Blockchain

Not just a buzzword in Government

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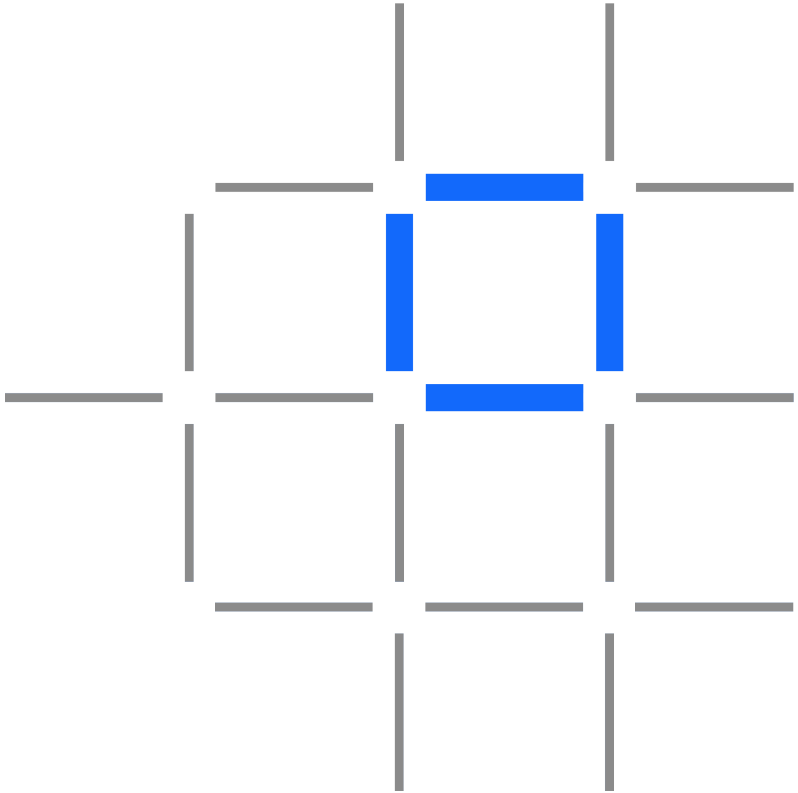

IBM **Blockchain**

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The Hype

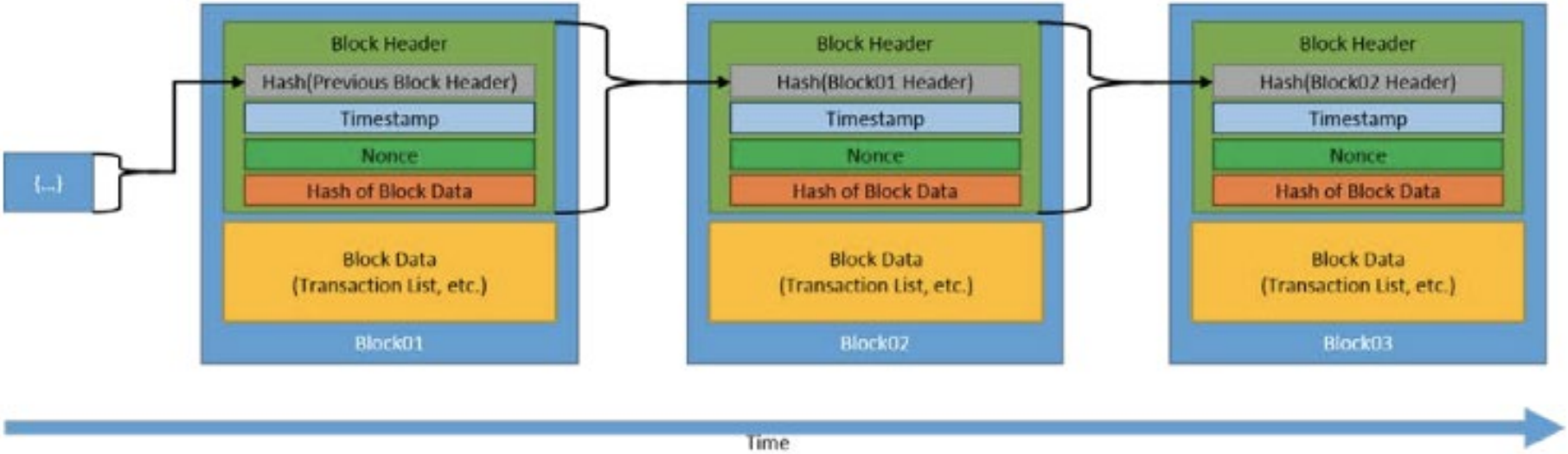
Deja vu


What Is Blockchain?
Pro Tip: Not Magic Internet Money

Early permissioned distributed ledger…

Distributed Ledger

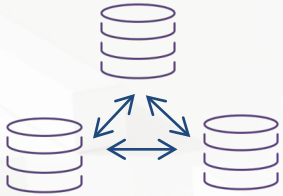
Ledger that is linked through a secure cryptographic hash



Source: ITL Bulletin Oct 2018, U.S. Department of Commerce, NIST

Traditional databases cannot be used in untrusted networks

- 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**

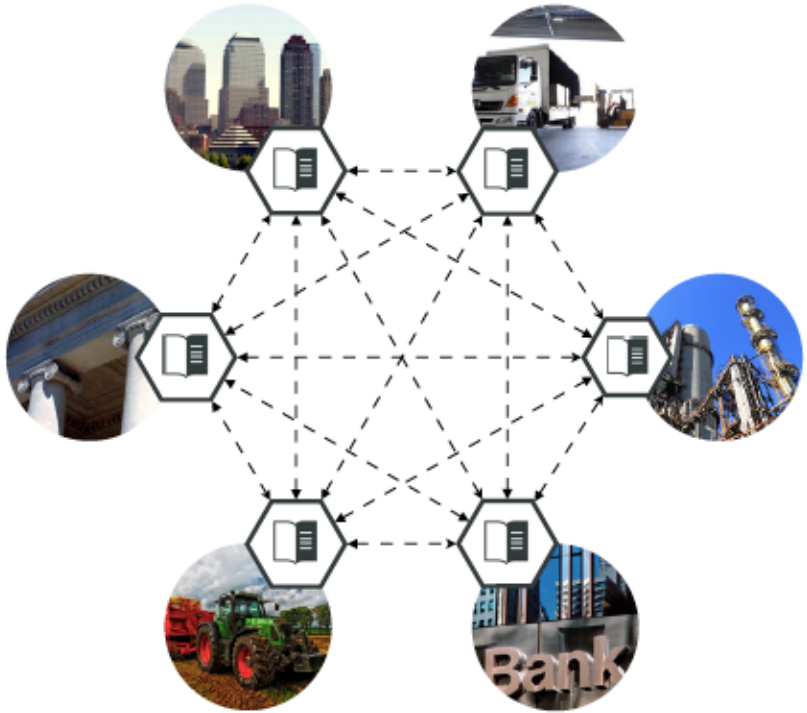
- **Blockchain** allows the concept of a distributed database to be deployed across an **untrusted network**
- Something a traditional database cannot handle

Blockchains | **Business Networks**

Business Network
Ecosystem the business exists in.
Suppliers, Banks, Regulators…

Assets
Anything that can be
manipulated to produce value

Blockchains | **Separate Ledgers**



Inefficient

- Separate ledgers record information multiple times.

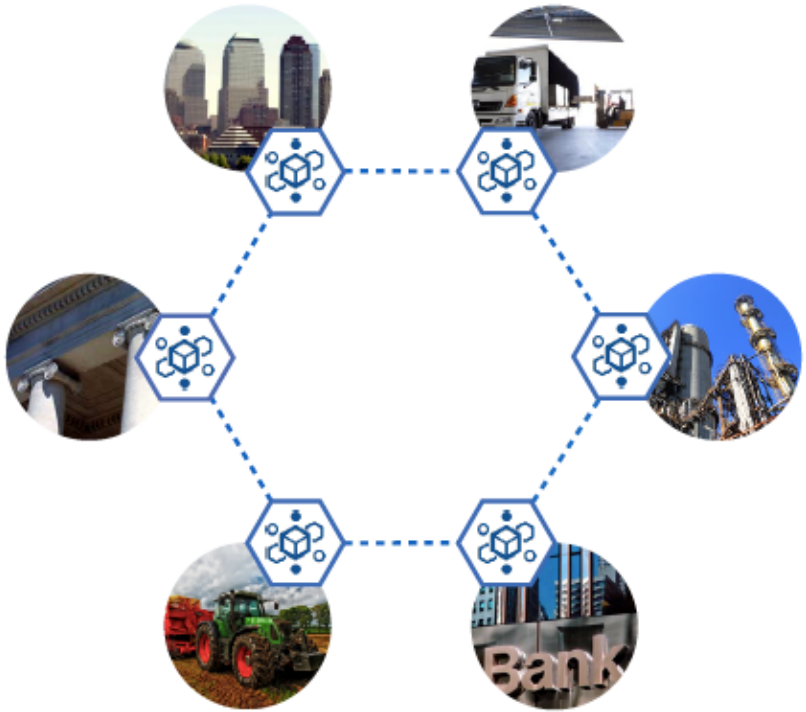
Expensive

- Time & money consumed on maintaining the same data.
- Point-to-point exchange of data is slow.
- Exchange costs money if middle-men are involved.

Vulnerable

- One mistake on one ledger will cause an issue.
- Disputes are hard to reconcile because data is siloed.
- Data is also often centralised.

Blockchains | **Shared Ledgers**



Consensus

- Transactions must be collectively approved

Immutability

- Once a transaction is recorded it cannot be removed
- Assets may change but their history will persist

Finality

- Single, shared ledger, single source of truth
- Every member has an identical replica
- Edits made to your replica are propagated round the network

We’re entering a new era.

But old problems are still slowing us down.

IBM **Blockchain**

TRUST DISRUPTION
the digital economy has made trust more important than ever—but also more difficult to establish

DATA DISRUPTION
by not capitalizing on insights uncovered from the world’s next natural resource -- their data.

BUSINESS DISRUPTION
is coming from all around, to achieve future growth collaboration with new kinds of partners will be required.

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Blockchain for business is ready for production.
But the task of developing and deploying solutions is larger than any one business can tackle on its own.

66%

Of organizations already active on blockchain are experimenting with the business model that connects people, resources and organizations in an ecosystem *

ENABLING TRUST

New technology is creating radical transparency – and uprooting how we interact, transact, and grow

TRANSPARENCY

More than a new technology, blockchain is rewriting how we do business

REMOVING BARRIERS

IBM Blockchain creates certainty, advances knowledge, brings together industries, and improves business process

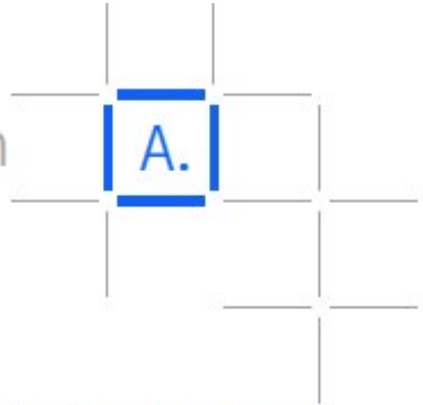
REINVENTING BUSINESS

Blockchain is shifting from one way of doing business to *the* way – creating new business solutions where there were none

For traditional enterprises, more than 85% of all blockchain initiatives today lack compelling, viable and sustainable business cases — Gartner “Hypecycle for Blockchain 2018”

85%

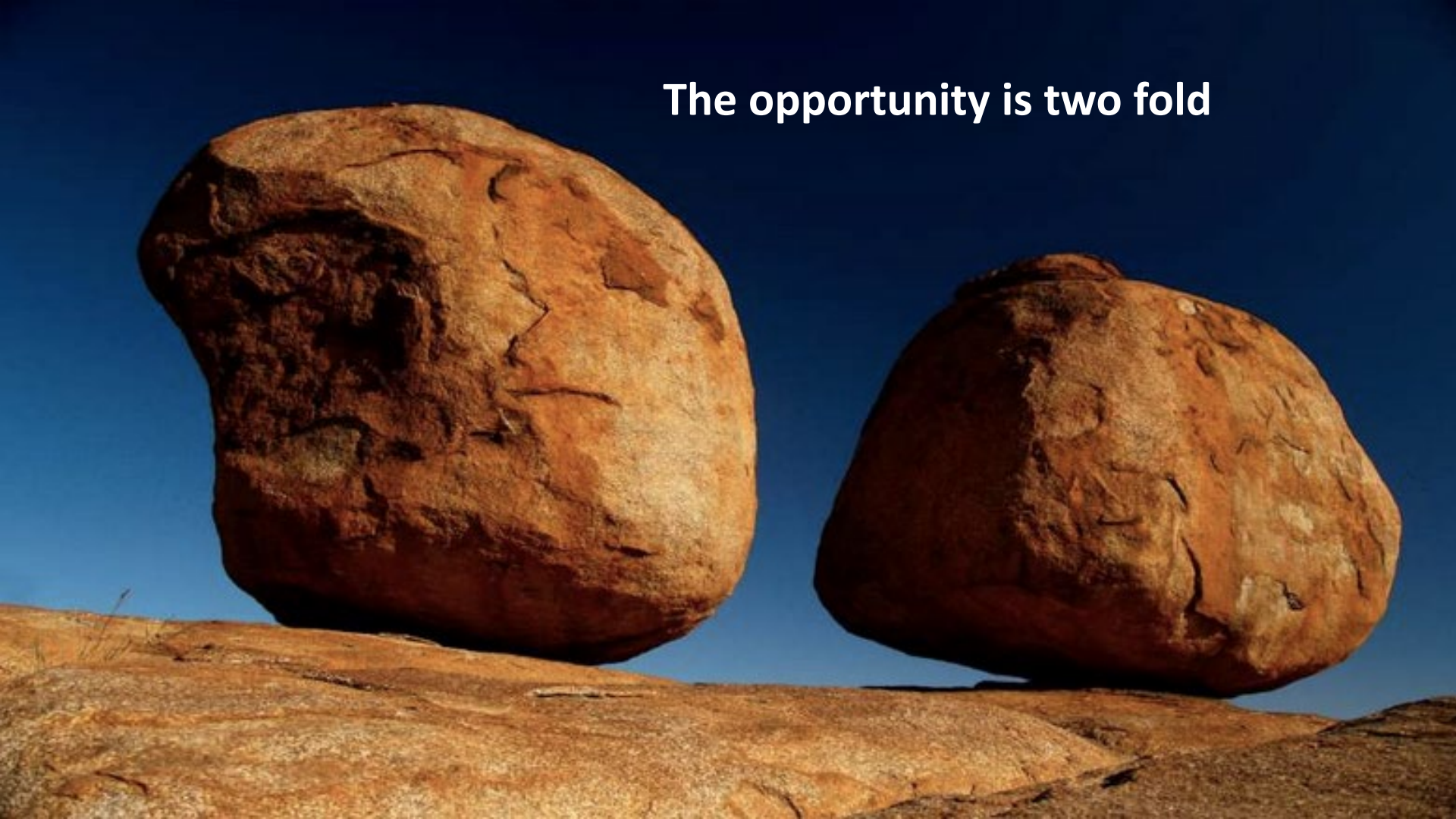
Identifying the business problem



If a business problem is yours — and yours alone — blockchain may not be the remedy you're looking for. Blockchain is best applied where there's friction across multiple parties, and those parties can each benefit from addressing it.

When is blockchain technology useful?

Business Network	• A **business network** must exist, with multiple organizations that are willing / interested / incented to work together
Need to Share Data	• There is a need for shared visibility of data or transactions between participants in the business network
Multiple 'Writers'	• The information to be shared must originate from more than one participant. • Multiple organizations must provide data / execute transactions
Absence of Trust	• There is a need for a single source of truth within the network • Participants do not inherently trust any one party to hold that data
Existing Intermediary	• There is a desire not to have a central gatekeeper to verify transactions (or there is desire to remove one that currently exists)


The opportunity is two fold

MORE EXAMPLES

Example: IGF Dispute Resolution

What?

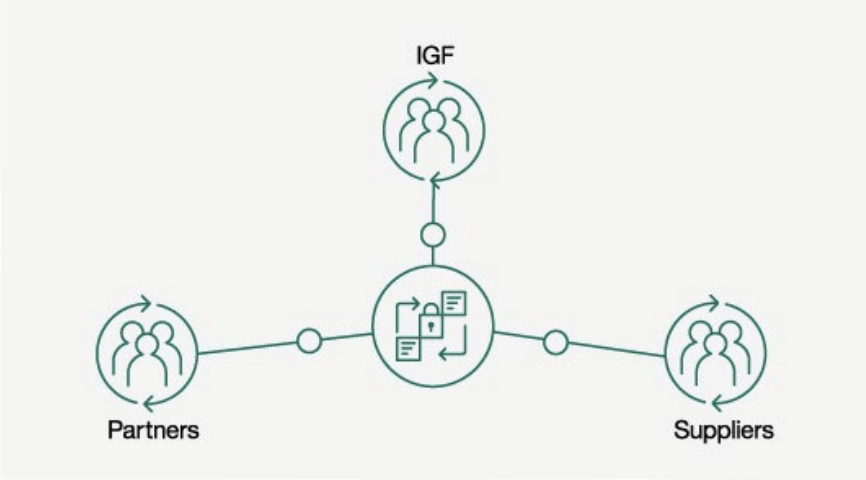
- IBM Global Financing applied Blockchain to its dispute resolution procurement process

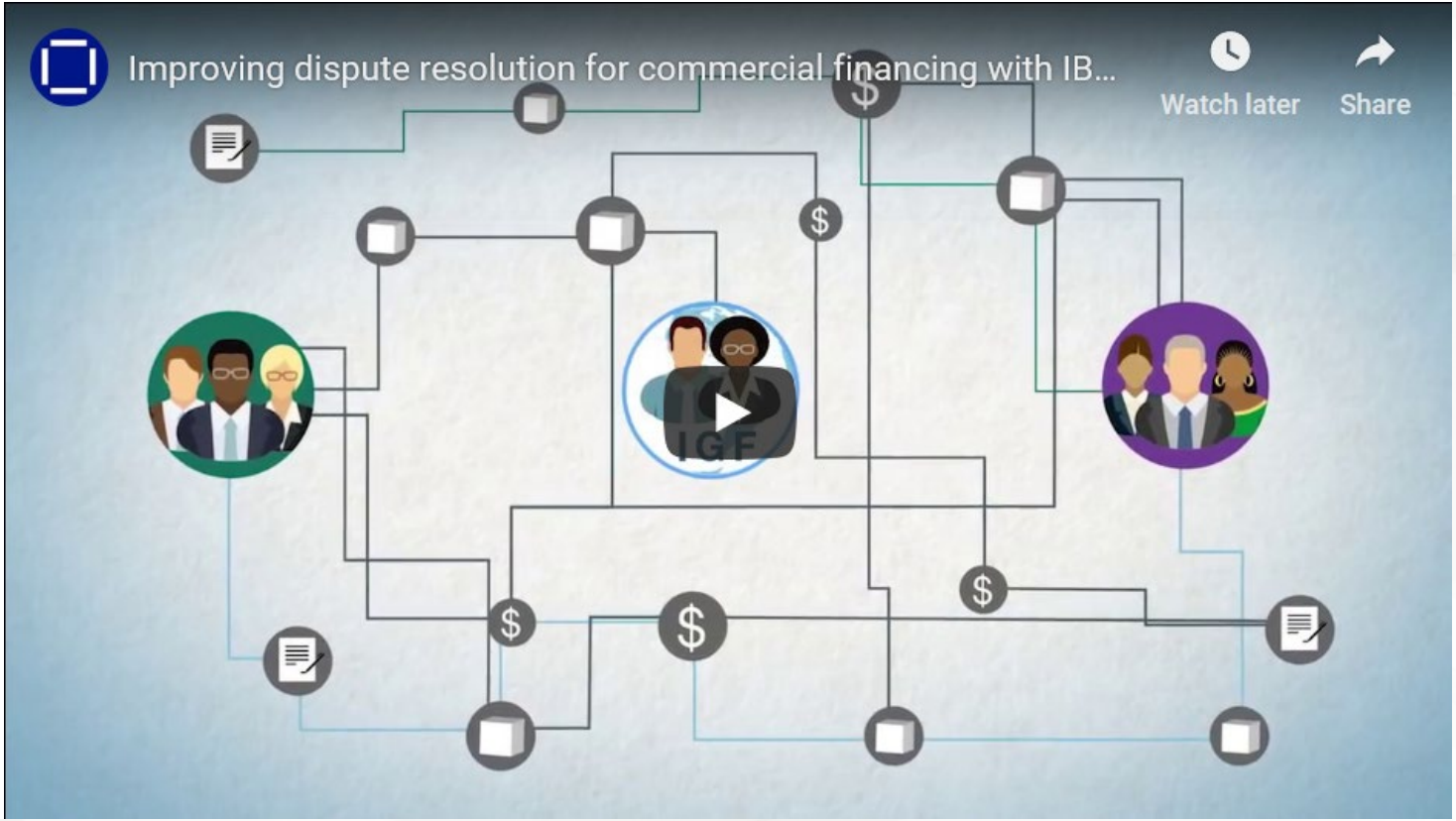
How?

- Providing Shared Visibility to a subset of its 4,000 business partners and supplies

Benefits

- Reduced disputes from 45 days to under 10 days representing a 75% decrease in time to resole
- Reduced cost and liberated capital



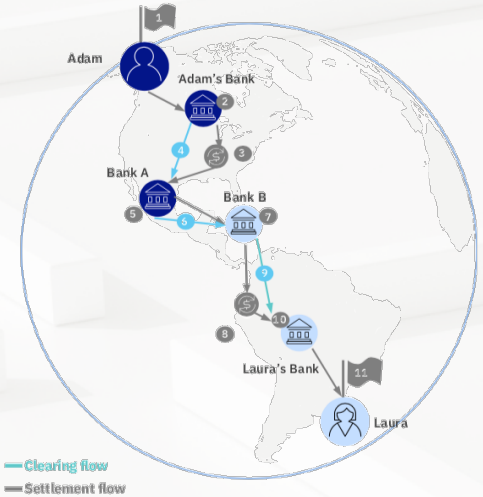

Improving dispute resolution for commercial financing with IB...
Watch later
Share
IGF

Example: World Wire

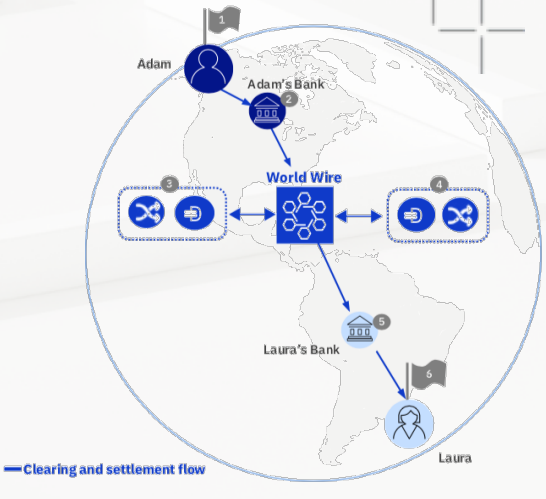
What?

- IBM Blockchain World Wire is an integrated network for real-time clearing and settlement.
- Allows banks and financial institutions to send and settle payments around the globe with finality in a matter of seconds
- Eliminates enduring challenges that have long hampered the cross-border payments industry.

Current international payment system today



With IBM Blockchain World Wire tomorrow



Benefits

- 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

Trade Lens

IBM | MAERSK

Example: TradeLens

What?

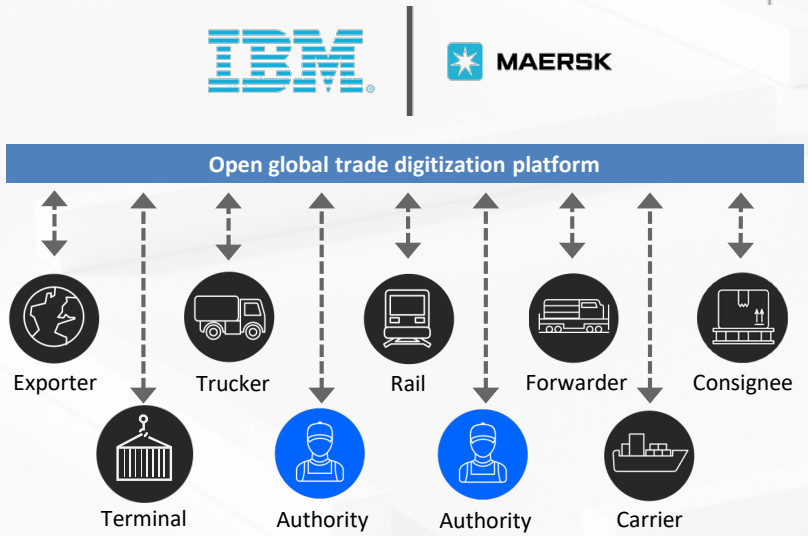
- An open, extensible platform for sharing shipping events, messages, and documents across all the actors and systems in the supply chain ecosystem.

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



Example: Food Trust

What?

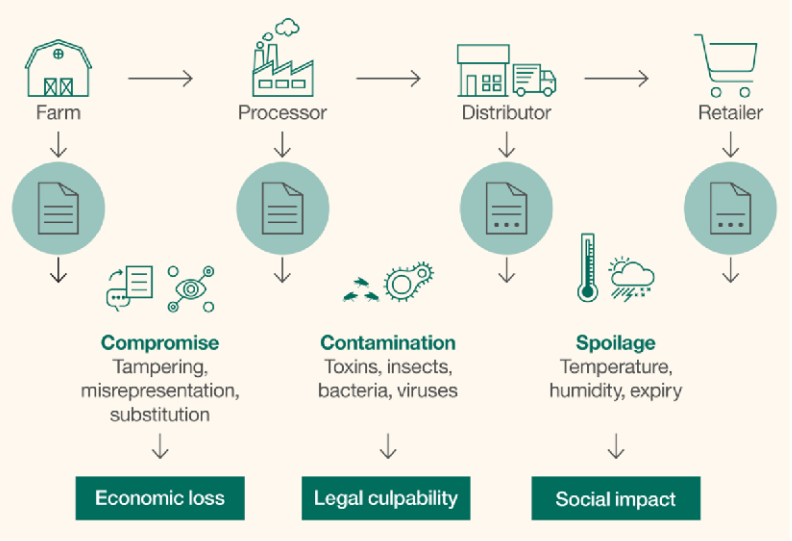
- IBM Food Trust is a set of modules providing traceability to improve food transparency and efficiency

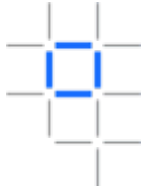
How?

- Blockchain is used to create a trusted connection with shared value for all ecosystem participants, including end consumers.

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.





Making blockchain real for business with over 400 engagements and multiple active networks

Trade Finance	Pre and Post Trade	Complex Risk Coverage
Digital Trade Chain, MIZUHO, NATIXIS, TRAFIGURA	DTCC, CLS Fundamental to FX, Bolsa Comercio Santiago, JPX	AIG, Standard Chartered
Identity/ Know your customer (KYC)	**Unlisted Securities/ Private Equity Funds**	**Loyalty Program**
SECURE KEY, Crédit Mutuel ARKEA, DIACC	NORTHERN TRUST, BORSA ITALIANA, SBI証券	UnionPay 银联
Medicated Health Data Exchange	**Fraud/ Compliance Registry**	**Distributed Energy/ Carbon Credit**
FDA	دبي الذكية SMART DUBAI	TenneT, Energy Blockchain Labs
Supply Chain	**Food Safety**	**Provenance/ Traceability**
MÆRSK, PSA The World's Port of Call	Walmart, Driscoll's, Tyson, McLane, Dole, Kroger, Nestlé, Unilever, gsf golden state foods	everledger

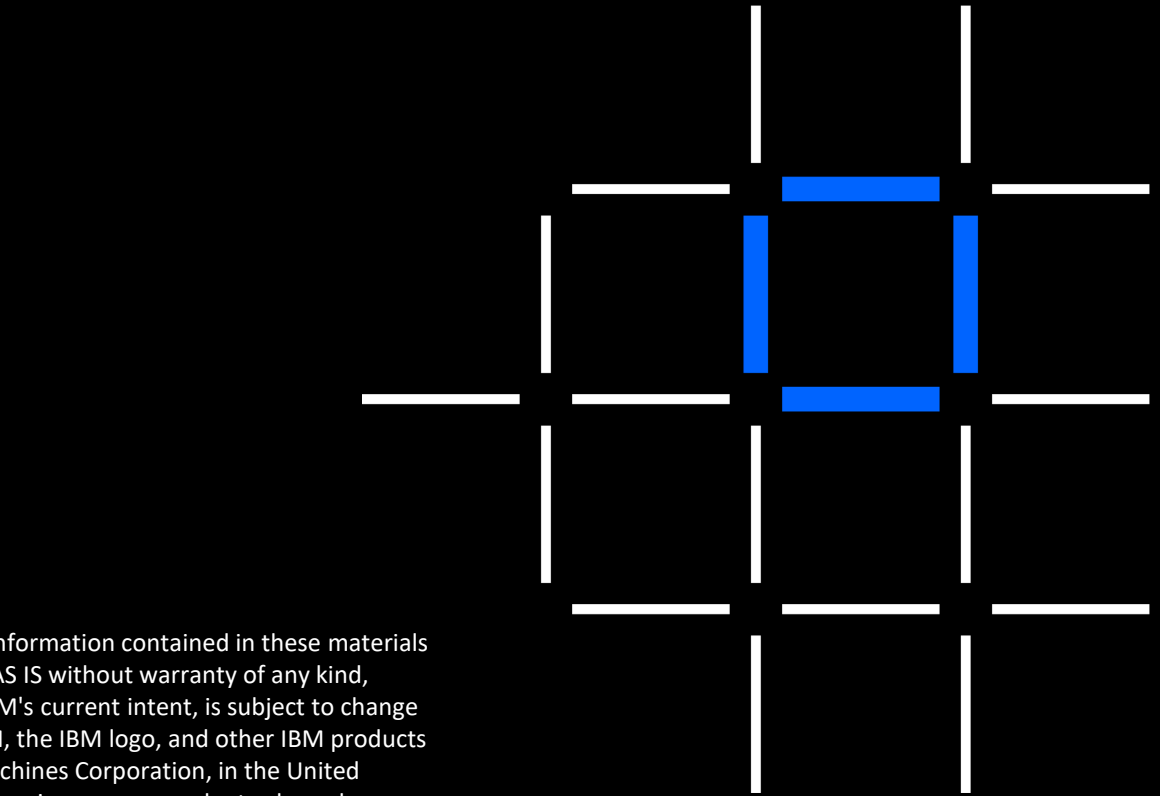
Thank you

IBM **Blockchain**

www.ibm.com/blockchain

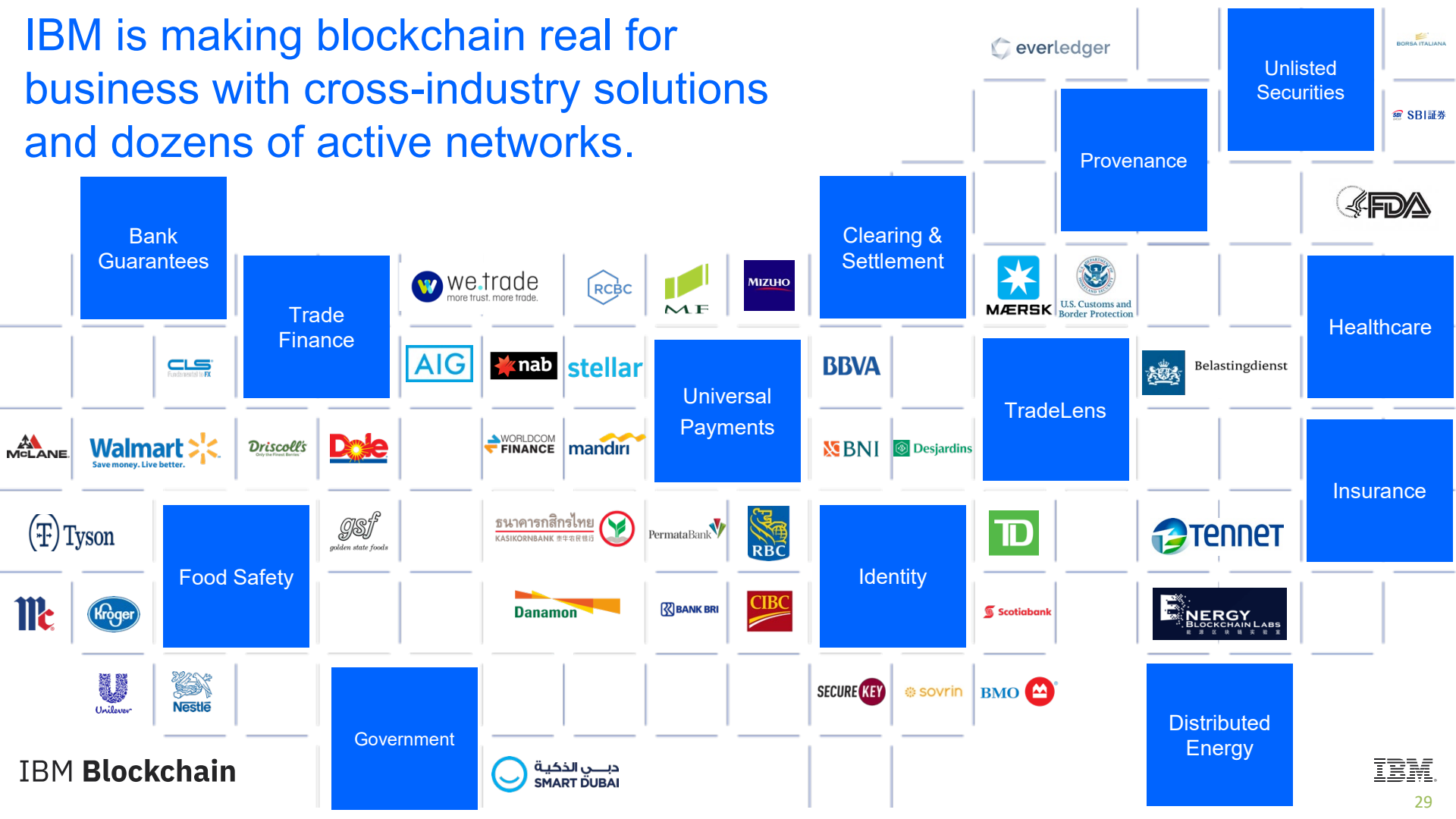
developer.ibm.com/blockchain

www.hyperledger.org



IBM

IBM is making blockchain real for business with cross-industry solutions and dozens of active networks.



IBM **Blockchain**

Blockchain Key Concepts

- Business Networks are collections of known, identifiable organizations that work together
  - Participants are suppliers, banks, partners, etc.
  - Can cross industry, geographic, and regulatory boundaries
- Assets are representations of tangible or intangible goods, or information that is used within the business network
- Smart Contracts define 'what can be done' within the business network resulting in queries + updates to assets represented on the ledger
  - Also known as 'chaincode', written in various programming languages
- Transactions are the irrefutable proof that a smart contract has been executed, and that the assets affected by that contract have been updated
- Distributed Ledger is database that holds records of every transaction done within the network. Multiple copies of the database exist in the network

Public vs. Private Blockchains

Some use-cases require anonymity, others require privacy, some may require a mixture of the two depending on the characteristics of each participant

Public blockchains

- For example, Bitcoin
- Transactions are viewable by anyone
- Participant identity is more difficult to control

Private blockchains

- For example, Hyperledger Fabric
- Network members are known but transactions are secret
- No (inherent) need for cryptocurrency

Most <u>business</u> use-cases require private, permissioned blockchains

- Network members know who they're dealing with (required for KYC, AML etc.)
- Transactions are (usually) confidential between the participants concerned
- Membership is controlled