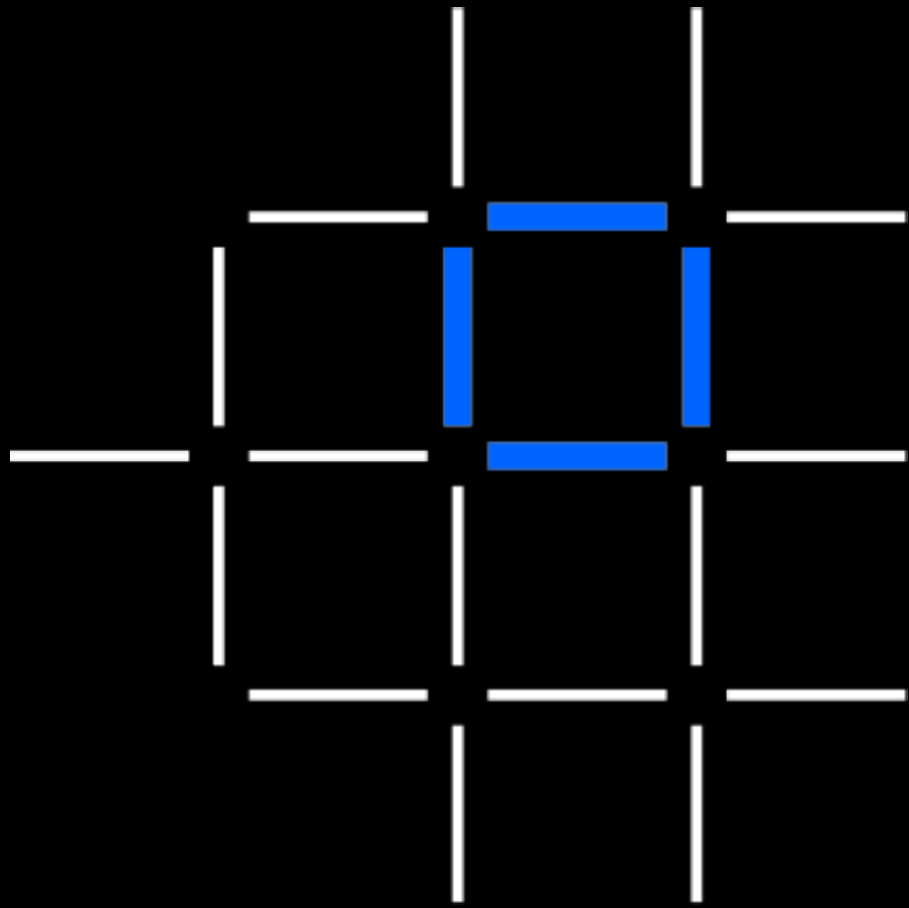
What is Blockchain?

Module 1 of IBM Blockchain Essentials



Presented by
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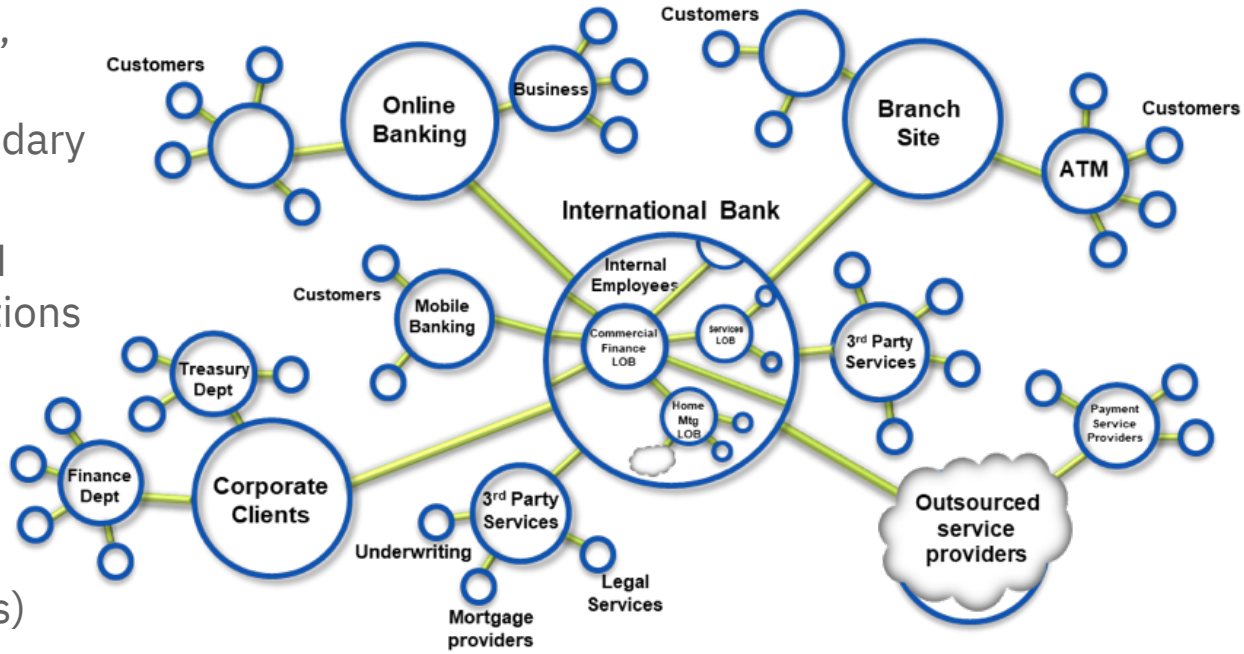
Business networks, wealth and markets

- 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

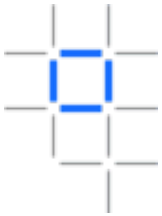
Intangible assets subdivide

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

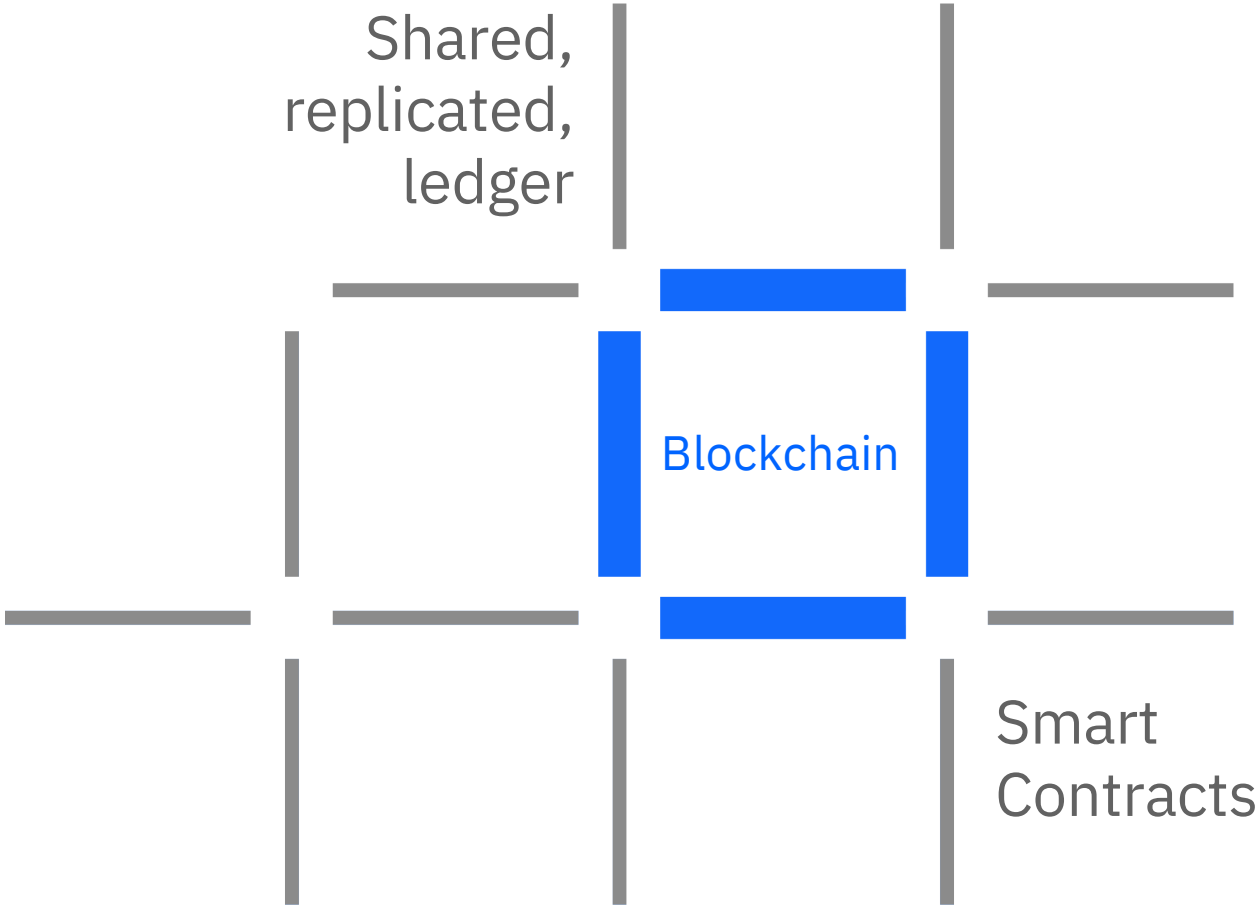
Cash is also an asset

- Has property of anonymity

Ledgers, Transactions and Contracts

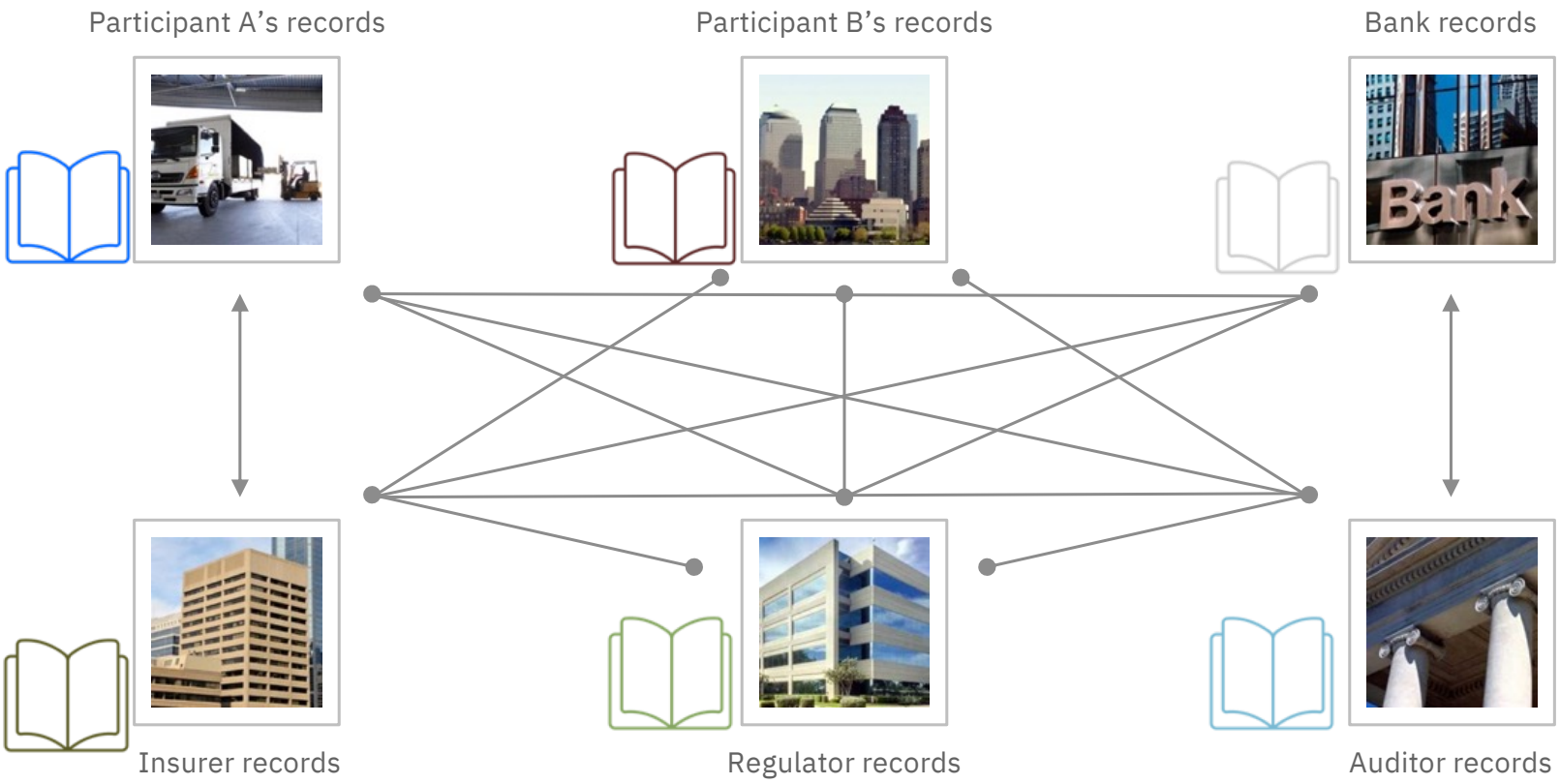


- Ledger: an important **log** of all transactions
  - Describes the inputs and outputs of the business
- Transaction: an **asset transfer** between participants
  - Matt gives a car to Dave (simple)
- Contract: the **conditions** for a transaction to occur
  - If Dave pays Matt money, then car passes from Matt to Dave (simple)
  - If car won't start, funds do not pass to Matt (as decided by third party arbitrator) (more complex)


Shared,
replicated,
ledger
Blockchain
Smart
Contracts

Problem

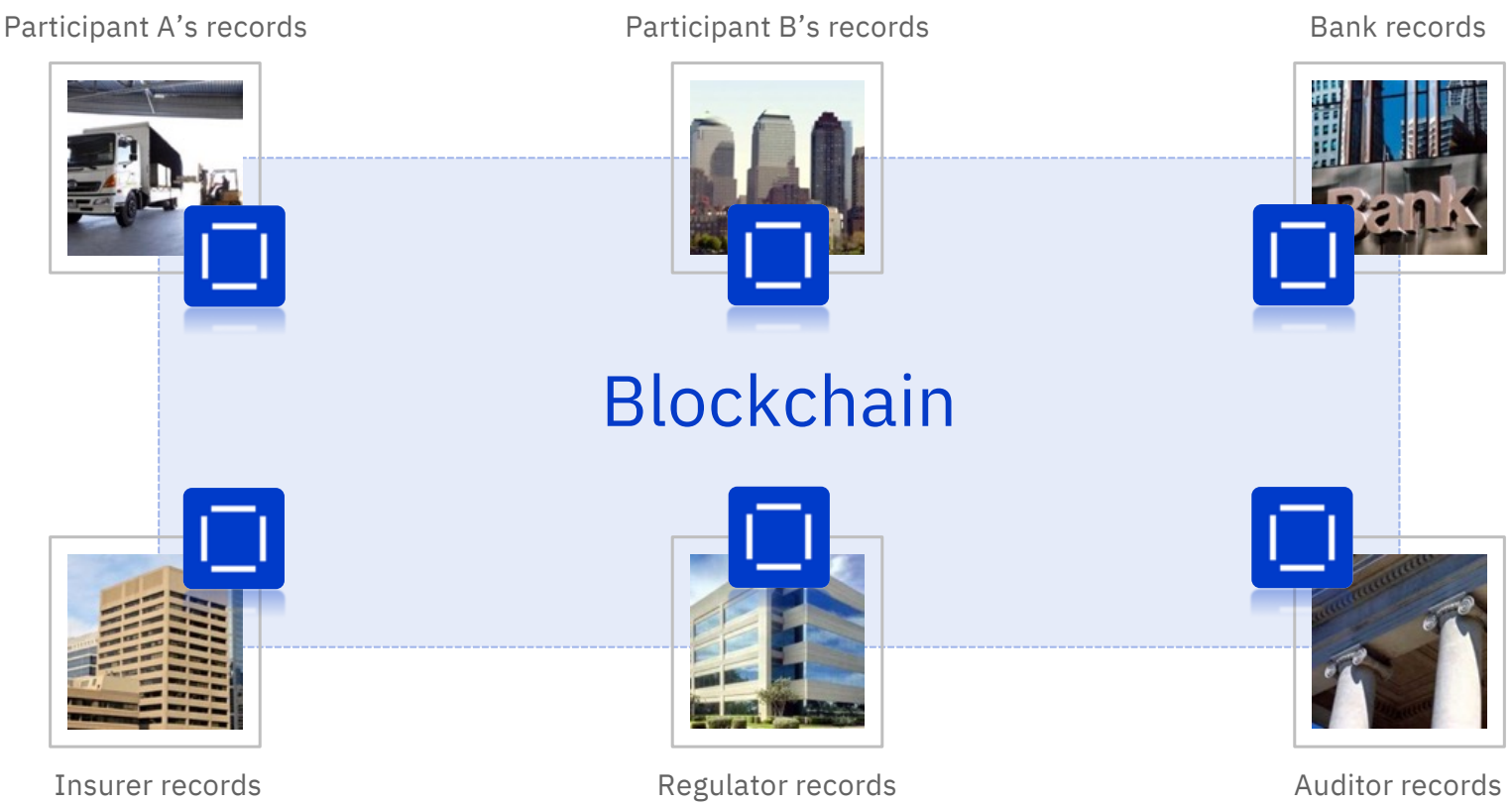
inefficient, expensive, vulnerable



Solution

A shared, replicated, permissioned ledger...

...with consensus, provenance, immutability and finality



Different **types** of blockchain

- All blockchains aim to provide irrefutable proof that a set of transactions occurred between participants

- Different types of blockchain exist:

  bitcoin is an example of an unpermissioned, public blockchain
  - The first blockchain application
  - Defines a shadow-currency and its ledger
  - Resource intensive

- Blockchains for business generally prioritize
  - Assets over cryptocurrency; Identity over anonymity; Selective endorsement over proof of work

Requirements of blockchain for business

ASSETS

Participants decide which assets to share

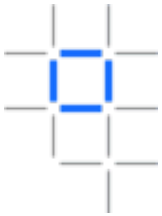
IDENTITY

Participants know who they are dealing with; information shared is need-to-know

ENDORSEMENT

Participants give provable endorsement

Summary



- Consider the way businesses operate:
  - Business networks, assets, transactions contracts, ledgers
  - **Ledgers** and **contracts** are prone to disputes

- Blockchain is a **shared, replicated ledger** with **smart contracts**

- All blockchains provide **cryptographic proof** of transactions
  - Different blockchains have different characteristics (e.g. prioritizing privacy over anonymity)

Thank you

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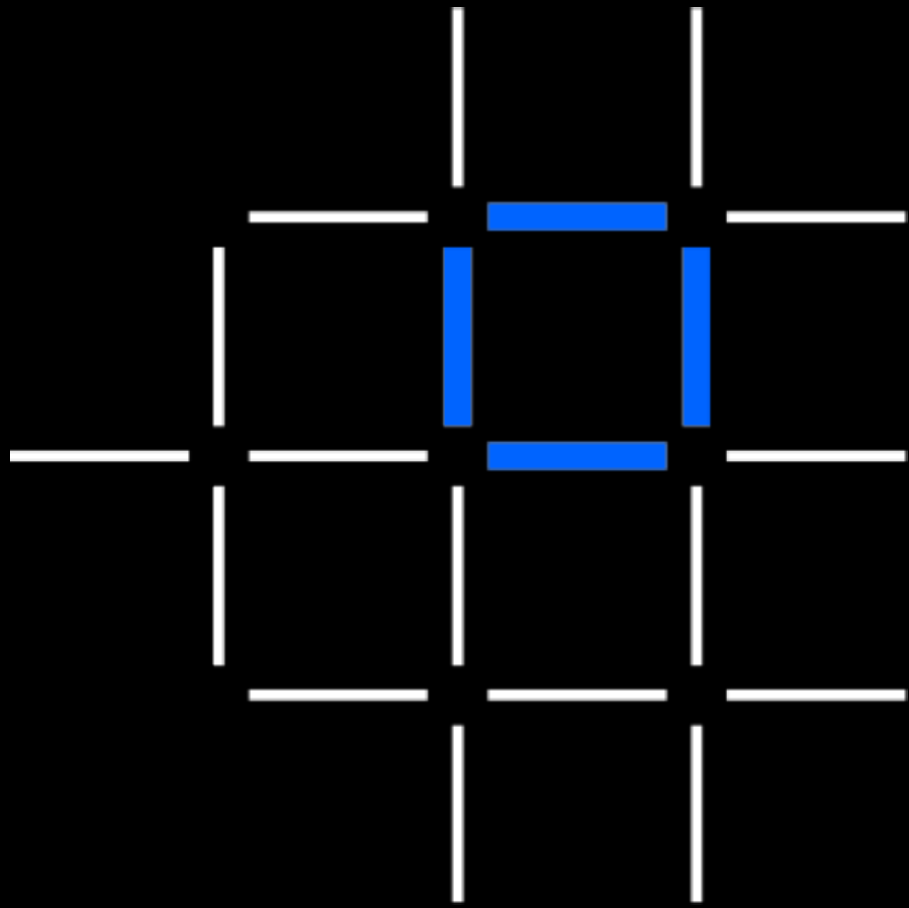

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