

Making **Blockchain** Real for Business

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Business Networks, Markets & Wealth

What?

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



Transferring **Assets**, building **Value**

What?

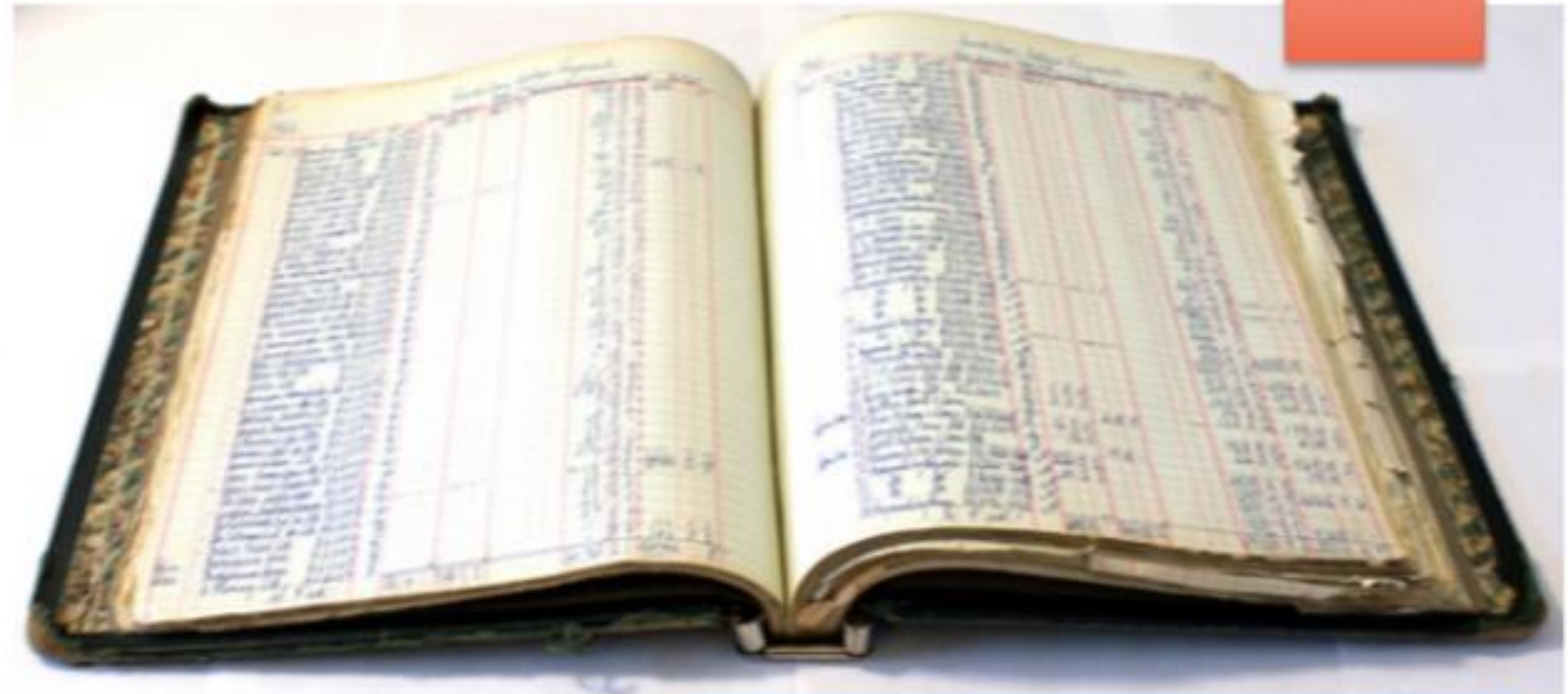
- Anything that is capable of being owned or controlled to produce **value**, is an **asset**
- Two fundamental types of asset
 - Tangible, e.g. a house
 - Intangible e.g. a mortgage
- Intangible assets subdivide
 - Financial, e.g. bond
 - Intellectual e.g. patents
 - Digital e.g. music
- Cash is also an asset
 - Has property of anonymity



Ledgers are Important

What?

- **Ledger**^[1] is THE system of record for a business
 - records asset transfer between participants.
- Business will have multiple ledgers for multiple business networks in which they participate.



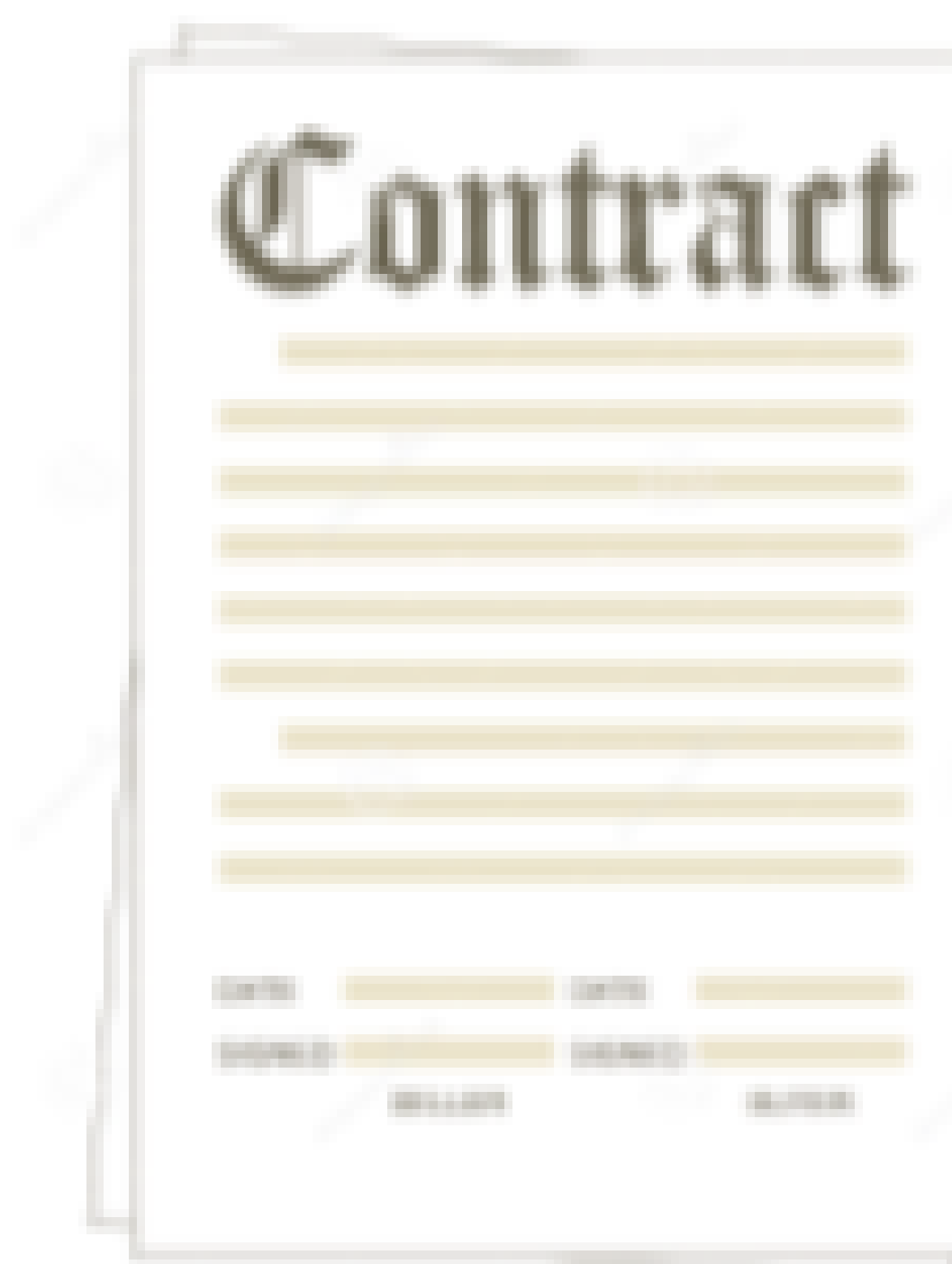
[1] The principal book (or computer file) for recording and totaling financial transactions by account type, with debits and credits in separate columns and a beginning monetary balance and ending monetary balance for each account.

A screenshot of a modern 'Accounts Ledger' software interface. The window title is 'Accounts Ledger' and the balance is shown as '\$43,336.50'. The main table has columns for 'Date', 'Account', 'Description', 'Debit', and 'Credit'. The table contains several rows of data, including transactions for 'Transportation', 'Hotel', 'Business Lunch', 'Gas', 'Rent', 'Utilities', 'Insurance', 'Medical', 'Food', 'Clothing', 'Entertainment', 'Travel', 'Miscellaneous', 'Depreciation', 'Amortization', 'Bad Debt', 'Interest', 'Dividend', 'Capital', 'Retained Earnings', 'Common Stock', 'Preferred Stock', 'Accounts Payable', 'Accounts Receivable', 'Inventory', 'Prepaid Expenses', 'Deferred Revenue', 'Long-Term Debt', 'Equity', and 'Retained Earnings'. The table is filtered to show 'All Transactions' and the total is \$43,336.50.

Participants, Transactions & Contracts

What?

- **Participants** - members of a business network
 - Customer, Supplier, Government, Regulator
 - Usually resides in an organization
 - Has specific identities and roles
- **Transaction** - an asset transfer
 - John gives a car to Anthony (**simple**)
- **Contract** - conditions for 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**)

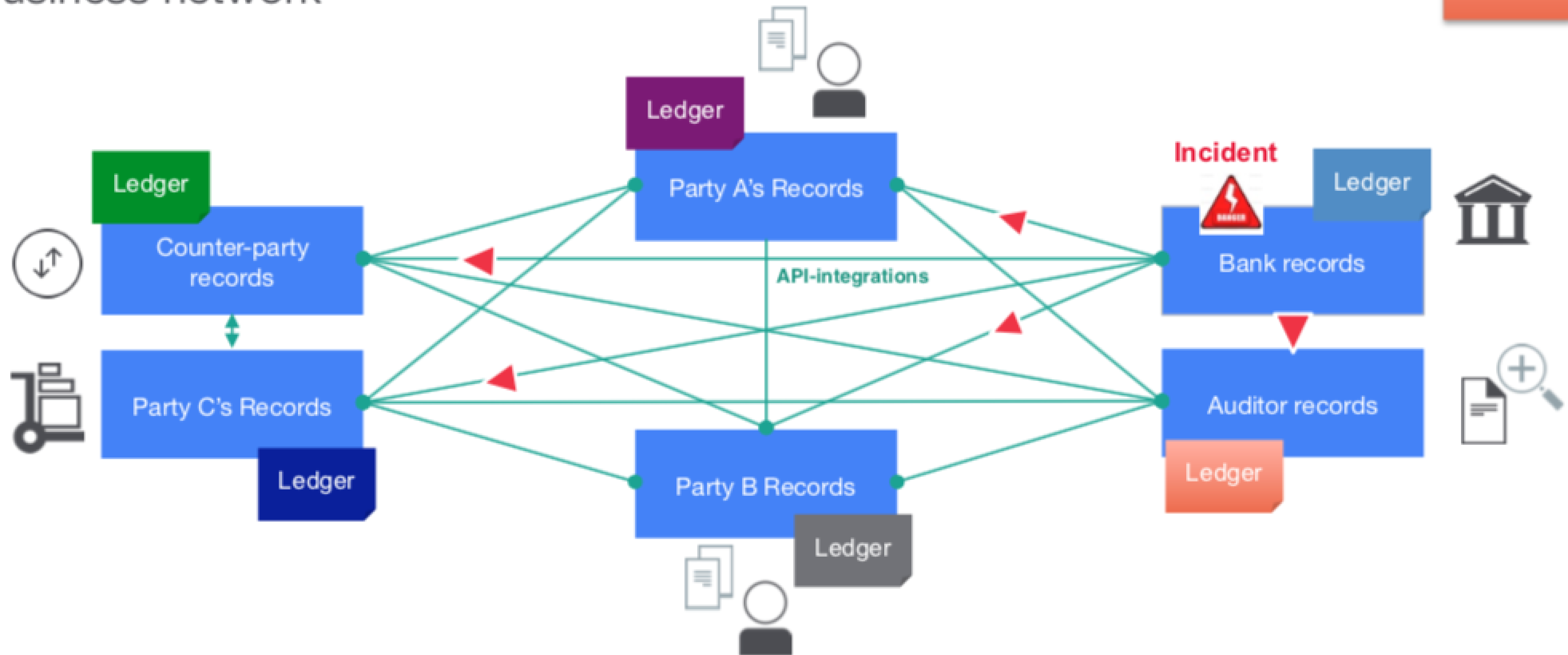


A *shared ledger technology* allowing any participant in the business network to see *THE* system of record (ledger)



Problem - Difficult to monitor asset ownership and transfers in a trusted business network

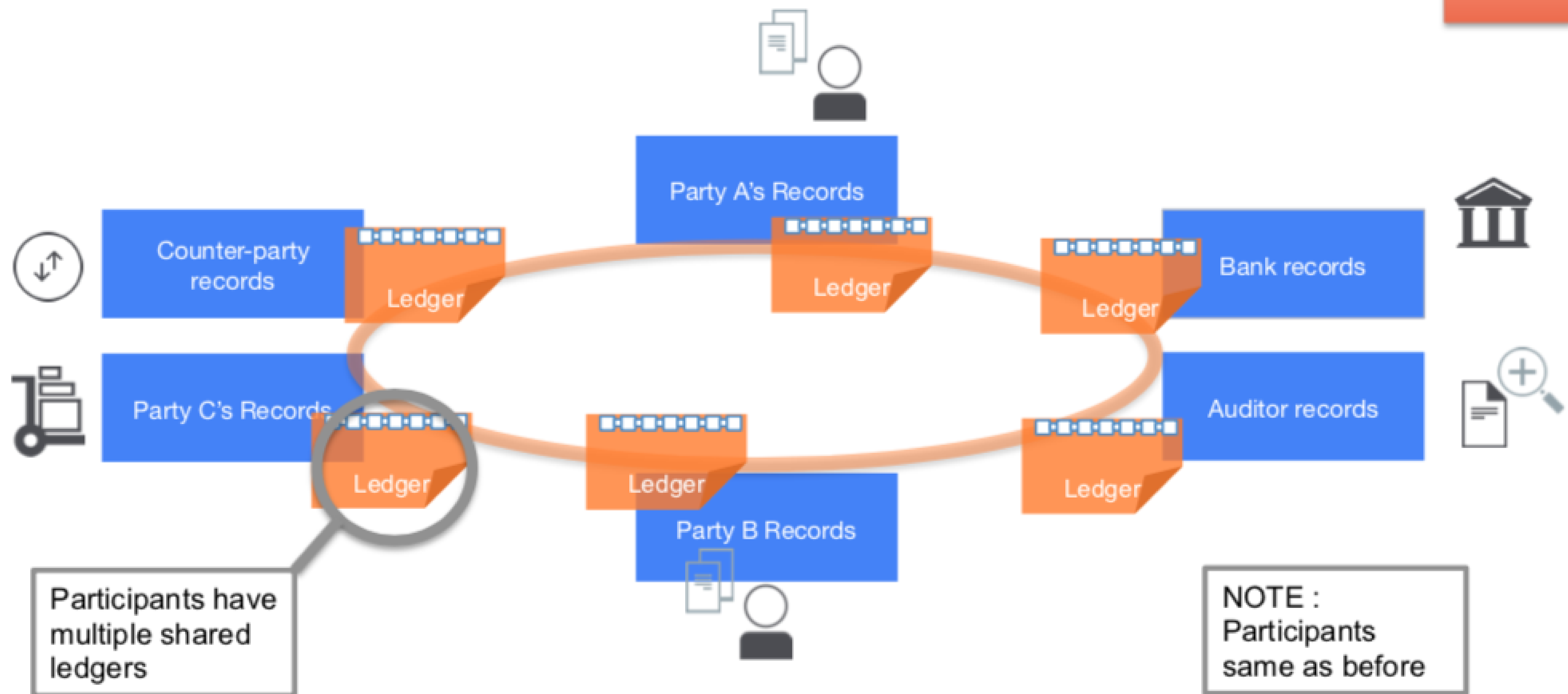
What?



Inefficient, expensive, vulnerable

Solution – a permissioned, replicated, shared ledger

What?



Consensus, provenance, immutability, finality

Blockchain for Business

What?

Append-only distributed
system of record shared
across business network

Shared
Ledger

Smart
Contract

Business terms embedded
in transaction database &
executed with transactions

Ensuring appropriate
visibility; transactions are
secure, authenticated &
verifiable

Privacy

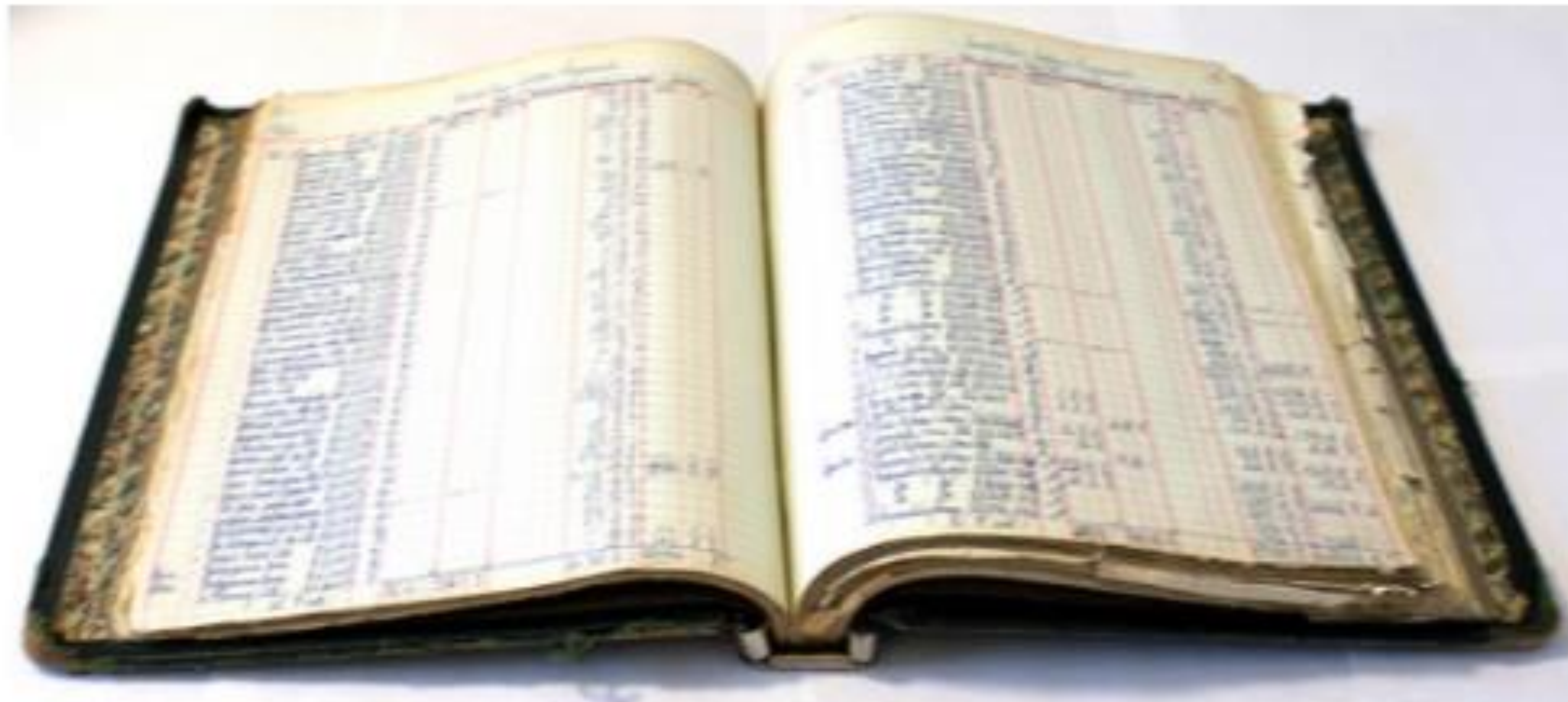
Validation

All parties agree to
network verified
transaction

Broader participation, lower cost, increased efficiency

Shared Ledger

What?



- Records all transactions across business network
- Shared between participants
- Participants have own copy through replication
- Permissioned, so participants see only appropriate transactions
- THE shared system of record

Smart Contract

What?

- Business rules implied by the contract . .
- . . embedded in the Blockchain &
- executed with the transaction
- Verifiable, signed
- Encoded in programming language
- Example:
 - Defines contractual conditions under which corporate Bond transfer occurs



Industrial Blockchain Benefits

Why?

Reduce costs and complexity



Improve discoverability



Trusted recordkeeping



Shared trusted processes



Patterns for Customer Adoption

How?

(1) INTERNAL LEDGER

- Ledger for internal reporting, audit and compliance,
- Consistent view of key business assets,
- Provenance, immutability & finality more important than consensus.
- Access to auditor and regulator

(2) CONSORTIUM SHARED LEDGER

- Created by a small set of participants
- share reference data between themselves and consumers.
- Consistent real-time view of key information

(3) INFORMATION HUB

- A ledger set up in a single organization
- Sharing of information between participants (e.g. voting, dividend notification)
- Assets have *information*, not financial value,
- Require provenance, immutability & finality.

(4) HIGH VALUE MARKET

- Ledger for the transfer of high financial value assets
- between many participants in a market.
- Requires all enterprise features of Blockchain

Use Case – Letter of Credit

Why?

What?

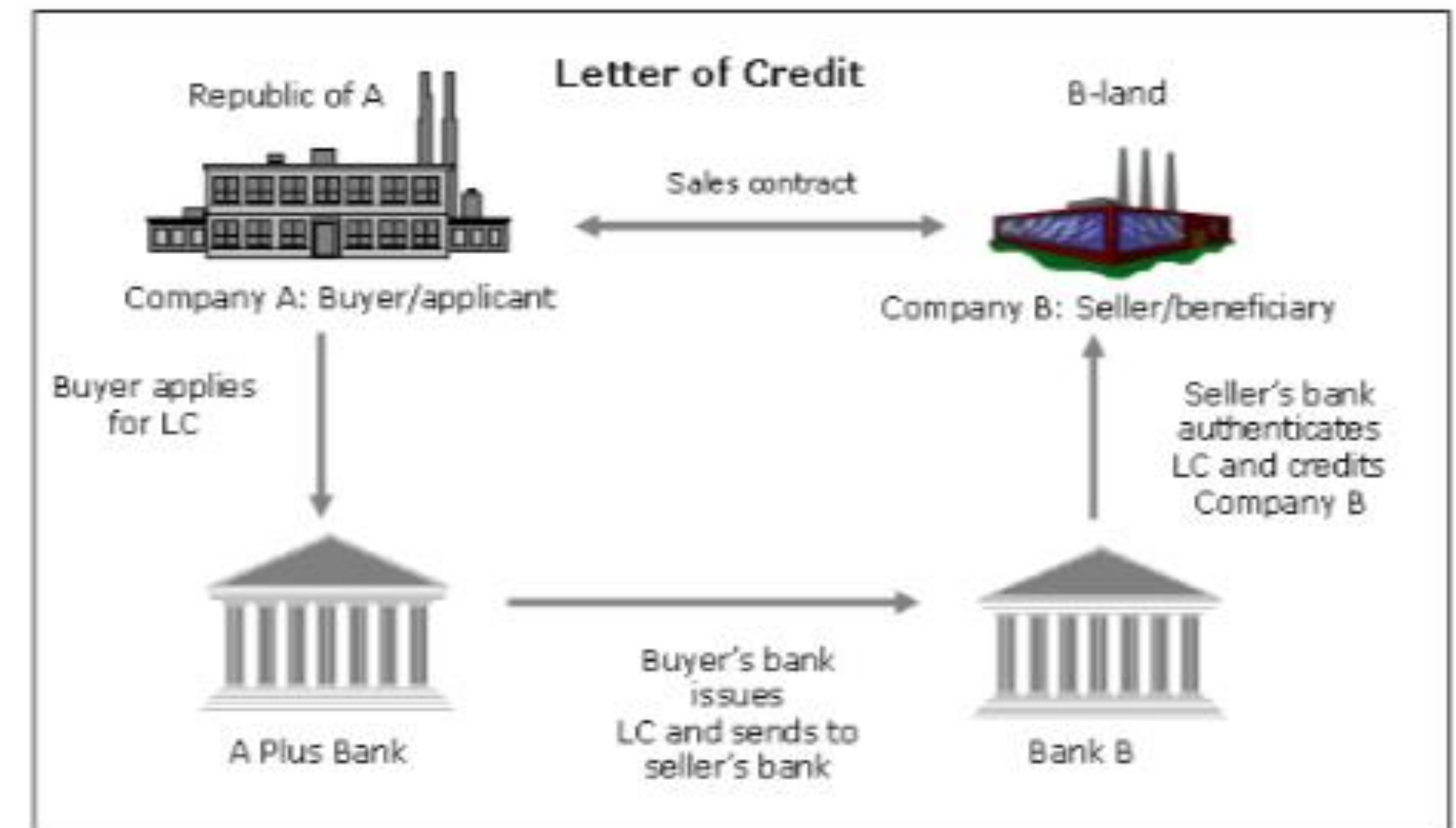
- Bank handling letters of credit (LOC) wants to offer them to a wider range of clients including startups
- Currently constrained by costs & the time to execute

How?

- Blockchain provides common ledger for letters of credit
- Allows bank and counter-parties to have the same validated record of transaction and fulfillment

Benefits

- Increased trust
- Increase speed of execution (less than 1 day)
- Vastly reduced cost



Other Potential Use Cases include . .

Why?

- **Securities**
 - Post-trade settlement
 - Derivative contracts
 - Securities issuance
 - Collateral management
- **Trade Finance**
 - Bill of Lading
 - Cross-currency payment
- **Syndicated Loans**
- **Intra-bank settlement**
- **Retail Banking**
 - Cross border remittances
 - Mortgage verification
 - Mortgage contracts (smart contract)
- **Public Records**
 - Real estate records
 - Vehicle registrations
 - Business license and ownership records



Thank You!