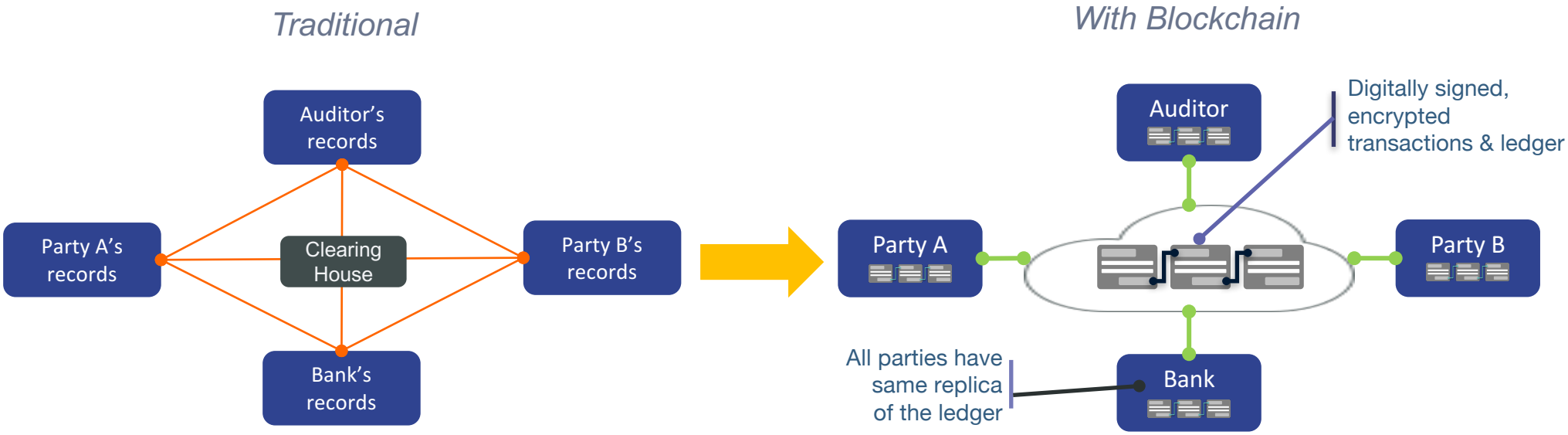
# IBM Blockchain Point of View

## IBM / UHG Meeting

December 12, 2017

Marie Wieck, General Manager IBM Blockchain

# Blockchain will fundamentally change business processes




… Inefficient, expensive, vulnerable

… Consensus, provenance, immutability, finality

# Blockchain creates a new style of network – transforming business processes & transactions

## Key Concepts

Append-only distributed system of record shared across business network

**Shared Ledger**

**Permissions**

Ensuring appropriate visibility; transactions are secure, authenticated & verifiable

Business terms embedded in transaction database & executed with transactions

**Smart Contracts**

**Consensus**

All parties agree to network verified transaction

## Benefits

Transaction time from days to near instantaneous

**Reduce Time**

**Removes Costs**

Overheads and cost intermediaries

Data loss, Tampering, fraud, cyber crime

**Reduce Risks**

**New Business Models**

IoT Integration into supply chain

# Blockchain Landscape

Distributed ledger market encompasses a range of technologies and organizations with different objectives

## DLT Alternatives

Bitcoin
Chain
Corda
Ethereum
Hyperledger Fabric
R3
Enterprise Ethereum Alliance
Stellar
Ripple
DAH
Quorum

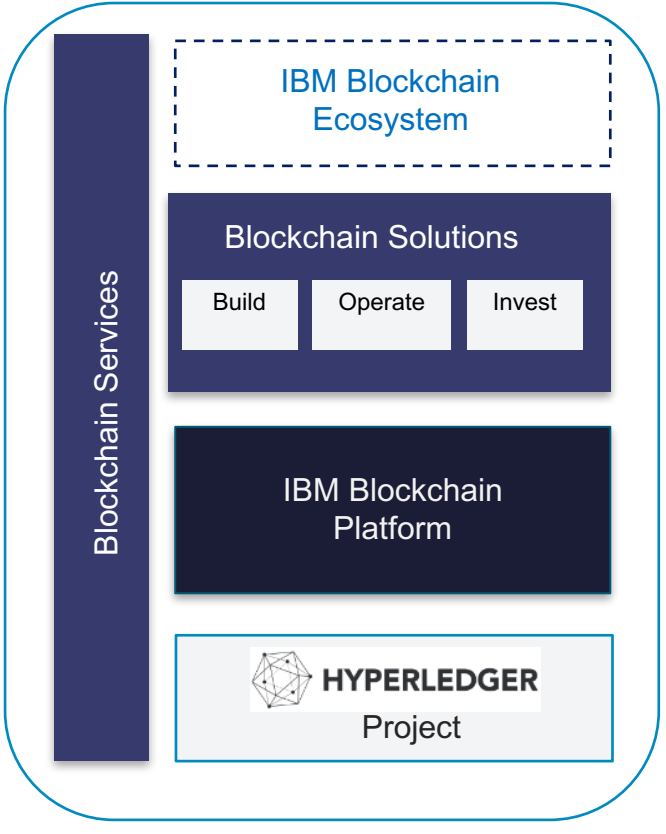
## Categorization

| | Anonymous | Permissioned |
|---|---|---|
| Cryptocurrency | Drive value of cryptocurrency<br>Bitcoin, Ethereum | Cryptocurrency for a business use-case<br>Stellar, Ripple |
| Non-Cryptocurrency | | Blockchain for business<br>Chain, Corda, Hyperledger |

**Standards bodies and consortiums**

Hyperledger, Enterprise Ethereum Alliance

# IBM Strategy: Transforming Industries and Business Processes with Blockchain




**Support** — Education, support and partner services to create a thriving ecosystem for Blockchain

**Provide** — Solutions to transform business processes and industries by creating and operating Blockchain Business Networks with enterprise participants

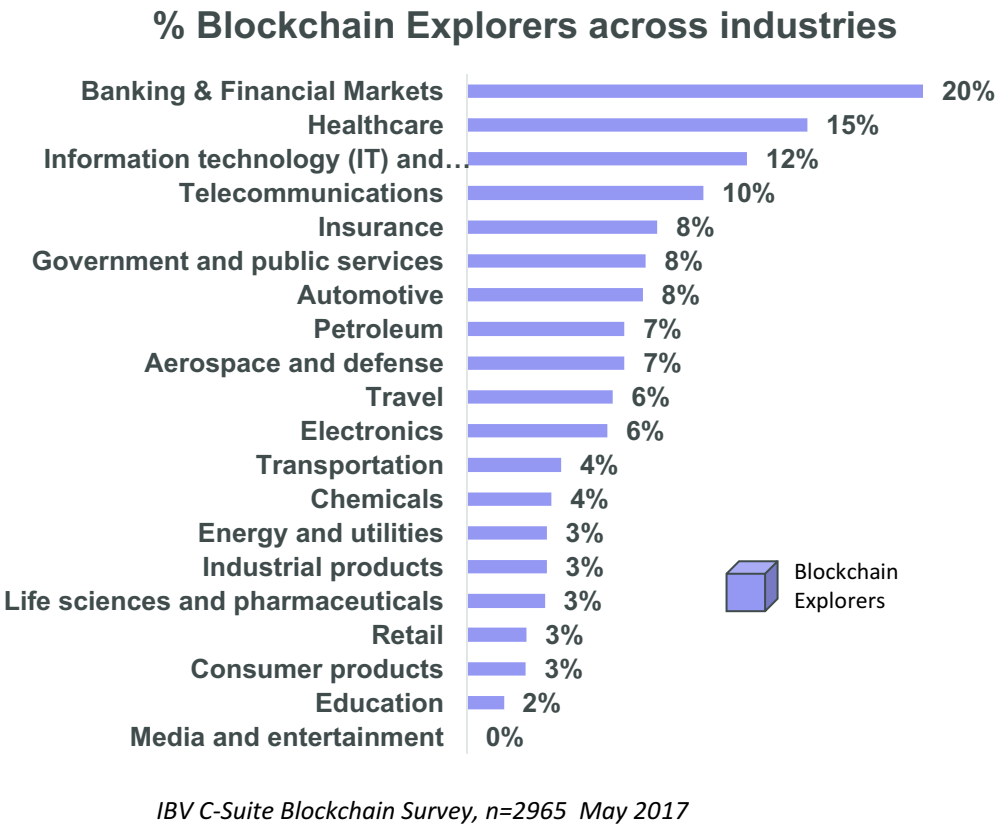
**Provide** — Secure Blockchain Platform on the Cloud with developer services and production grade capabilities to enable the creation and management of Blockchain business networks

**Invest** — With The Linux Foundation community to ensure the best possible foundation for Blockchain in a commitment to open standards, open source and open governance

*Hyperledger Fabric is a blockchain framework implementation and Hyperledger Composer is a tooling environment for blockchain and two of the projects hosted by The Linux Foundation.

# Blockchain is a C-Suite Initiative across all Industries

*IBV Global C-Suite Study "Forward Together" found 8% of Companies have Blockchain projects underway, & 34% expect to this year*




*IBV C-Suite Blockchain Survey, n=2965 May 2017*

## Best Practices from Blockchain Explorers

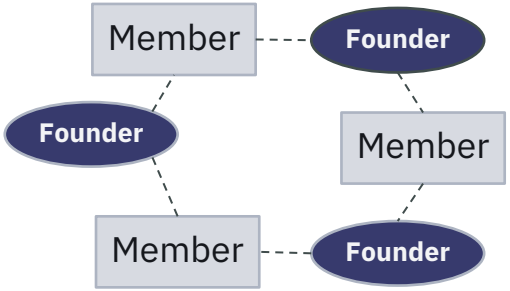
- **Orchestrate for economic advantage:** Get the business model right and make sure all participants, not just the founders, see economic benefit.
- **Establish a circle of trust:** Blockchain is all about the network. Test the linkage with a "minimum viable ecosystem", not just a minimum viable product. Consider including competitors as well.
- **Learn fast & keep an open mind:** There is an opportunity for a first mover advantage, if only to develop skills and test use cases. But expect new learnings and be prepared to pivot quickly.

# Examples of client engagements and active blockchain 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 Tokyo Stock Exchange | 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 GROUP 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 Only the Finest Berries, Tyson, McLane, Dole, Kroger, Nestlé, Unilever, gsf golden state foods | everledger |

# Building Communities in Blockchain Networks

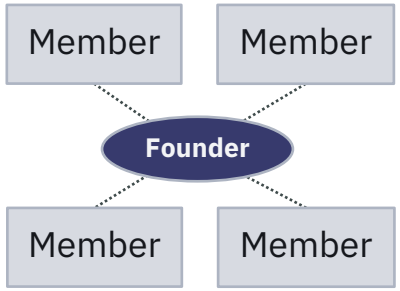
## Consortium Based Network




Founders are equal among other participants, may include a joint legal entity among the founders (e.g. – JV)

Examples: JPX JAPAN EXCHANGE GROUP, we.trade, IBM Food Safety

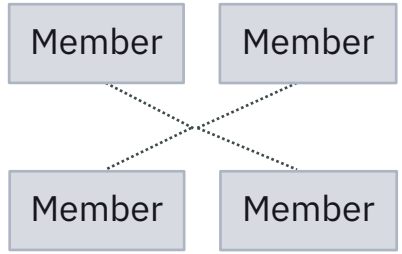
## Founder Directed Network




Individual founder in a position to provide strong direction

Examples: NORTHERN TRUST, CLS Fundamental to FX

## Community Based Network




Driven by industry standards bodies or existing non-blockchain network owners

Examples: IBM Watson Supply Chain, SWIFT

# Food Traceability

## What?

- Traceability of food from “farm to fork”

## How?

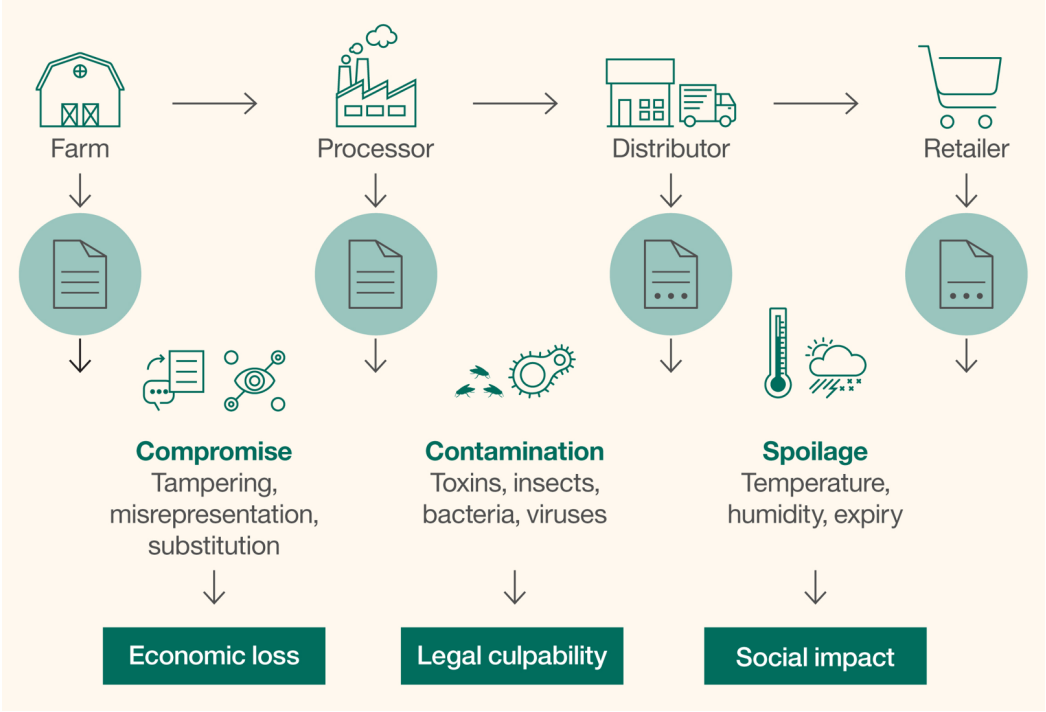
- Blockchain holds history of food items processed through entire supply chain

## Offerings

- Product Recall Assistant
- Free Data Entry & Access
- Certificate Manager

## Benefits

- Increased trust – multiplied by each participant in food supply chain
- Pinpoint source of compromised food, reducing the unnecessarily broad recall
- Improved co-ordination in food supply chain



# Global Trade Digitization

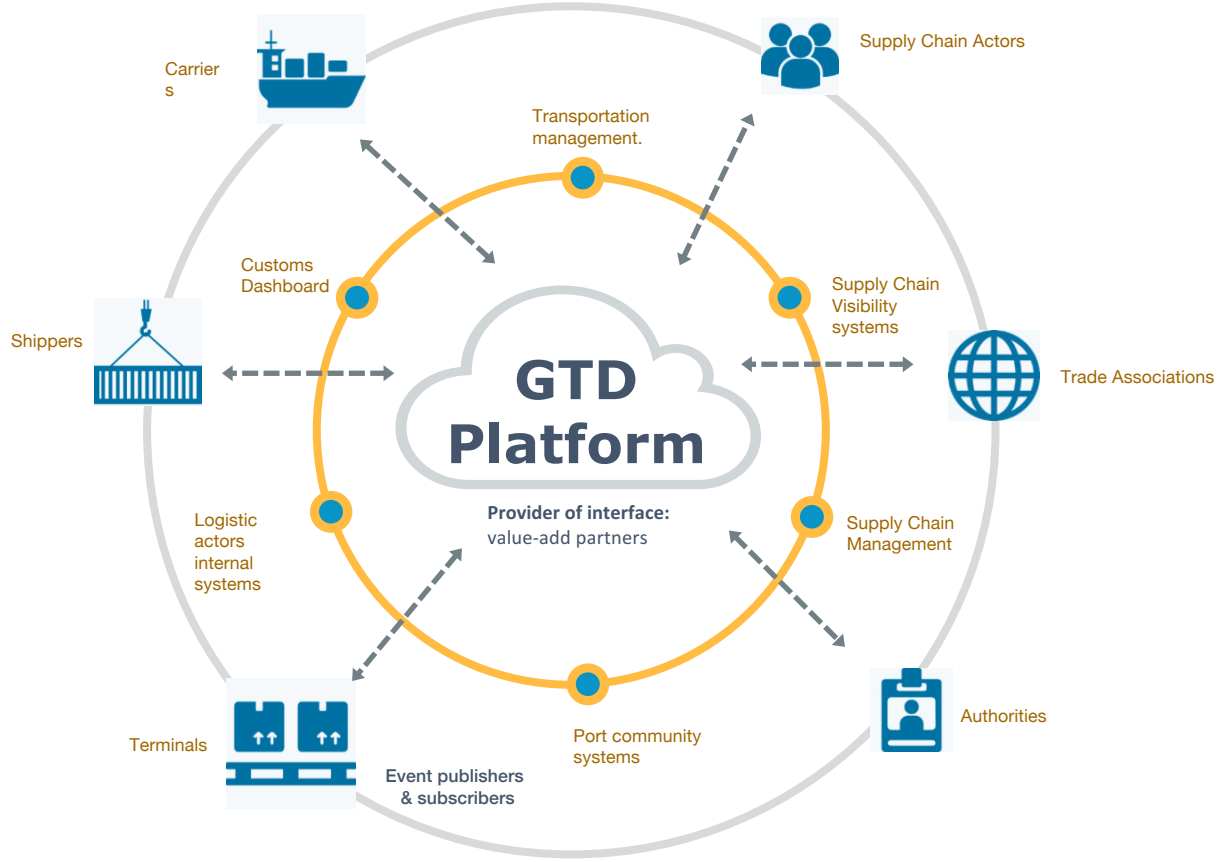
**An open, extensible platform for sharing shipping events, messages, and documents across all the actors and systems in the supply chain ecosystem.**

## Offerings:

- Paperless Trade
- Shipping Information Pipeline

## Important principles

- Detailed information remains under the control of the owner
- Neutral
- Fault Tolerant
- Everyone can work in their own systems



# Trusted Identity

## What?

New experience for consumers to effortlessly sign-on to digital services, while remaining in control of their identity attributes.

## How?

Blockchain enables

- No central database or identity honeypots
- No central point of failure
- “Triple Blind” data sharing – PRIVACY

## Benefits

Institutions that participate in an ecosystem benefit with increased customer satisfaction, reduced risk in identity theft, and new revenue sources to institutions

# IBM and FDA partnership

## What

- Create and promote a secure, efficient and scalable exchange of health data using blockchain technology.

## How

- Blockchain technology will be used to create an electronic ledger of where and how data is transferred and exchanged
- Initial trial focus on oncology data

## Benefit

- Creating an audit trail through the ledger, healthcare professionals will be able to:
  - hold information leakers accountable
  - maintain transparency in what data is going where
  - secure weak spots in the sharing process.

ZDNet CLOUD INNOVATION SECURITY TECH PRO MORE

**IBM bets on the blockchain to keep your medical data safe**

Big Blue believes the secure transfer of medical information can be achieved through technology associated with Bitcoin.

IBM has announced a new partnership with the US Food and Drug Administration (FDA) in a study designed to determine whether blockchain technology can be used to keep medical data transfers safe from theft or exploit.

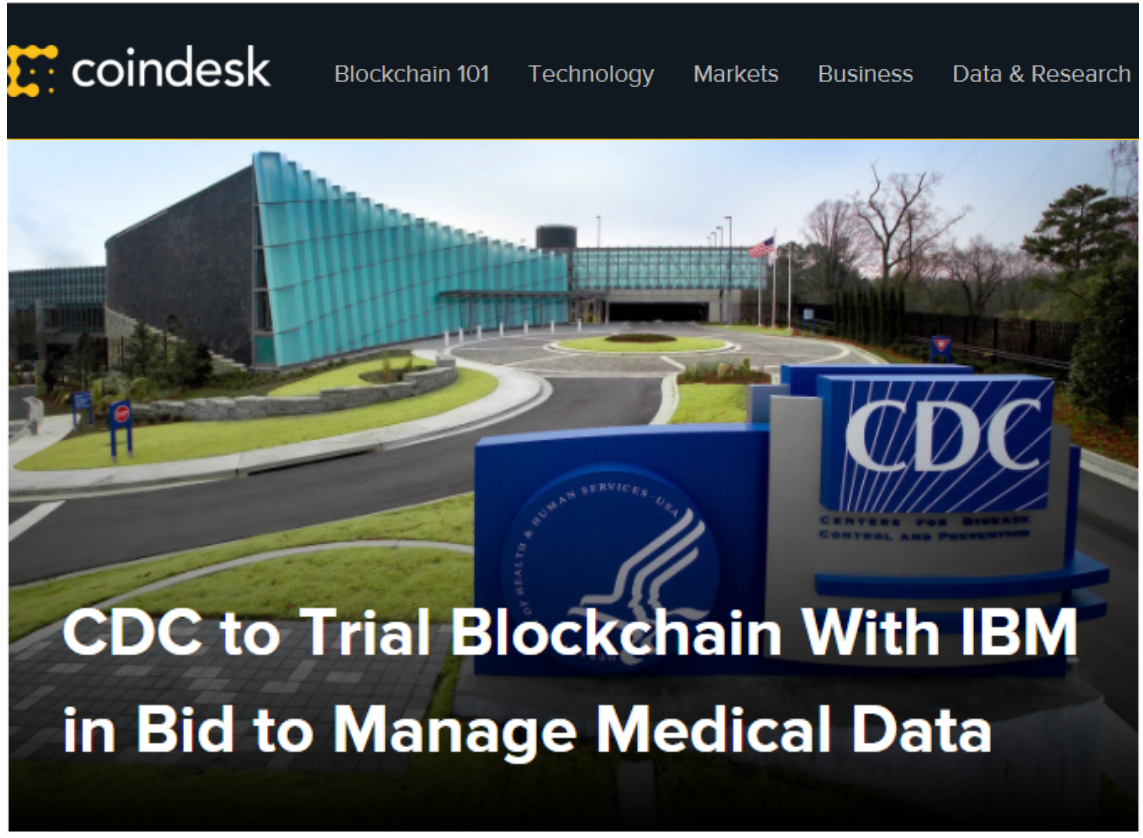
# CDC Use Case: EHR Reference Data Chain of Custody and Consent

## What

- Track the chain of custody of the EHRs and how they are stored, accessed and moved through the lifecycle in compliance with specific governmental regulations
- Manage consent and sharing of EHRs

## How

- Each participant agrees to capture the access and storage of HER data on the blockchain
- Blockchain creates single view of the EHR reference data
- Include consent model so that owners of data can quickly and easily provide consent for others to access their data and then record consent to avoid dispute

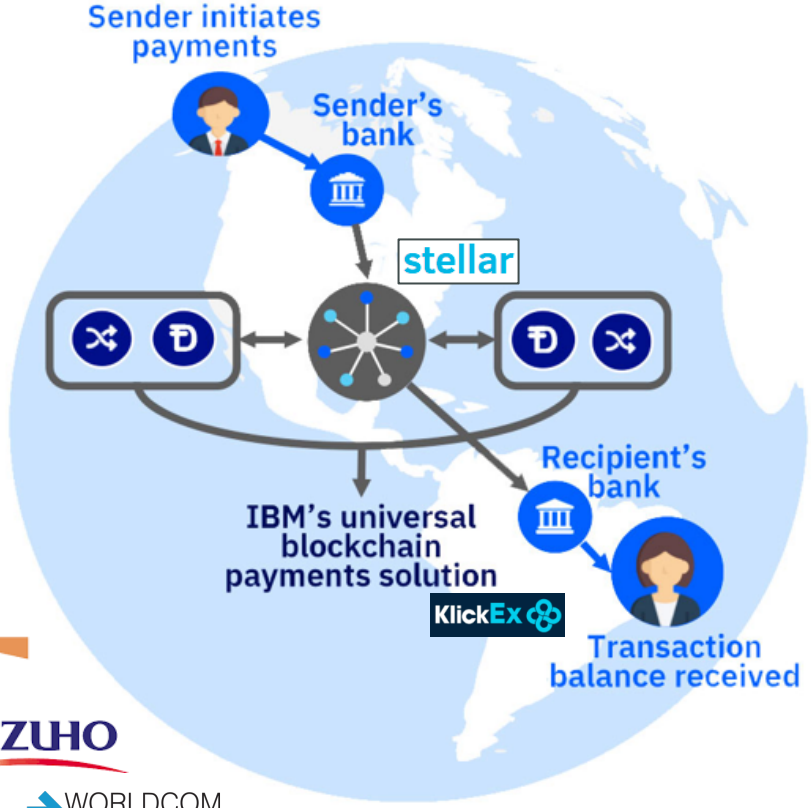


# IBM's universal blockchain payment strategy announced at SIBOS

*A universal rail for real-time clearing and settlement on an integrated Blockchain network*

**Tomorrow's Process:**

Near real-time international payments




**Banking Leaders Involved**

BBVA, nab, TD, ธนาคารกสิกรไทย KASIKORNBANK, Danamon, BNI, mandiri, MIZUHO, BANK BRI, RCBC We believe in you., WORLDCOM FINANCE

**What:**
A multi-ledger, single network for real-time atomic clearing and settlement using IBM Blockchain technology

**How:**
- Collaboration between IBM and technology partners Stellar.org and KlickEx Group
- Initial participants include over 13 financial institutions

**Benefits:**
- Create secure, high volume, low-cost cross-border payments services without sacrificing margins
- Access new markets and currencies with limited risk
- Generate new sources of revenue with value-added products and services

*$1 Trillion business in Cross-border Payments growing at 20+%*

# we.trade – Digital Trade Chain

## Project Background

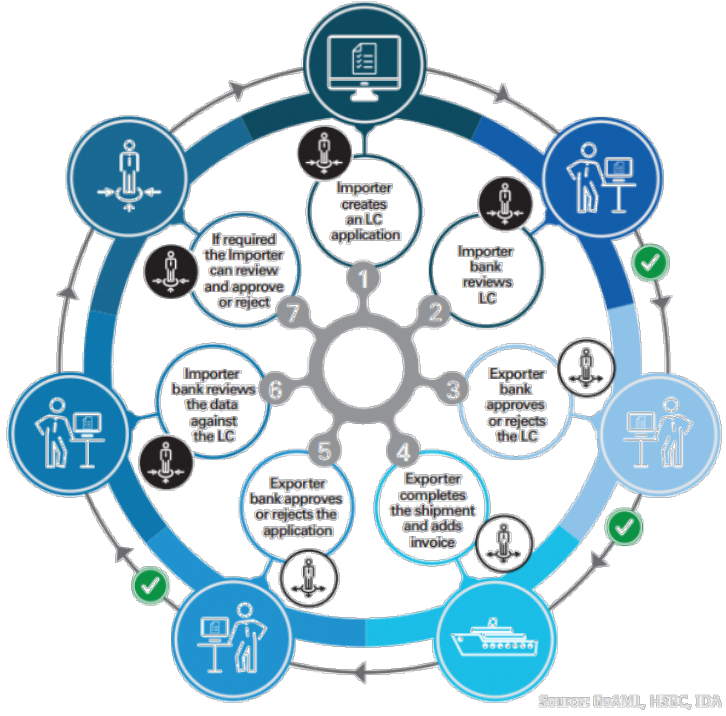
- Digital Trade Chain (DTC), is a blockchain-based international trading system for a consortium of major world banks including Deutsche Bank, HSBC, KBC, Natixis, Rabobank, Société Générale & UniCredit

## Solution

- Connects all parties involved in international trade — banks, importers, exporters, buyers, sellers, transporters, and other appropriate participants
- Built on Hyperledger Fabric and IBM Blockchain, DTC allows banks to extend services and provide more efficient use of capital – fostering greater participation by small and medium businesses and end-users
- Allows rapid deployment of "Smart Contracts" and other tangible aids to innovative emerging business, trading, and financial activity
- Enables accurate trading posture information, order to settlement control, risk coverage, track and trace options

## Target Outcomes

- 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: IBM Institute for Business Value

# BlueAudit – Intercompany Supply Chain Optimization

## Project Background

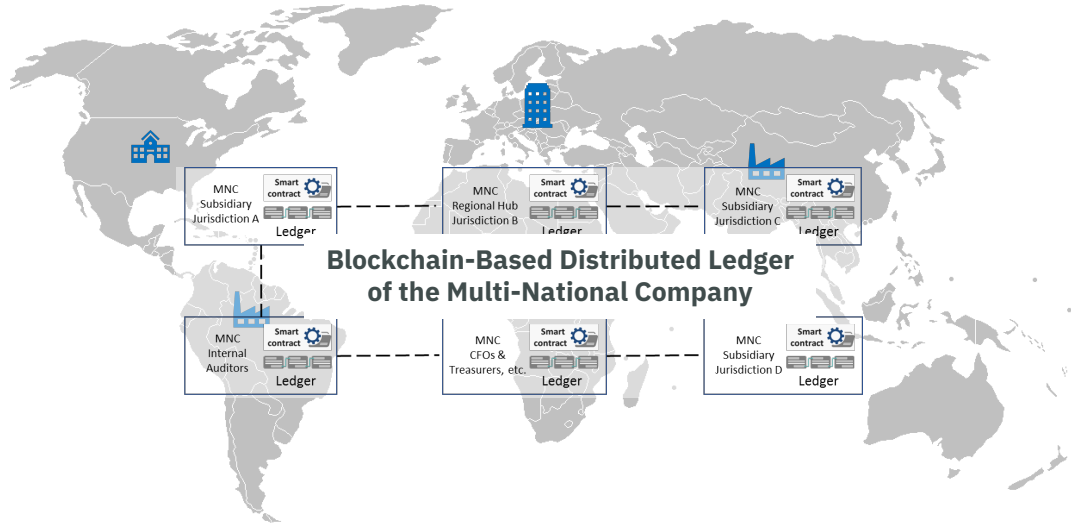
- Transactions over the intercompany supply chain are subject to compliance and audit on finance, accounting, transfer pricing, capital control, etc., in each Jurisdiction.

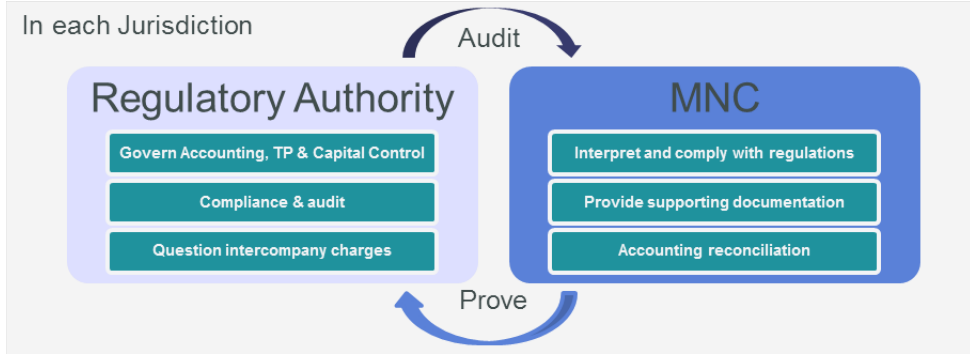
## Solution

- Document intercompany transactions, linkage, supporting documents contemporaneously through a blockchain-based application.
- Encode regulatory and trade rules in smart contracts to enhance control and compliance
- Complement exiting systems with minimal disruption

## Benefits

- End-to-end traceability & tamper-proof documentation for external auditing.
- End-to-end visibility with resolution preserved for CFOs, Treasurers, & Internal Auditors, etc.

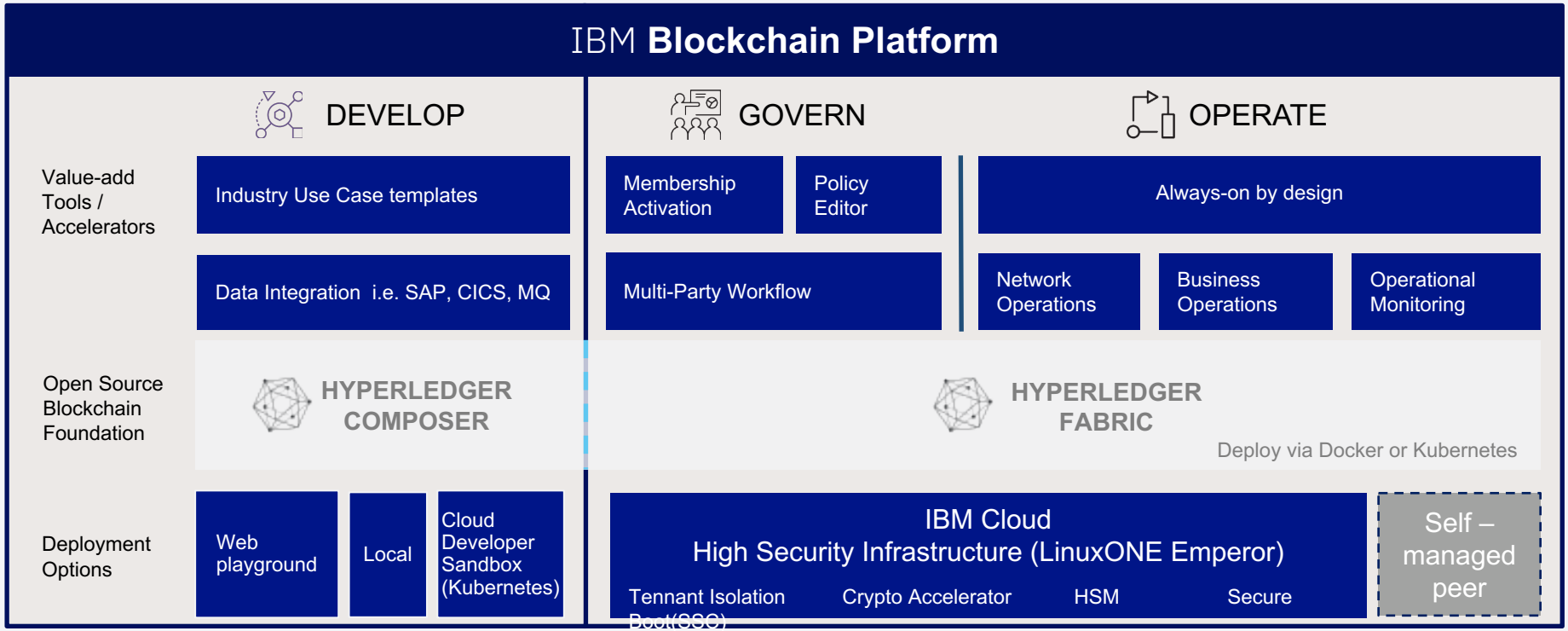


# IBM Blockchain

**Solutions** Food Safety, Universal Blockchain Payments Network, Identity, Private Equity etc…

**IBM Extensions** Watson IOT, API Management, Messaging, Workflow etc...




Included in IBM Blockchain Platform

Supported via IBM Certified Docker Images

Coming soon

# JUNIPER RESEARCH "Blockchain Awareness, Deployment Status & Perceived Benefits" August 2017

## IBM RANKED NO 1 BLOCKCHAIN TECHNOLOGY LEADER

### Sited as Number 1 by More than 4 in 10 Respondents to Juniper Survey

Hampshire, UK – 18th September 2017: A new study from Juniper Research has found that IBM is clearly regarded as having the strongest credentials in the blockchain sector, well ahead of competitors.

**Blockchain Technology Leaders**

1. IBM
2. Microsoft
3. Accenture

Almost 400 company founders, executives, managers and IT leaders responded to Juniper's Blockchain Enterprise Survey. Amongst enterprises either actively considering, or in the process of deploying blockchain technology, more than 4 in 10 (43%) ranked IBM first - more than twice the proportion selecting second-placed Microsoft (20%).

According to the study, this reflected IBM's high-profile R&D engagement with initiatives such as Hyperledger and its extensive list of blockchain clients across an array of key verticals and use cases, including banking, asset tracking and the music industry.

Read more in Juniper's complimentary whitepaper, *'Which Industries are the Best Fit for Blockchain?'*

### Initial Blockchain Tests Spur Further Investment

Amongst respondents who were prepared to state their levels of investment in blockchain, more than two-thirds (67%) stated they had already invested more than $100,000 by the end of 2016, while 91% of these companies confirmed that they would be spending at least this amount in 2017. The study stated that this suggested most initial investments had delivered results that were sufficiently encouraging for companies to pursue more extensive trials and/or integrations.

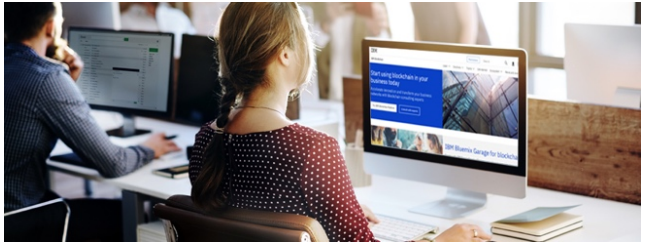
### Bitcoin Blockchain – Ill-Suited for Most Commercial Deployments

However, the accompanying report urged companies to focus on private blockchains for commercial deployments, rather than utilise public chains such as Bitcoin. It argued that most corporate applications would require the capability to restrict access to permissioned users, while companies would also need to have a degree of control over the development of the blockchain on which their systems have become dependent.

According to research author Dr Windsor Holden, *"Even if companies conduct initial testing using a public blockchain, in most cases the shortcomings of these chains should disqualify them from many use cases, including financial settlement, public sector deployments, logistics and land registry."*

https://www.juniperresearch.com/press/press-releases/ibm-ranked-no-1-blockchain-technology-leader

# Getting started on your blockchain journey



## Learn More About Blockchain

## Schedule an IBM Blockchain Workshop

## Develop a Blockchain Application

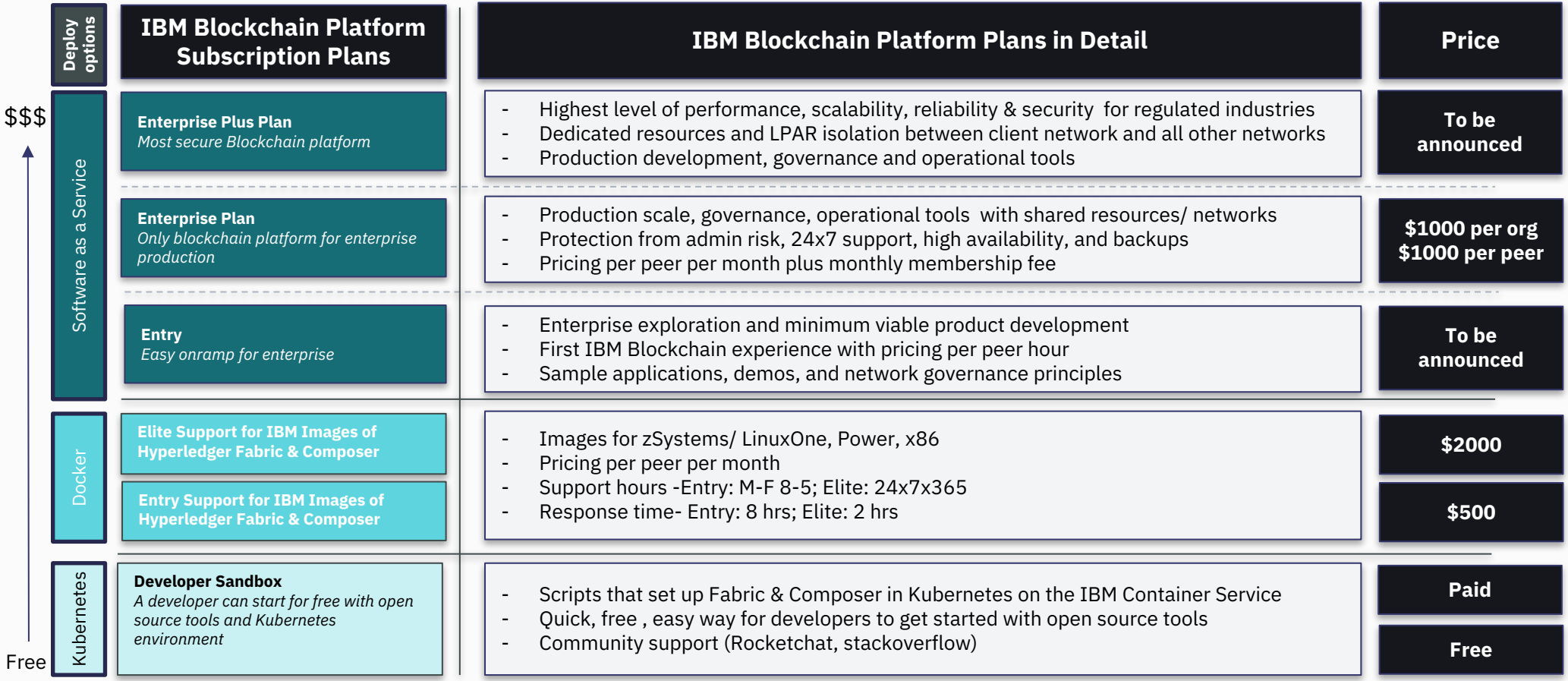

## Activate and Grow your Blockchain Network

# Thank you!

https://www.ibm.com/blockchain/

mwieck@us.ibm.com

# IBM Blockchain Platform Offering Overview



# What is new in the IBM Blockchain Platform for 2018?

## 1Q18

### ✓ New Starter Plan (Beta)
Get started using the IBM Blockchain Platform and experience production blockchain with a low cost plan built for pilot projects

### ✓ Smart Contracts & Analytics Tools
Tech preview of analytics and smart contracts tools make it straightforward to leverage samples, build applications, and capture insight from blockchain ledgers

### ✓ Ultimate in security and isolation
New, limited offer, Enterprise+ Plan is ideal for large enterprises in regulated industries that need more control to meet SLA's. Get the HA of Enterprise on dedicated compute. Build networks in your own clusters!

## 2Q18

### ✓Starter & Enterprise Plus Plans GA
Refresh includes Fabric v.1.1 and Composer, with JavaScript chaincode; performance improvements, new security features, samples and CouchDB for high performance query

### ✓ Hybrid Networks
Integrate peers deployed across environments through the IBM Blockchain Platform to address data residency requirements

### ✓ Multi-Site Disaster Recovery
Multi-site Disaster Recovery solution, enabling business networks that are continuously available.

## Forward

### ✓ DevOps & solution components
Manage accounts across network participants; onboard and manage members; manage secure documents, archive and ledger storage; identity and payment integrations; additional operational and governance tools

### ✓ New deployment & storage options
Enable clients to deploy blockchain in the environment of their choice and integrate with the IBM Blockchain Platform; extended storage capabilities

### ✓ Non-disruptive Hyperledger updates
Upcoming Hyperledger releases of Fabric, Composer and Indy. Delivering extended consensus models- RAFT, PBFT, Zero knowledge proofs; reuse of external packages; links; audit and archive

### ✓ Global blockchain footprint
Expanding data centers to worldwide with over 20+ sites in scope including disaster recovery, SOC2 Type 2 and FedRamp
All data centers certified to ISO27001 industry standard compliance



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