

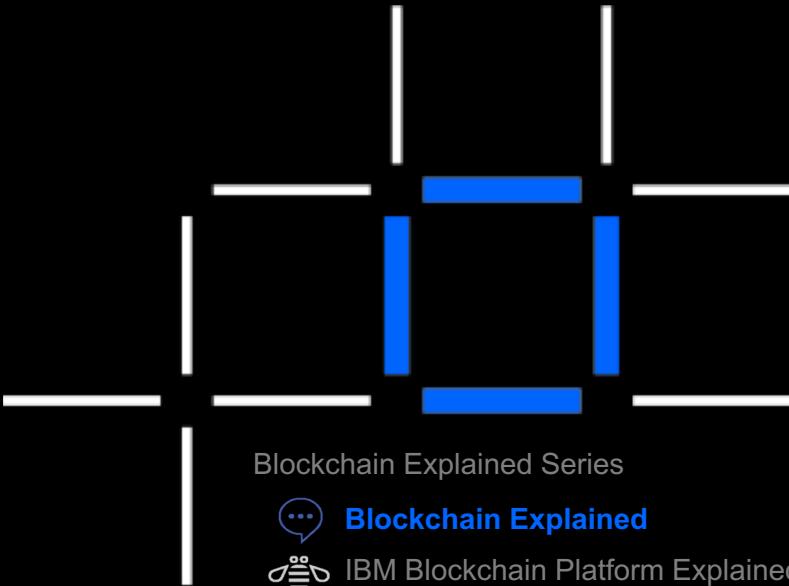
Blockchain Explained

An Introduction to Blockchain for Business

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<https://www.linkedin.com/in/titogarrido>



Blockchain Explained Series



Blockchain Explained



IBM Blockchain Platform Explained



Solutions Explained



Garage Explained



Next Steps



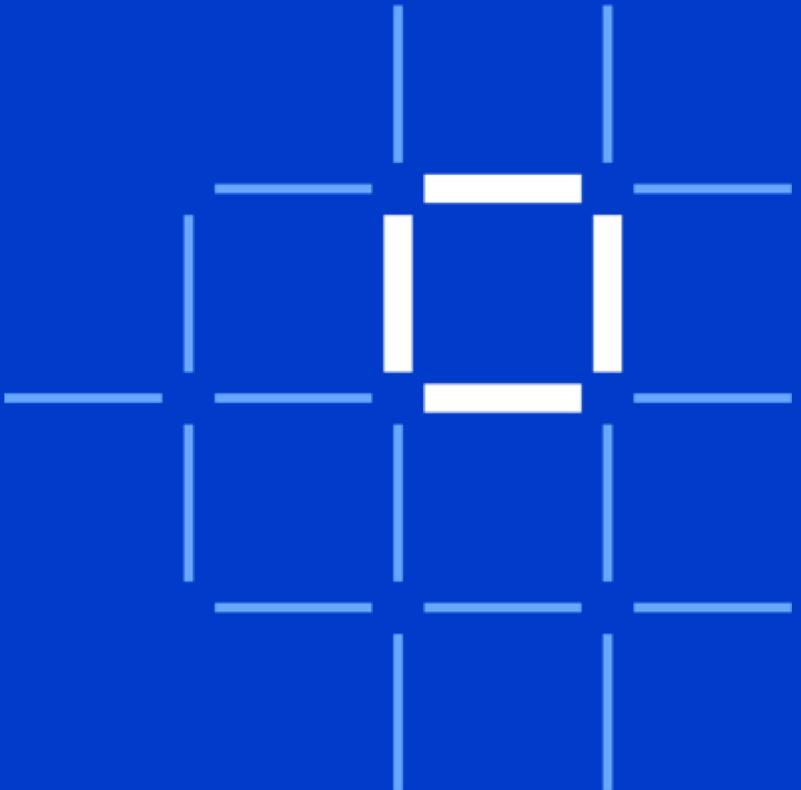
What is Blockchain?



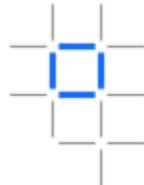
Why is it relevant for
our business?



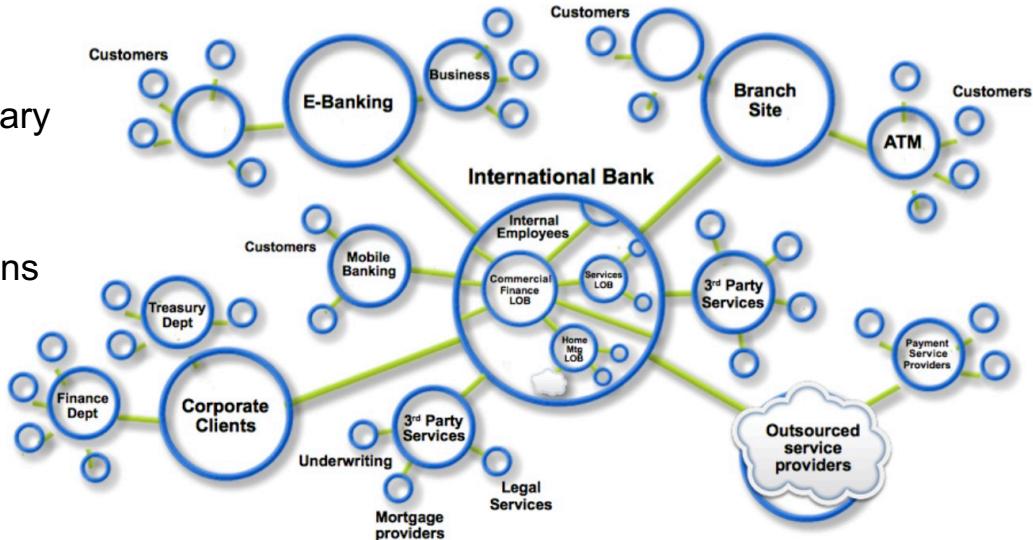
How can IBM help us
apply blockchain?



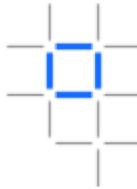
Business networks, wealth and markets



- **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

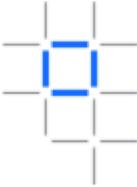
- Tangible, e.g. a house
- Intangible, e.g. a mortgage

Intangible assets subdivide

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

Cash is also an asset

- Has property of anonymity

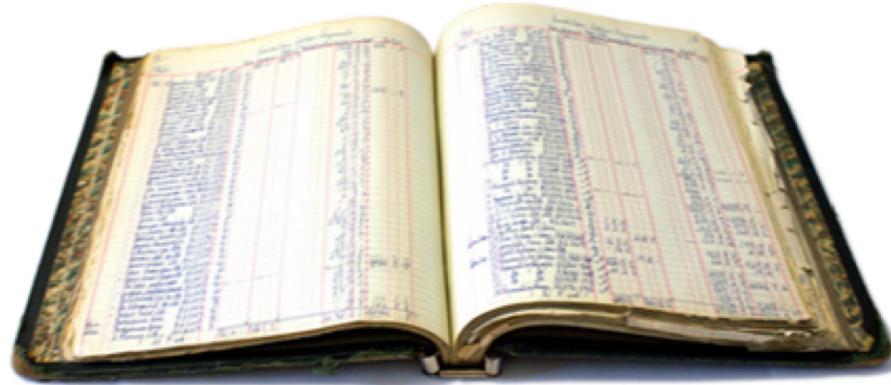


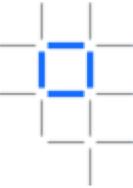
Ledgers are key

Ledgers are THE system of record for a business.

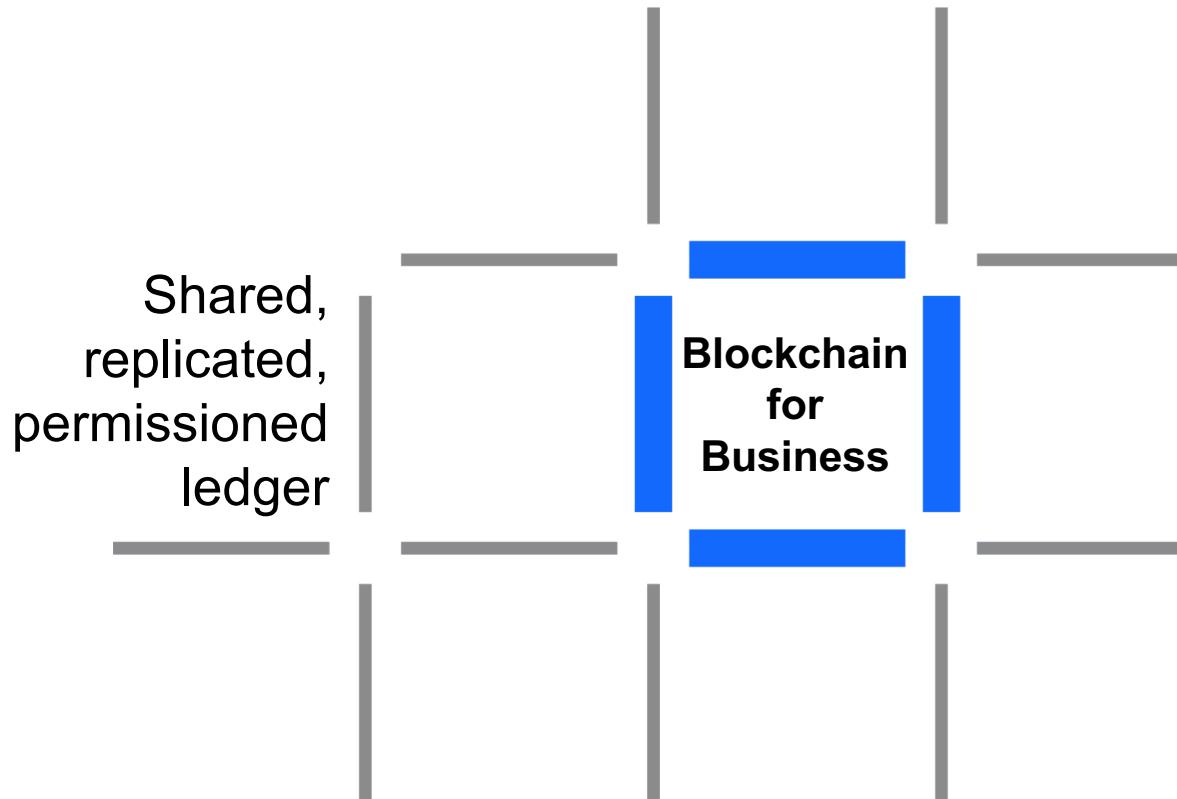
Businesses will have multiple ledgers for the multiple business networks in which they participate.

- **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)

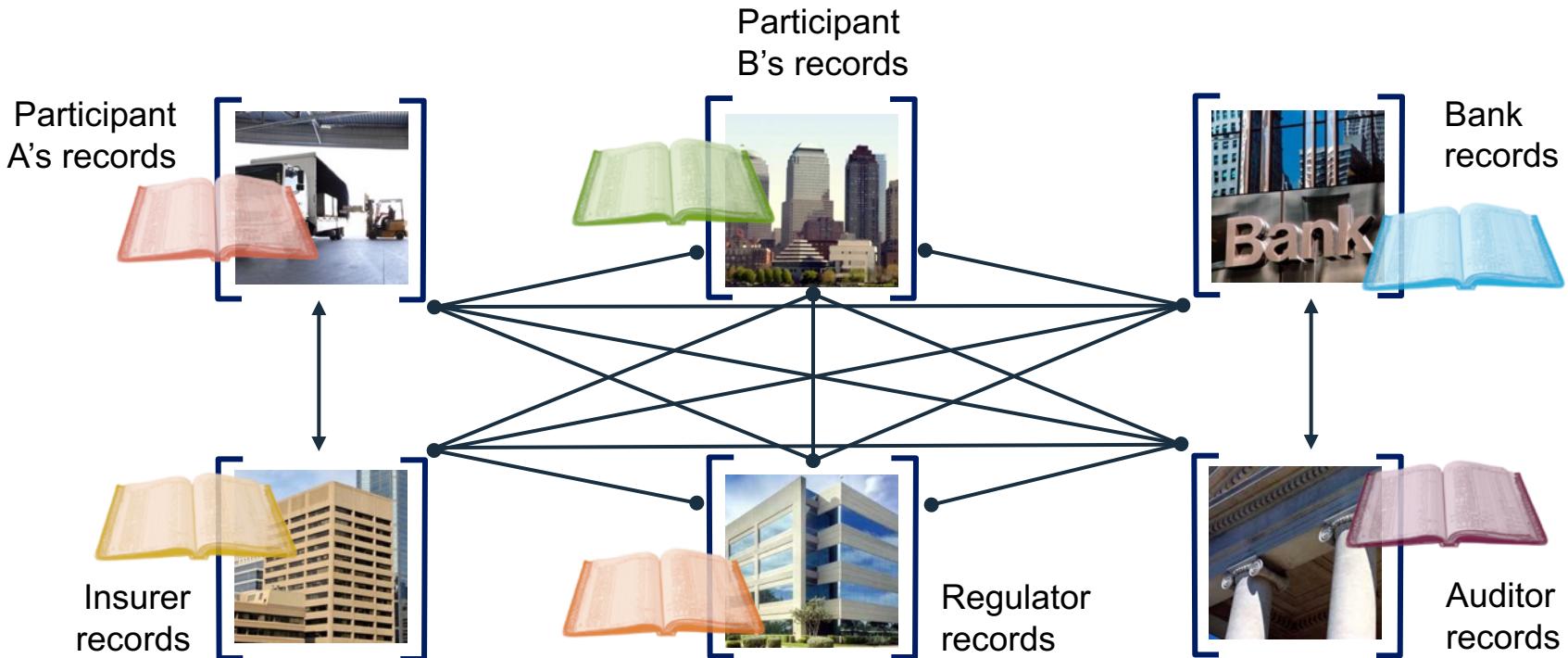
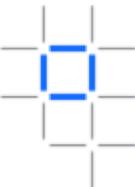




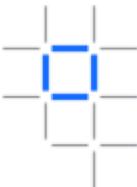
Introducing Blockchain for Business...



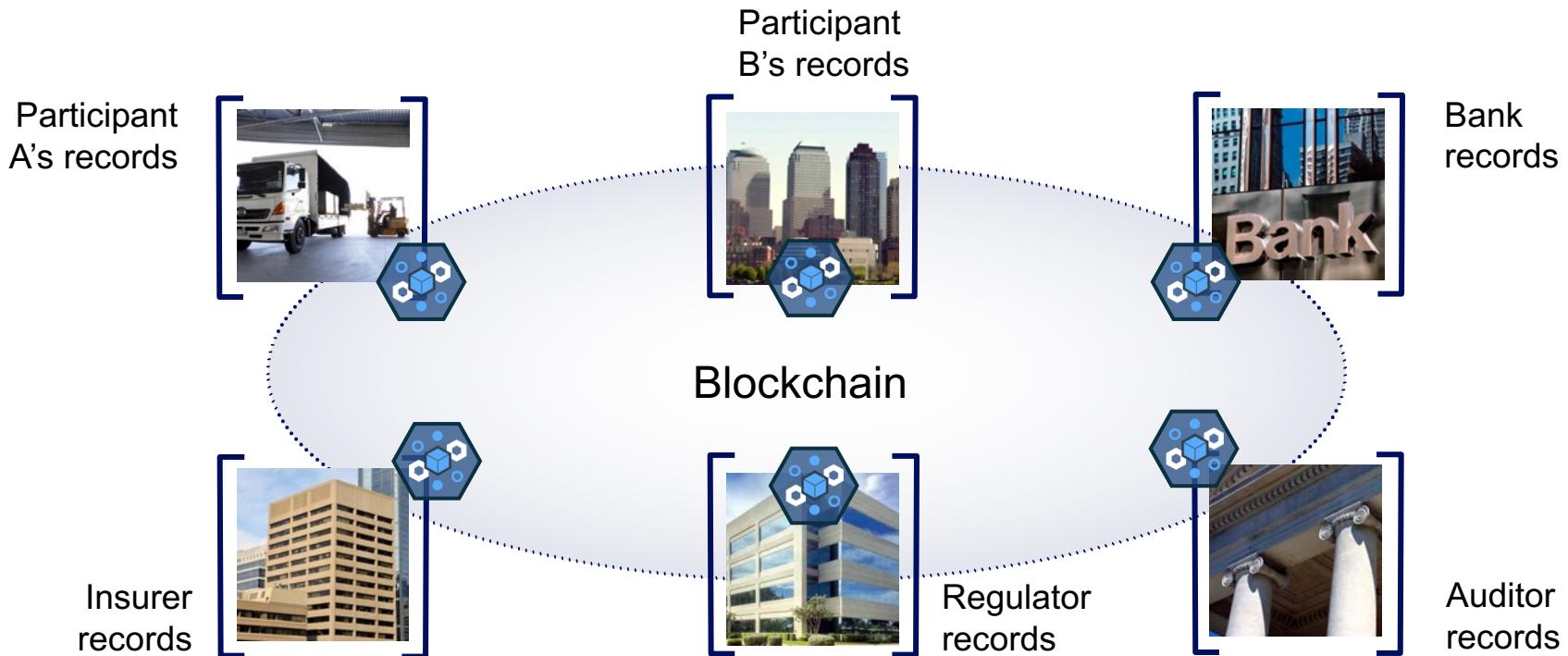
Problem...



... inefficient, expensive, vulnerable

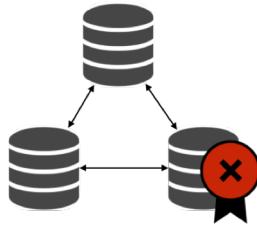
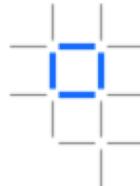


A shared, replicated, permissioned ledger ...



... with consensus, provenance, immutability and finality

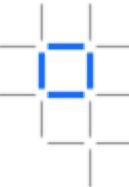
Why not use a database?



- A traditional database is **centralized**
- Everyone needs to **trust** the administrator managing the database
- There's typically **no immutability or provenance**
- Distributed databases do not alleviate the **trust** issue
- There are now **more copies** to worry about and **more administrators**
- **Blockchain** allows the concept of a distributed database to be deployed across an **untrusted network**
- Something a traditional database cannot handle

Traditional databases cannot be used in untrusted networks

Different types of blockchain



- All blockchains aim to provide **irrefutable proof** that a set of transactions occurred between participants
- Different types of blockchain exist:

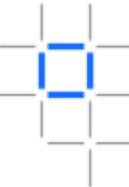


is an example of an unpermissioned, public blockchain

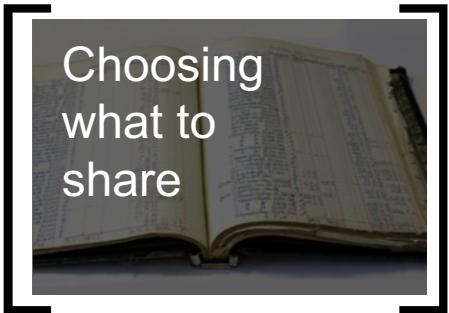
- The first blockchain application
 - Defines a shadow-currency and its ledger
 - Resource intensive
-
- Blockchains for business are generally permissioned and private, and prioritize
 - Identity over anonymity | Selective endorsement over proof of work | Assets over cryptocurrency



Requirements of blockchain for business



Participants decide which assets to share



Transaction Endorsement



Participants give *provable* endorsement

Participants know who they are dealing with



Privacy and Confidentiality



Information shared via need-to-know



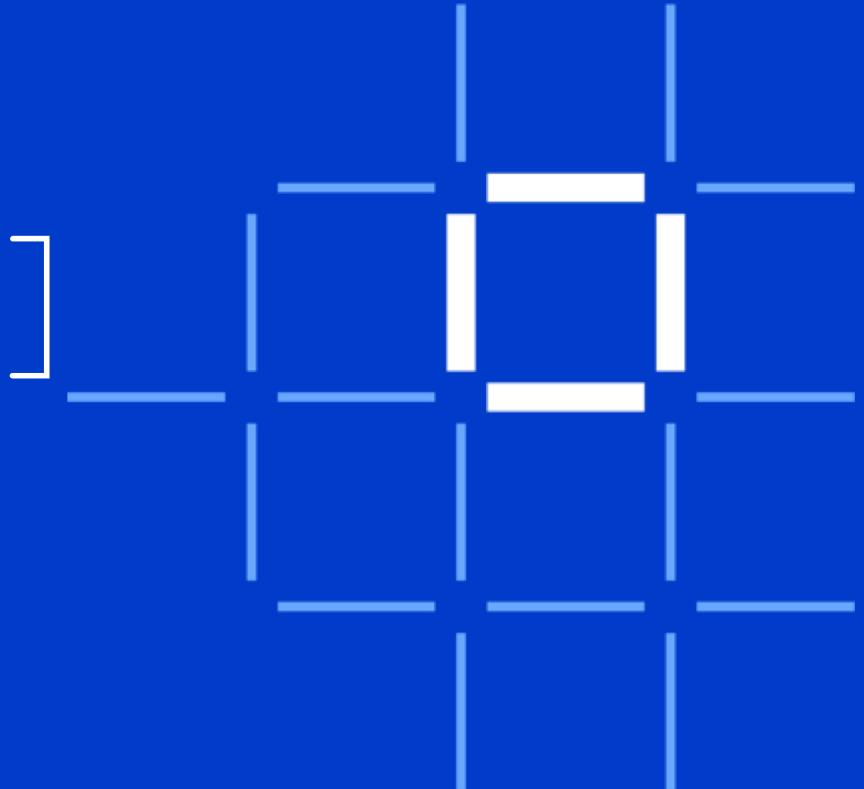
What is Blockchain?

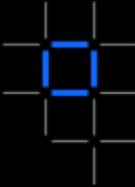


Why is it relevant for
our business?



How can IBM help us
apply blockchain?





Blockchain is creating extraordinary opportunities for businesses to come together in new ways

Create New Value

Exploit new business models and eliminate inefficiencies

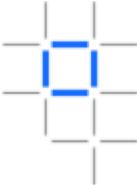
Optimize Ecosystems

Streamline business processes and the exchange of value along your ecosystem

Reduce Risk

Replace uncertainty with transparency and a trusted decentralized ledger





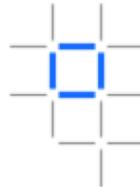
Further examples by (selected) industry



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



Global Financing: Dispute Resolution



What?

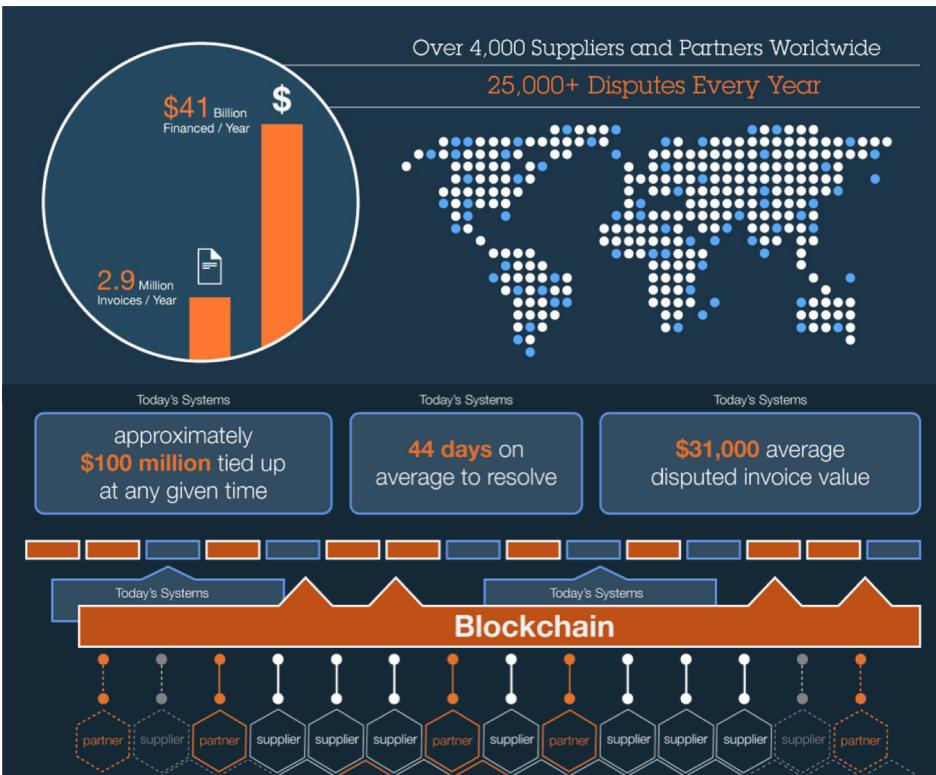
- IBM Global Finance provides a \$41bn channel financing per year. There are a number of disputes that take time to resolve and can lock up transactions costing time and money

How?

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

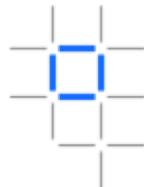
Benefits

- 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





ABN·AMRO Financial Audit and Compliance Ledger



What?

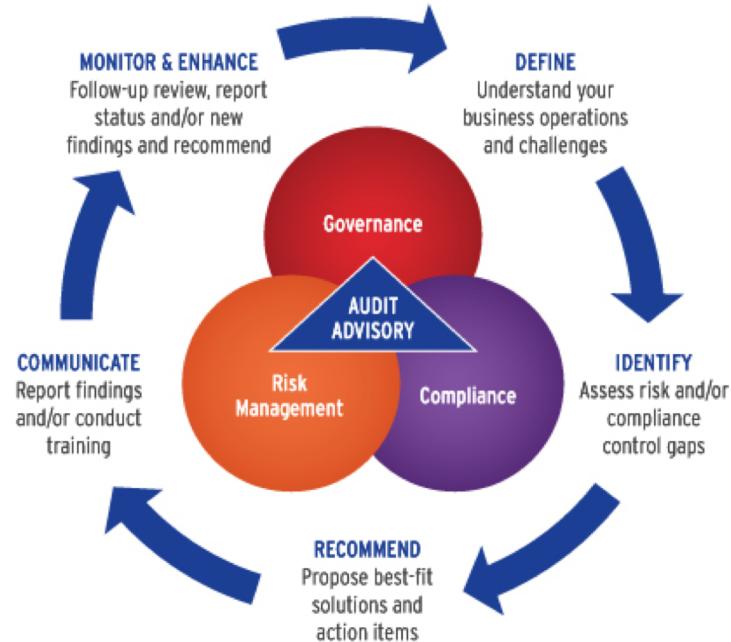
- Reimagine current expensive audit process requiring integrating data – often inconsistent and outdated - from various sources on the blockchain

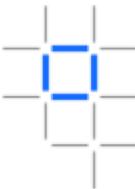
How?

- Shared replicated ledger serves as single point of truth
- Auditors are guaranteed that no one has tampered the data via immutability of blockchain

Benefits

- Clients, bank and regulators all see single version of truth
- No data inconsistencies => clear audit trail
- Enables efficient lower-cost Asset Quality Reviews (AQR)





Common KYC Data

What?

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

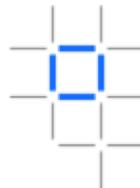
How?

- 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.



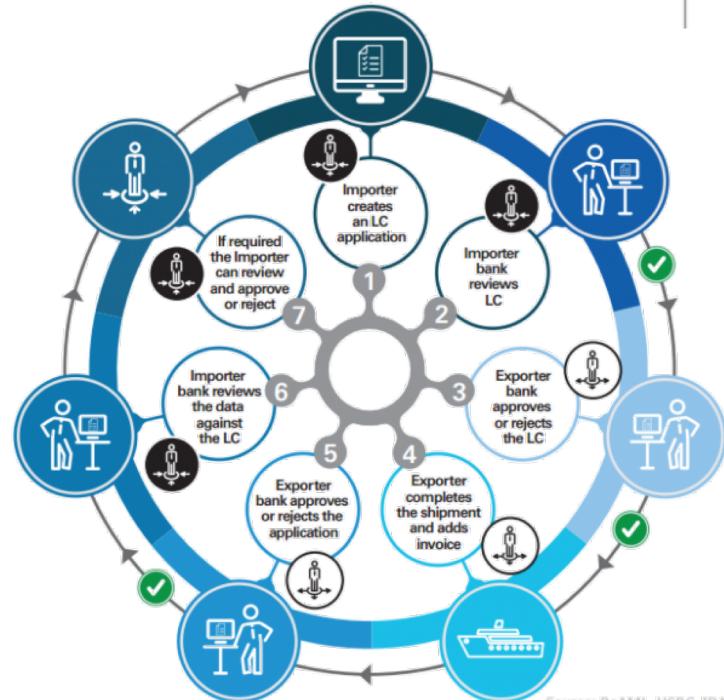


What?

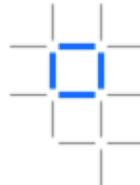
- Digital Trade Chain (DTC), is a blockchain-based international trading system for a consortium of major world banks including: **Deutsche Bank, HSBC, KBC, Natixis, Rabobank, Société Générale, Santander, UniCredit and Nordea**
- Enables accurate trading posture information, order to settlement control, risk coverage, track and trace options

Benefits

- Near-real time exchange of information on a secure platform that digitizes transactional financing and other complex processes
- Continual business and compliance readiness in any regulatory environment
- Scalability that allows for rapid international expansion as business, regulatory, and security opportunities converge



Source: BoAML, HSBC, IIDA



What?

- Track diamonds across supply chain from mine to retail

How?

- Shared ledger for storing digital certification with supporting material

Benefits

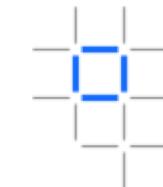
- Protect against the occurrence of fraud, theft, trafficking and black markets
- Assist in the identification and reduction of synthetic stones being labelled as authentic
- Increase speed of transparency for cross border transactions for insurance companies, banks and claimants



Food Trust



MCLANE
INTELLIGENT. SOLUTIONS



Walmart

Nestlé

Tyson

gsf
golden state foods



Unilever

What?

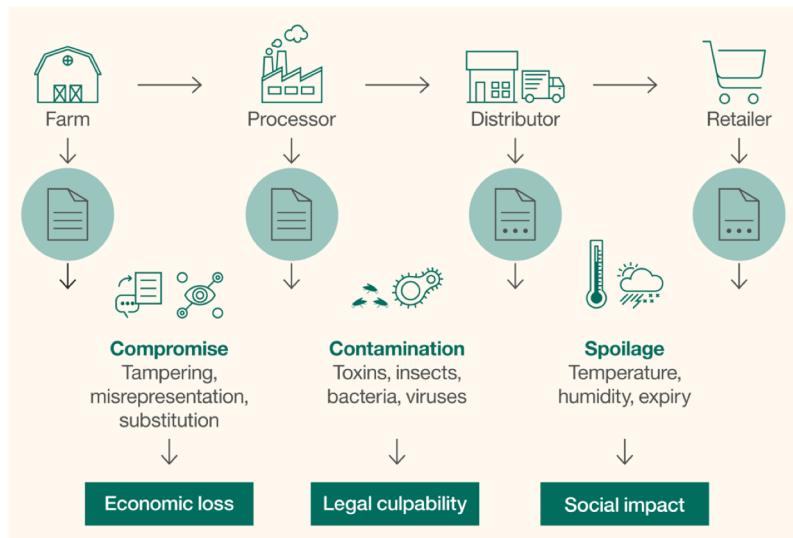
- Provide a trusted source of information and traceability to improve transparency and efficiency across the food network.

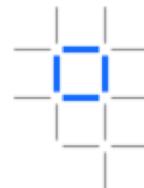
How?

- 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?

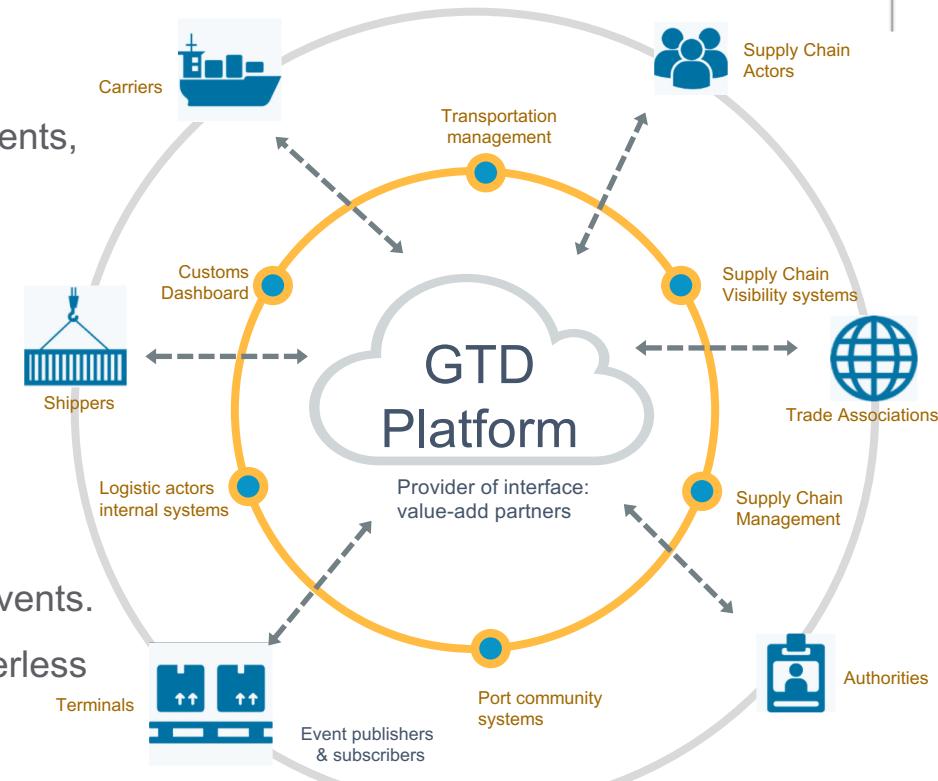
- An open, extensible platform for sharing shipping events, messages, and documents across all the actors and systems in the supply chain ecosystem.

How?

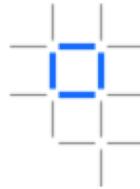
- Providing Shared Visibility and Shared State for Container Shipments

Benefits

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



Key players for blockchain adoption



Regulator

- An organization who enforces the rules of play
- Regulators are keen to support Blockchain based innovations
- Concern is systemic risk – new technology, distributed data, security

Industry Group

- Often funded by members of a business network
- Provide technical advice on industry trends
- Encourages best practice by making recommendations to members

Market Maker

- In financial markets, takes buy-side and sell-side to provide liquidity
- More generally, the organization who innovates
 - Creates a new good or service, and business process (likely)
 - Creates a new business process for an existing good or service



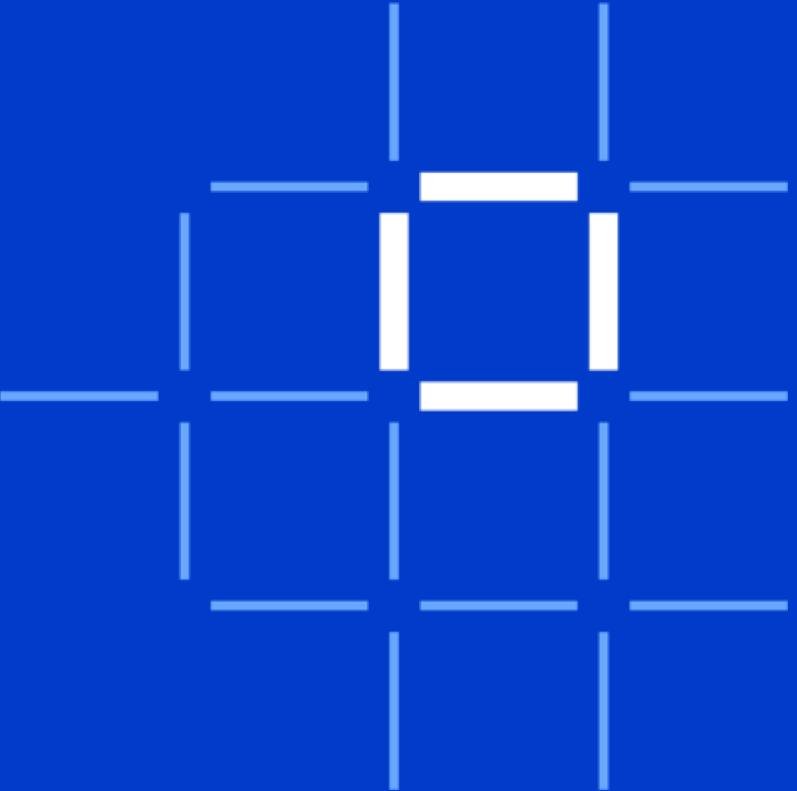
What is Blockchain?



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

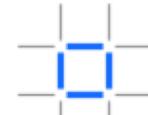
Develop, govern and operate enterprise blockchain networks with speed and security



HYPERLEDGER

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

Hyperledger: A Linux Foundation project



- IBM Blockchain Platform is underpinned by technology from the Hyperledger project
- Hyperledger is a collaborative effort created to advance cross-industry blockchain technologies for business
- Founded February 2016; now more than **240 member organizations**
- Open source
Open standards
Open governance model

Premier



General



Associate



Academia Associate



General

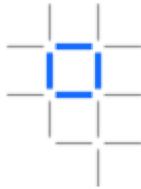


Source: <https://www.hyperledger.org/members>
Updated: 21 June 2018





Distributed ledger

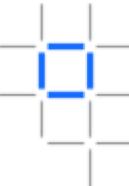


A screenshot of a web browser showing the Hyperledger Fabric project page. The URL is https://www.hyperledger.org/projects/fabric. The page features a large banner with the Hyperledger Fabric logo and a network of nodes. Below the banner are two buttons: "GET THE CODE" and "BUILD YOUR FIRST NETWORK". The page also includes sections for "Type: DLT, Smart Contract Engine" and "Status: Active". A video player for "Hyperledger Fabric Explainer" is visible at the bottom.

- 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

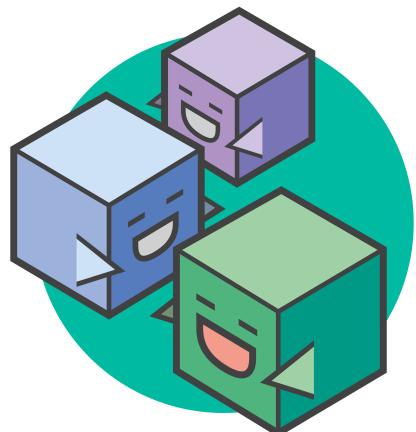


IBM



Accelerated development

- 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

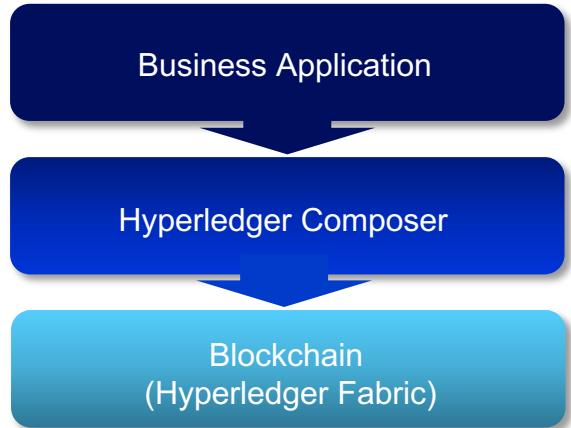


Features

- Model your business networks, test and expose via APIs
- Applications invoke transactions to interact with business network
- Integrate existing systems of record

Try it in your web browser now:

<http://composer-playground.mybluemix.net/>

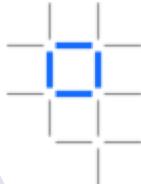


Making blockchain real for business...



Trade Finance	Pre and Post Trade	Complex Risk Coverage	Commercial Real Estate
Digital Trade Chain 	DTCC	AIG	
Identity/ Know your customer (KYC)	Unlisted Securities / Private Equity Funds	Loyalty Program Mgt.	Distributed Energy & Grid Mgt.
SECURE KEY	Northern Trust	UnionPay	
Medical Health Data Exchange	Anti-Fraud & Port Mgt.	Carbon Credit Mgt.	Asset Tracking
	دبي الذكية SMART DUBAI	ENERGY BLOCKCHAIN LABS	
Supply Chain & Logistics	Food Safety	Audit	Digital Rights & Copyright Mgt.
MAERSK	Walmart	everledger	sacem

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 on Bluemix
3. Standard demo customization



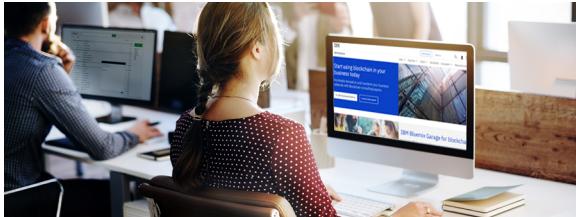
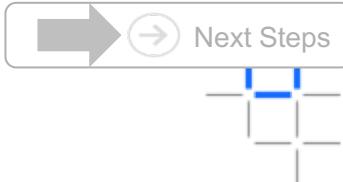
1. Design Thinking workshop to define business challenge
2. Agile iterations incrementally build project functionality
3. Enterprise integration



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



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

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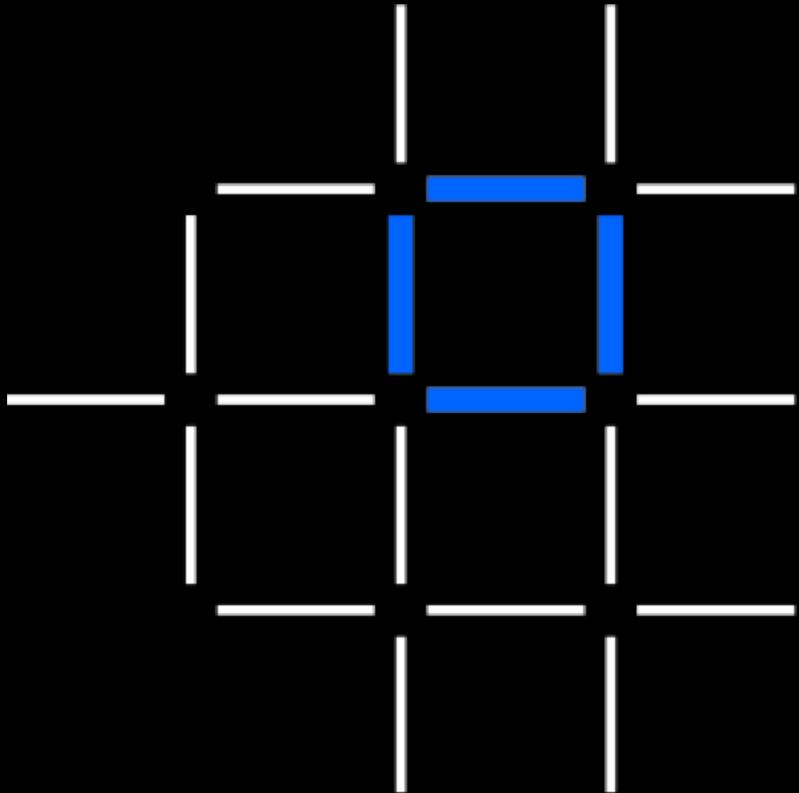
<https://www.linkedin.com/in/titogarrido>

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

 @IBMBlockchain

 IBM Blockchain

 IBM Blockchain





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