

Making Blockchain Real for Business

Explained



Contents



What are Blockchain technologies?



Why is it relevant for our business?



How can IBM help us apply Blockchain?



Ledgers are key ...

Ledger is THE system of record for a business. Business will have multiple ledgers for multiple business networks in which they participate.

- **Transaction** – an asset transfer onto or off the ledger
 - 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)



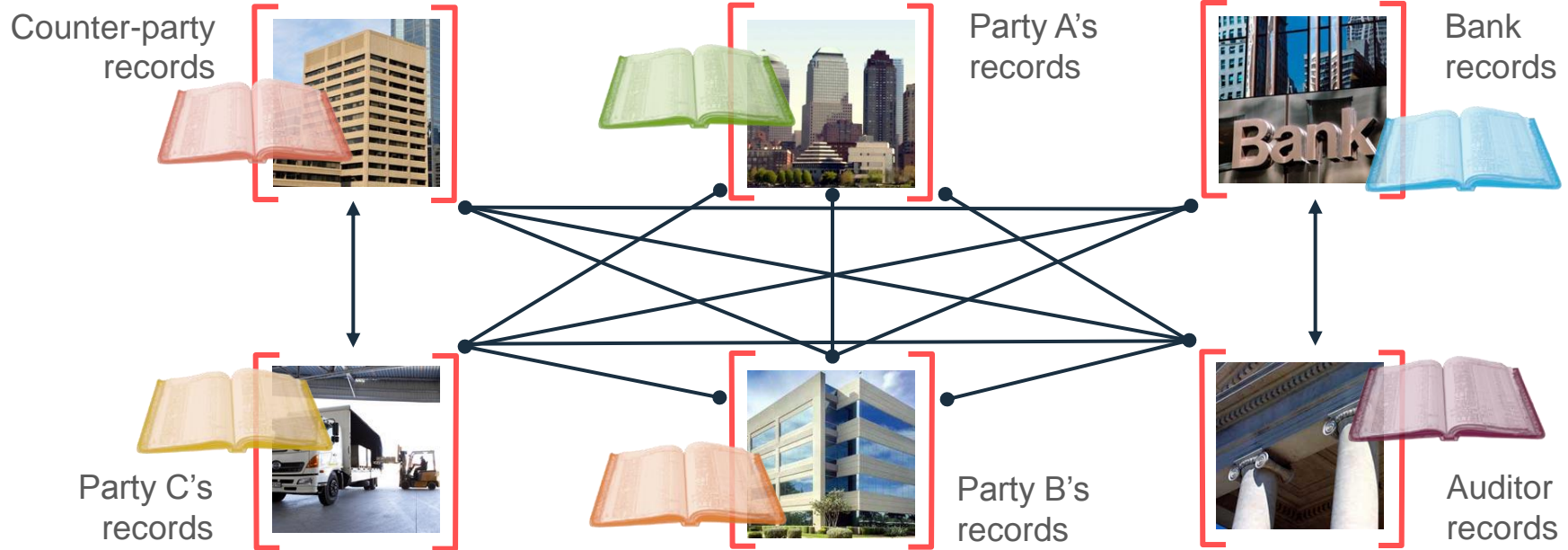


Introducing Blockchain

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

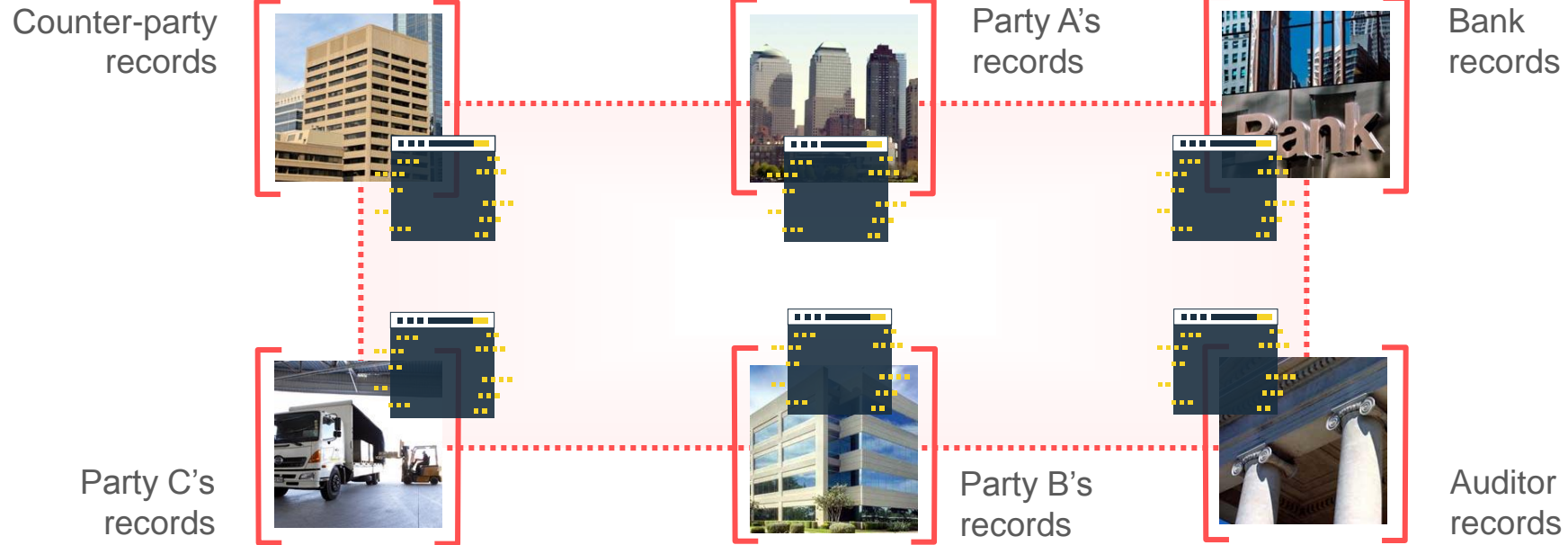


Problem ...



... Inefficient, expensive, vulnerable

Solution ...



... Consensus, provenance, immutability, finality



Blockchain for business ...

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



Consensus

All parties agree
to network verified
transaction

... Broader participation, lower cost, increased efficiency

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Blockchain benefits



Saves time

Transaction time
from days to near
instantaneous



Removes cost

Overheads and
cost intermediaries



Reduces risk

Tampering, fraud
& cyber crime

Other potential use cases

[?] Why

– Securities

- Post-trade settlement
- Derivative contracts

– Trade Finance

- Bill of Lading
- Cross-currency payment

– Syndicated Loans

– Supply Chain

– Retail Banking

- Cross border remittances
- Mortgage verification & contracts

– Public Records

- Real estate records
- Vehicle registrations
- Citizen Identity

– Digital Property Management

Patterns for customer adoption

HIGH VALUE MARKET

- Transfer of high value financial assets
- Between many participants in a market
- Regulatory timeframes

ASSET EXCHANGE

- Sharing of assets (voting, dividend notification)
- Assets are information, not financial
- Provenance & finality are key

CONSORTIUM SHARED LEDGER

- Created by a small set of participants
- Share key reference data
- Consolidated, consistent real-time view

COMPLIANCE LEDGER

- Real-time view of compliance, audit & risk data
- Provenance, immutability & finality are key
- Transparent access to auditor & regulator

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

Not for all ...

Blockchain is not ...

- Suited to high performance (millisecond) transactions
- For just one participant (no business network)
- A replicated database replacement
- A messaging solution
- A transaction processing replacement
- Suited for low value, high volume transactions



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Blockchain for Business – Our Point of View



Community + Code

Linux Hyperledger
Project

Open Source Code: Blockchain built from the ground up for business;

Permission | Privacy
Confidential | Auditable

Open Governance – 40 member board



Cloud

IBM Blockchain

Blockchain value-added managed service on SoftLayer and
z Systems;

Identity | Consensus | Audit | System Integration |
Hardware-assist for Performance & Security
IBM Blockchain on Bluemix



Clients

Blockchain Solutions
Blockchain Garage

Blockchain Solutions for Financial Services;

Trade Finance | Capital Markets

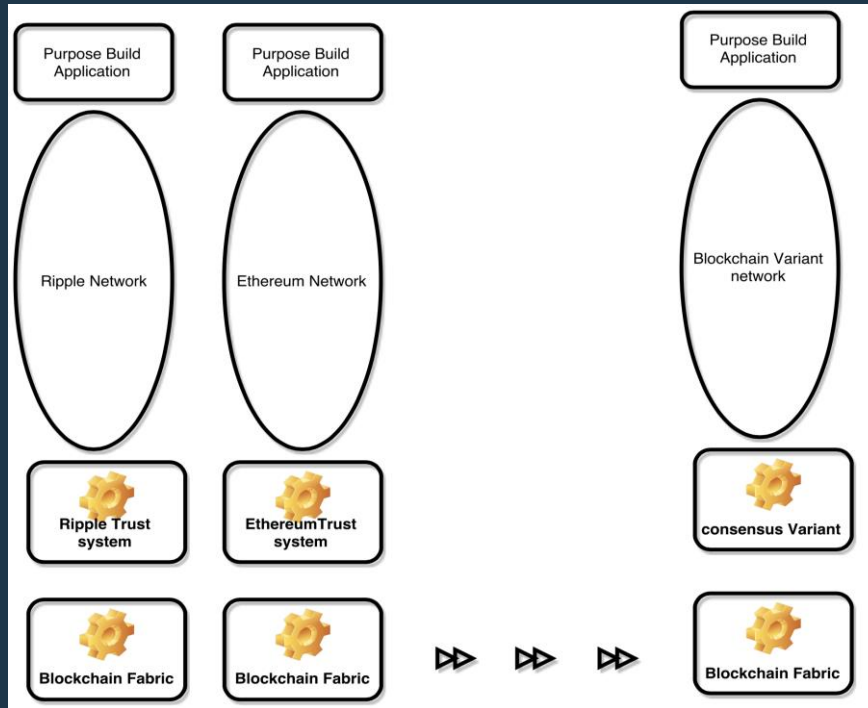
Blockchain Garage

NY | London | Singapore | Japan

Blockchain GBS Practice



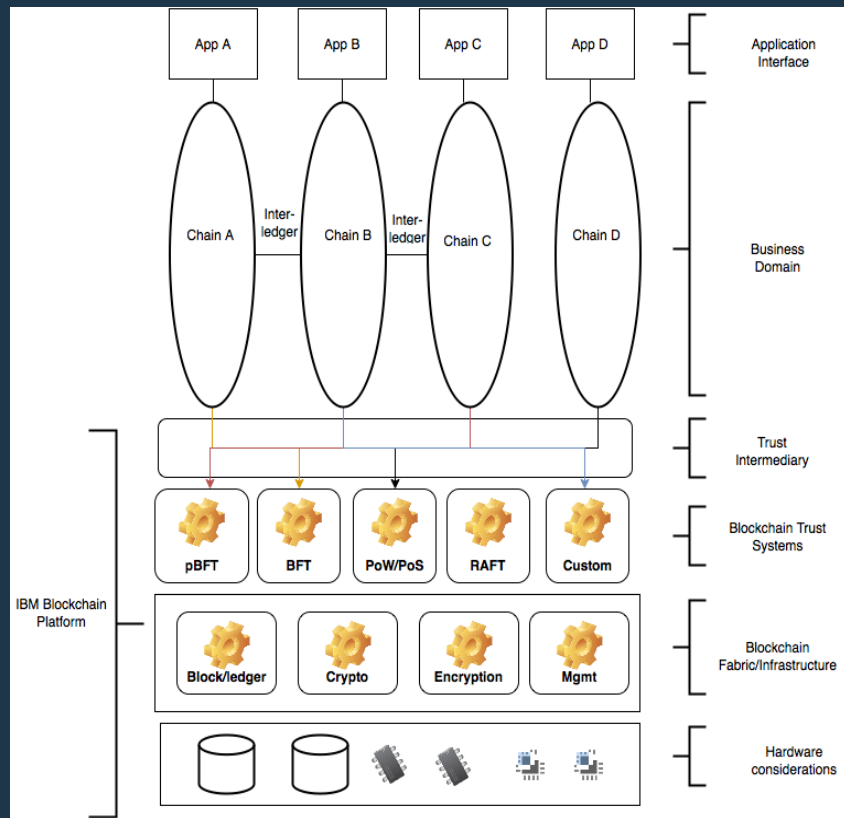
Blockchain vendors – Offer specialization



Each Vendor – Offers Specialization

- Variant trust systems – Consensus, Mining, Proof of Work etc.
- Lock into single trust system
- Purpose built infrastructure components for a specialized use case
- Design being field tested in form of POCs.
- Creates fragmented blockchain models for enterprise.

How can IBM Blockchain be Different?

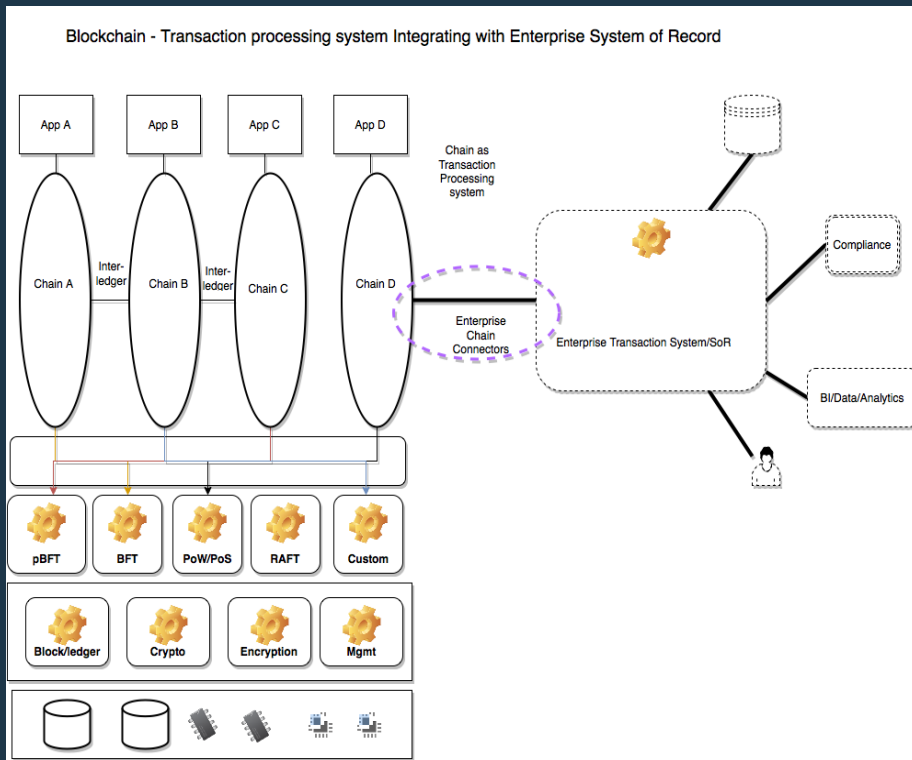


How Do we differentiate ?

- Open Design
- Providing flexibility with pluggable and modular trust system
- Open for specialized blockchains e.g. Ripple
- Trust Intermediary – a trust system provisioning layer
- Enterprise blockchain platform concept
- Separate Business domain with technology that supports it.

Blockchain – Transaction Processing vehicle

Enterprise Integration Considerations



- Integration with incumbent SoR
- Compliance and regulatory requirements
- Data formats – ISO20022, EDI 820 etc.
- Blockchain to enable transaction processing, and preserve the enterprise SoR systems.
- Design Intent
 - Path of least disruption
 - Accelerate Enterprise adoption

Linux Foundation's Hyperledger Project

- Linux Foundation project announced December 17, 2015 with **17** founders, now **40** members
- The Hyperledger Project is a collaborative effort to advance Blockchain technology by identifying and addressing important features for a cross-industry open standard for distributed ledgers that can transform the way business transactions are conducted globally
- Open source and open standards-based

Enable adoption of shared ledger technology at a pace and depth not achievable by any one company or industry

QUICK FACTS

Chairman:	Blythe Masters/DAH
Executive Director:	Brian Behlendorf
Tech Committee:	Chris Ferris/IBM
Contribution:	44,000 lines of code in February 2016
Accept:	2Q IBM Open Code accepted into incubation
Sprint to one codebase with unified thinking:	Target 3Q release

PREMIER

accenture
High performance. Delivered.

CME Group

DEUTSCHE BÖRSE GROUP

Digital Asset

DTCC

FUJITSU

HITACHI
Inspire the Next

IBM

intel

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R[®]

GENERAL

ABN-AMRO

ANZ

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BLOCKCHAIN

Blockstream

bloq

BNY MELLON

Broadridge

Calastone

CISCO

cloudsoft

CLS[®]
Fundamental to FX

coinplug

consensus

CREDITS

Cuscal
The complete payments partner

Customer Trust

EVUE
digital labs

Gem

guardtime

intellect[®]

itBit

Milligan Partners

ML

Orchestrating a brighter world
NEC

NTT DATA

redhat

Ribbit

Skry

SORAMITSU
FSCV

STATE STREET

SWIFT

symbiont

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IBM offerings supporting Hyperledger



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PROJECT**



**IBM Blockchain
ON IBM CLOUD**



**IBM Blockchain
SOLUTIONS**

**BLUEMIX
SERVICE**



Blockchain

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- Your private Blockchain network in 1-click
- Learn with sample applications
- Develop your own Smart Contracts

ibm.com/blockchain/



Summary

Blockchain ...

- is a shared, replicated, permissioned ledger technology
- can open up business networks by taking out cost, improving efficiencies and increase accessibility
- addresses an exciting and topical set of business challenges, which cross every industry

IBM ...

- supports the Linux Foundation Hyperledger open standard, open source, open governance Blockchain
- has an easy to access, proven and incremental engagement model giving customers the confidence to get started NOW

Thank you!