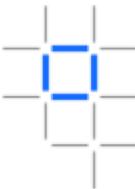
Example: Audit and compliance



- What
- Financial data in a large organization dispersed throughout many divisions and geographies
 - Audit and Compliance needs indelible record of all key transactions over reporting period

- How
- Blockchain collects transaction records from diverse set of financial systems
 - Append-only and tamperproof qualities create high confidence financial audit trail
 - Privacy features to ensure authorized user access

- Benefits
1. Lowers cost of audit and regulatory compliance
 2. Provides “seek and find” access to auditors and regulators
 3. Changes nature of compliance from passive to active



Common KYC Data

What?

- View of customer identity to enable compliance with Know Your Customer (KYC)

How?

- A complete view of customers' documents across a distributed network

Benefits

- Creation of a single but cross-businesses KYC platform to inform all of the banks processes.
- Crédit Mutuel Arkéa could enable its customers to deliver proof of their identity to third-parties such as local utilities, retailers or regulated service providers.



Accelerating Global Payments

What?

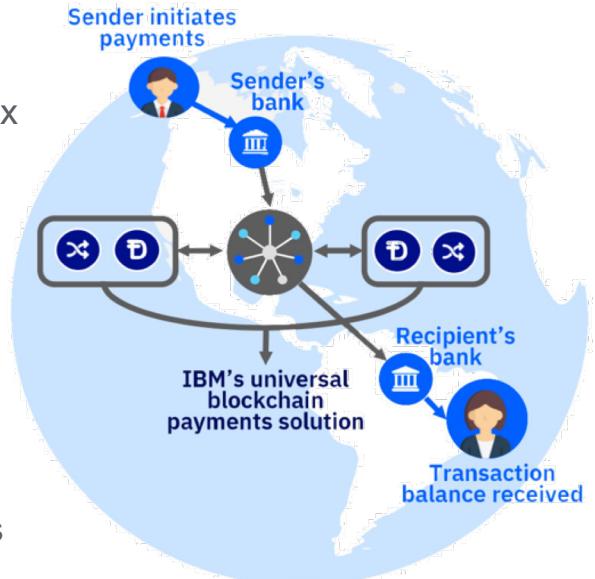
- A universal rail for real-time clearing and settlement on an integrated Blockchain network

How?

- Collaboration between IBM and technology partners Stellar.org and KlickEx Group
- Initial participants include over 13 financial institutions

Benefits

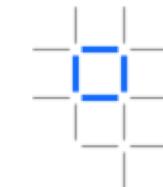
- Create secure, high volume, low-cost cross-border payments services without sacrificing margins
- Access new markets and currencies with limited risk
- Generate new sources of revenue with value-added products and services
- Aim: near real-time international payments



Food Trust



MCLANE
INTELLIGENT. SOLUTIONS



Walmart

Nestlé

Tyson

gsf
golden state foods



Unilever

What?

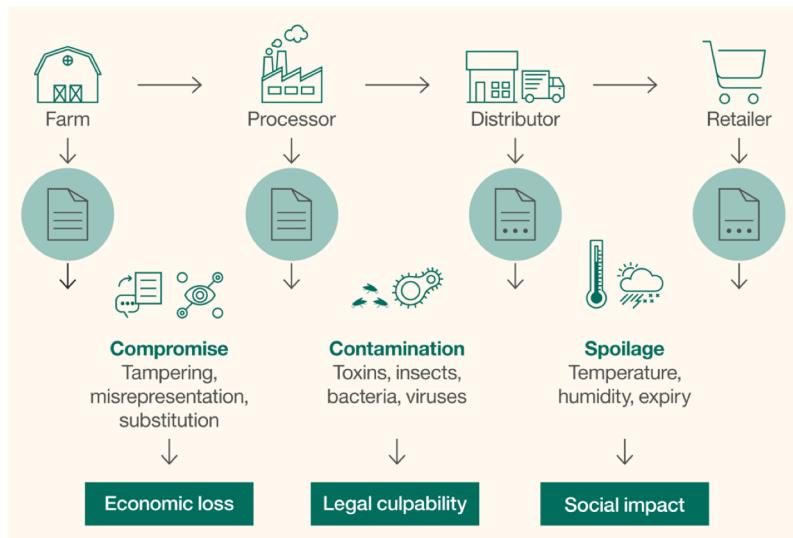
- Provide a trusted source of information and traceability to improve transparency and efficiency across the food network.

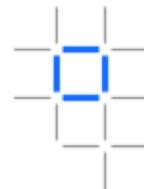
How?

- Shared ledger for storing digital compliance documentation, test results and audit certificates network.

Benefits

- Reduce impact of food recalls through instant access to end-to-end traceability data to verify history in the food network and supply chain.
- Help to address the 1 in 10 people sickened and 400,000 fatalities WW which occur every year from food-born illnesses.





What?

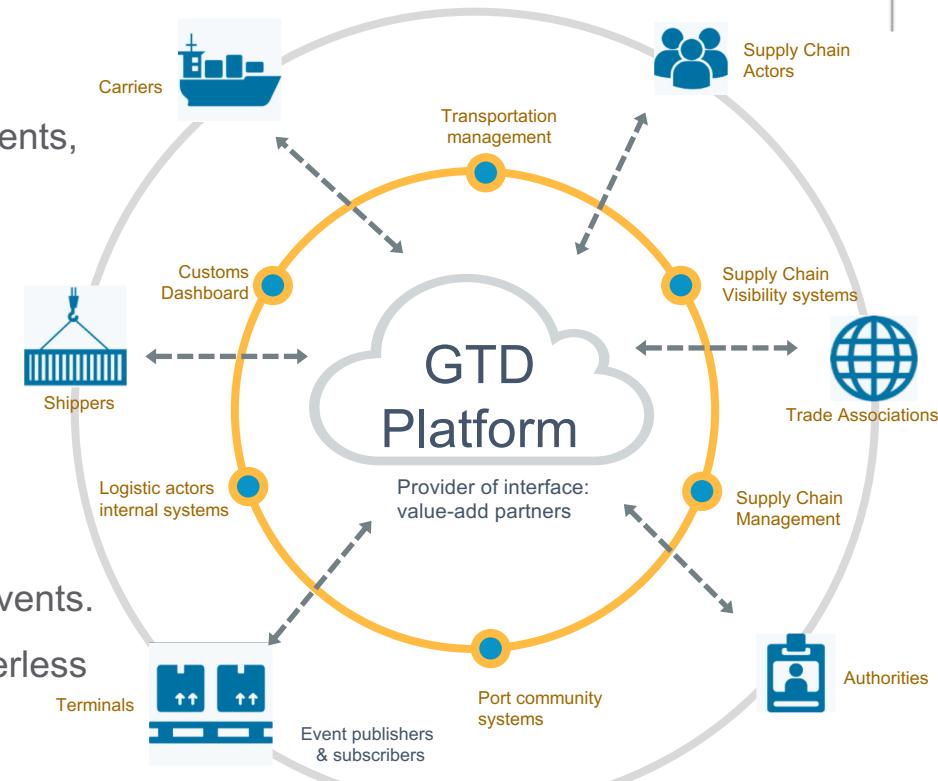
- An open, extensible platform for sharing shipping events, messages, and documents across all the actors and systems in the supply chain ecosystem.

How?

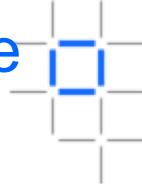
- Providing Shared Visibility and Shared State for Container Shipments

Benefits

- Increase speed and transparency for cross border transactions through real time access to container events.
- Reduced cost and increased efficiency through paperless trade



Healthcare organizations tackle provider directories mandate



What?

- Five healthcare organizations including insurers UnitedHealthcare and Humana, Optum, Quest Diagnostics and MultiPlan are launching a blockchain pilot to help payers tackle mandated provider directories

How?

- The pilot will use blockchain technology for the five members of the alliance to share the curated information.
- “So when one payer does the curation work, it could be potentially shared with the other payers,” “This works for payers that have an overlapping provider population.”

Optum, UnitedHealthcare, Humana, others launch blockchain pilot

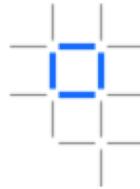
The alliance is one of the first, if not the first, national blockchain alliances for healthcare, says Optum engineer.

By [Susan Morse](#) | April 02, 2018 | 10:28 AM

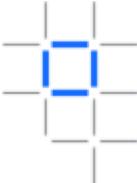


*Source: <http://www.healthcareitnews.com/news/optum-unitedhealthcare-humana-others-launch-blockchain-pilot>

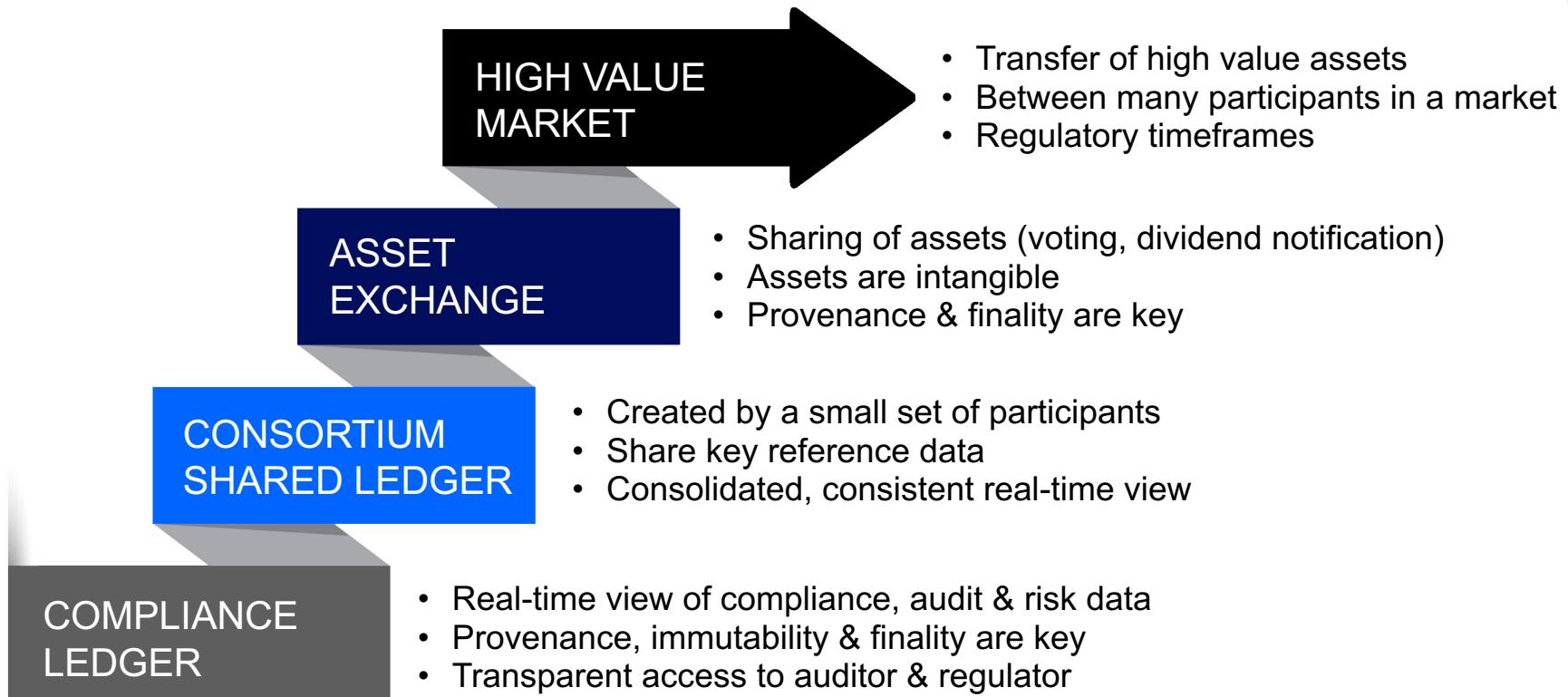
Further examples by (selected) industry



Financial	Public Sector	Retail	Insurance	Manufacturing
<ul style="list-style-type: none">• Trade Finance• Cross currency payments• Mortgages	<ul style="list-style-type: none">• Asset Registration• Citizen Identity• Medical records• Medicine supply chain	<ul style="list-style-type: none">• Supply chain• Loyalty programs• Information sharing (supplier – retailer)	<ul style="list-style-type: none">• Claims processing• Risk provenance• Asset usage history• Claims file	<ul style="list-style-type: none">• Supply chain• Product parts• Maintenance tracking



Patterns for customer adoption





What is Blockchain?



Why is it relevant for
our business?



How can IBM help us
apply blockchain?



IBM Blockchain Strategy

Drive the development of **applications** for specific business use-cases, to be deployed to active **blockchain networks**



Services

Collaborate
with services
teams from
ideation all the
way to
production



Ecosystem

Tap into our diverse ecosystem to develop strategic partnerships and create your competitive advantage



Solutions

Solve critical industry challenges by building and joining new business networks and applications



Platform

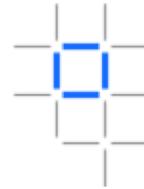
Develop, govern and operate enterprise blockchain networks with speed and security



HYPERLEDGER

A founding, premier member of Hyperledger, IBM is committed to open source, standards & governance

Hyperledger: A Linux Foundation project



- A collaborative effort created to advance cross-industry blockchain technologies for business
- Founded February 2016; now more than 230 member organizations
- Open source, open standards, open governance
- Five frameworks and five tools projects
- IBM is a premier member of Hyperledger

www.hyperledger.org



Hyperledger Members

Premier



Associate



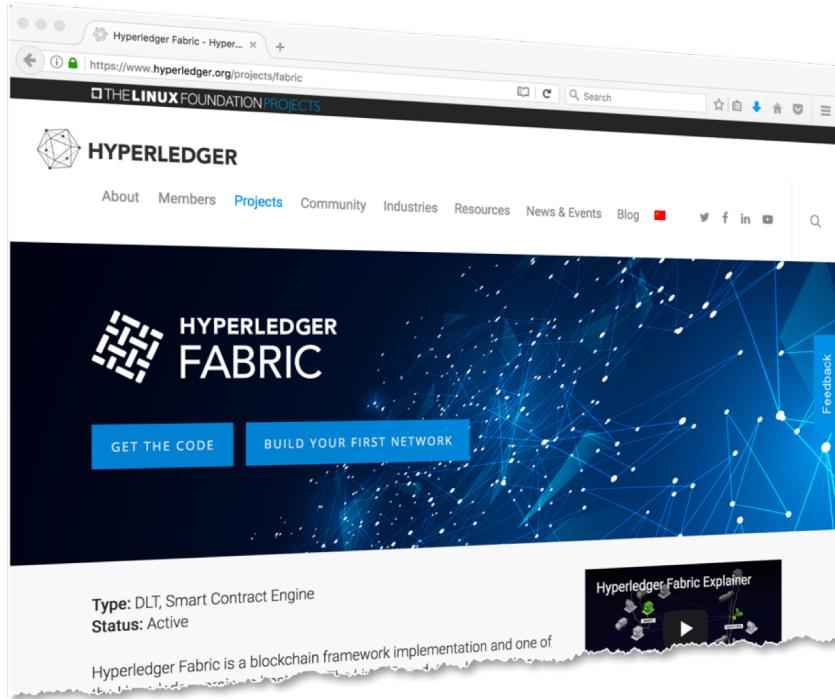
General



Associate (Academia)



Distributed ledger platform

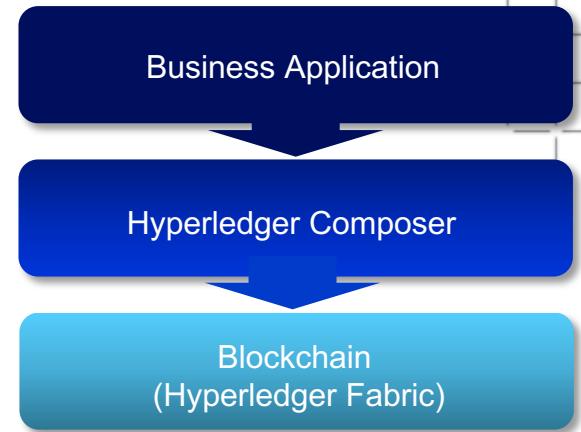
The screenshot shows the official Hyperledger Fabric project page on the Linux Foundation's website. The page has a dark blue header with the Hyperledger logo and navigation links for About, Members, Projects, Community, Industries, Resources, News & Events, and Blog. Below the header is a large banner featuring the Hyperledger Fabric logo and a complex network graph. At the bottom of the banner are two blue buttons: 'GET THE CODE' and 'BUILD YOUR FIRST NETWORK'. To the left of the banner, there is a sidebar with project details: 'Type: DLT, Smart Contract Engine' and 'Status: Active'. At the very bottom, a small note states: 'Hyperledger Fabric is a blockchain framework implementation and one of the most popular open source blockchain projects in the world.'

- An implementation of blockchain technology that is a foundation for developing blockchain applications
- Emphasis on ledger, smart contracts, consensus, confidentiality, resiliency and scalability.
- V1.1 released March 2018
 - Includes significant performance, security, migration and smart contract improvements
- IBM is one of the many contributing organizations

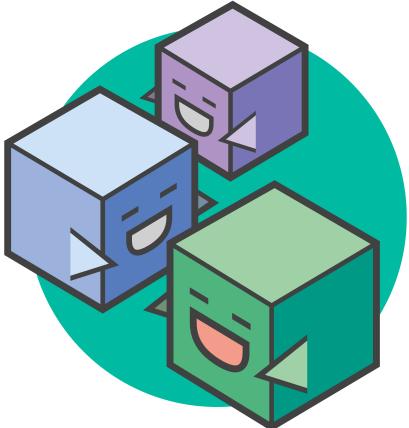
<http://hyperledger-fabric.readthedocs.io/>

Hyperledger Composer: Accelerating Time to Value

- A suite of high level application abstractions for business networks
- Emphasis on **business-centric vocabulary** for quick solution creation
- Reduce risk, and increase understanding and flexibility



- Features
 - Model your business networks, test and expose via APIs
 - Applications invoke transactions to interact with business network
 - Integrate existing systems of record
- Fully open and part of Linux Foundation Hyperledger
- Try it in your web browser now:
<http://composer-playground.mybluemix.net/>



IBM Blockchain



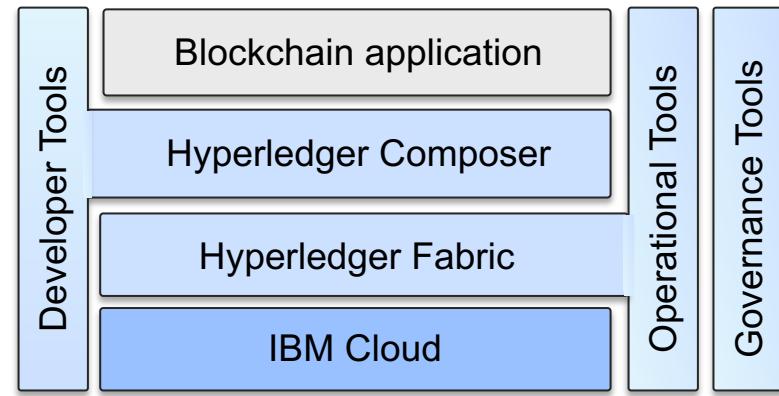
Blockchain Composed

Introducing the IBM Blockchain Platform

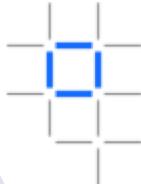
http://ibm.biz/Platform_Demo

IBM Blockchain Platform is a fully integrated enterprise-ready blockchain platform designed to accelerate the development, governance, and operation of a multi-institution business network

- **Developer tools** that make use of Hyperledger Composer to quickly build your blockchain application
- Hyperledger Fabric provides the ledger, which is managed through a set of intuitive **operational tools**
- **Governance tools** for democratic management of the business network
- Flexible deployment options, including a highly secure and performant **IBM Cloud** environment



IBM Engagement Model overview



1. Discuss Blockchain technology
2. Explore customer business model
3. Show Blockchain Application demo



1. Understand Blockchain concepts & elements
2. Hands on with Blockchain
3. Standard demo customization



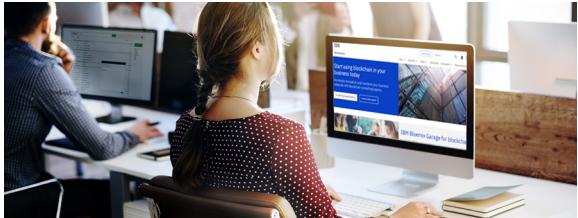
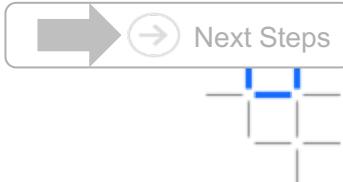
1. Design Thinking workshop to define business challenge
2. Agile iterations incrementally build project functionality
3. Enterprise integration



1. Scale up pilot or Scale out to new projects
2. Business Process Re-engineering
3. Systems Integration

Remote	Digital or F2F	Face to face	Face to face
--------	----------------	--------------	--------------

Getting started on your blockchain journey



[Learn More About
IBM Blockchain](#)



[Schedule an IBM
Blockchain Workshop](#)



[Develop a Blockchain
Application](#)



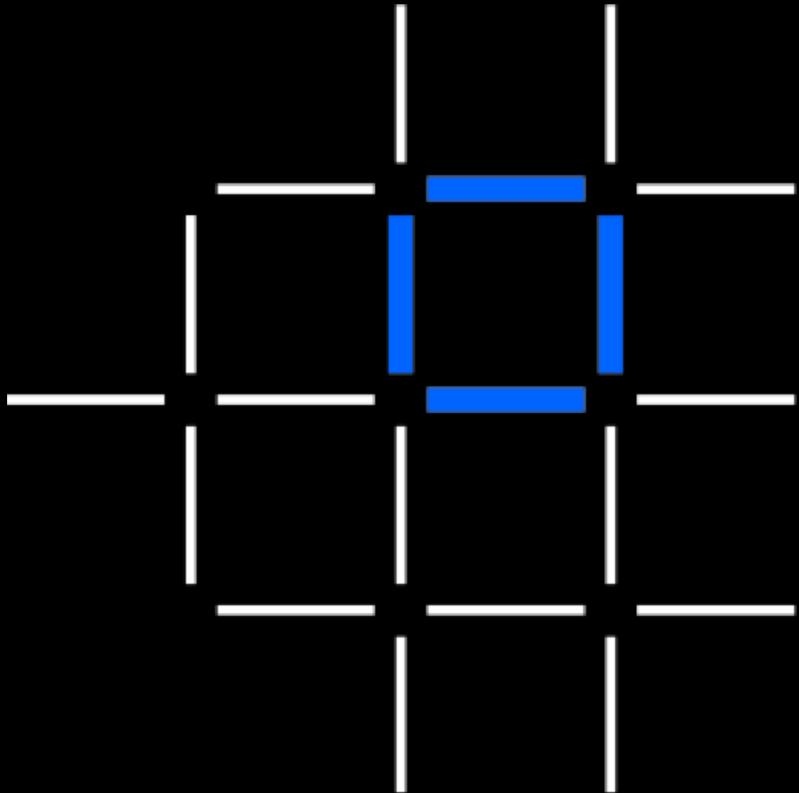
[Activate and Grow your
Blockchain Network](#)

Thank you

Jin VanStee
jinxiong@us.ibm.com

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

-  @IBMBlockchain
-  IBM Blockchain
-  IBM Blockchain





© Copyright IBM Corporation 2018. All rights reserved. The information contained in these materials is provided for informational purposes only, and is provided AS IS without warranty of any kind, express or implied. Any statement of direction represents IBM's current intent, is subject to change or withdrawal, and represents only goals and objectives. IBM, the IBM logo, and other IBM products and services are trademarks of the International Business Machines Corporation, in the United States, other countries or both. Other company, product, or service names may be trademarks or service marks of others.