Blockchain for the Enterprise

Miroslav Iwachow
IBM
Basic Business Concepts of an Enterprise Blockchain

- **Business Networks** connect businesses
- **Participants** with Identity
- **Assets** flow over business networks
- **Transactions** describe asset exchange
- **Smart Contracts** underpin transactions

Blockchain provides an immutable, shared, replicated ledger
Various Ledgers for different Jobs

- **Hyperledger Burrow** is a client including a built-to-specification Ethereum Virtual Machine. Contributed by Monax
- **Hyperledger Fabric** is a permissioned blockchain infrastructure, originally contributed by IBM and Digital Asset
- **Hyperledger Iroha** was written from scratch in C++, with an emphasis on supporting mobile applications. Contributed by Soramitsu
- **Hyperledger Sawtooth** is a dynamic hot swapping consensus algorithms in a running network, contributed by Intel
- **Hyperledger Indy** is a project for supporting independent identity on distributed ledgers
Towards a Network of Networks

Global trade
- Port Authority
- Shipper
- Air transport
- Manufacturer
- Regulator

Trade finance
- Correspondent Bank
- Importer
- Insurance
- Merchant Bank
- Distribution
- Regulator

Insurance
- Brokers
- Underwriters
- Retail
- Syndicates
- Consumers
- Agricultural
- Manufacturer
- Producer

Agricultural Manufacturer Production

IBM Blockchain
IBM Solutions

- Food Trust
- TradeLens
- World Wire
Re-imagining digital business processes

**IBM Food Trust™**

- **Manage quality risk:** enable rapid, low cost, food recalls
- **End to End transparency:** data sharing extends beyond 'one up, one down'!
- **Trust and Audit:** ensure provenance with easily trusted, auditable records.
- **Consumer confidence:** comprehensively communicate with end consumer

**TRADELENS**

- **Connects the ecosystem:** brings together ports, terminals, ocean carriers, government authorities, etc
- **Drives true information sharing:** real-time and seamless actionable insight
- **Fosters collaboration and trust:** automate cross-org business processes
- **Shared visibility** and shared state for shipments

**World Wire**

- **24x7 payments:** payment support regardless of size, origination, destination or asset type
- **Higher visibility:** for streamlined transactions with reduced disputes and reconciliation needs
- **Regulatory compliance:** enhanced through improved transparency
- **Secure network:** with interaction and eligibility criteria & robust access control
Food Trust
Today the food industry is focusing efforts around several key opportunity areas:

- **Food Safety**: 1 out of 10 people get sick each year, and 420,000 die from foodborne illness.
- **Supply Chain Optimization**: 80% of CPGs say their business is partially or entirely paper-based, resulting in inefficiencies and unnecessary costs.
- **Food Waste**: 1/3 of global fresh fruits and vegetables are thrown away because their quality has dropped to unacceptable levels.
- **Consumer Demand**: Only 1 in 4 consumers trust today’s food system. 94% say they’d be more loyal to brands that offers transparency.

Each of these issues can be addressed with **end-to-end supply chain visibility**...

...However, creating end-to-end supply chain visibility requires **enabling companies to share data on their own terms, in a trusted and protected manner**.

*Part of 2018 roadmap for delivery*
IBM Food Trust leverages blockchain to address main food industry concerns

- Food Safety
- Supply Chain Optimization
- Food Waste
- Consumer Demand

IBM Food Trust solution provides secure access to end-to-end food supply chain information via specialized modules.

Early Adopters

*Part of 2018 roadmap for delivery
IBM Food Trust is open too all participants in the food ecosystem

IBM Food Trust is building a robust ecosystem which includes:

- All companies across the food supply chain
- Third-party partners
  - Device-makers, QA testers, label makers
  - IT and consulting companies
  - Standard-setting bodies

and growing...
The cost of global trade is estimated at $1.8 trillion annually\(^1\) with potential savings from more efficient processes of ~10%.

More than \$16\ trillion in goods are shipped across international borders each year.

80% of the goods consumers use daily are carried by the ocean shipping industry.

By reducing barriers within the international supply chain, global trade could increase by nearly 15%, boosting economies and creating jobs\(^2\).

In many cases the administrative cost of moving a container is higher than the cost of physically moving it.

---

1) Maersk Strategy Group (May 19, 2016) based on World Bank data for World Trade Costs
IBM and Maersk have launched TradeLens
An open and neutral supply chain platform poised to transform the industry

- TradeLens is built for the industry and offers benefits to trade participants from across the supply chain ecosystem
- Responding to industry feedback, IBM and Maersk have revised the approach and are proceeding under a Collaboration Agreement, which offers greater flexibility and responsiveness to industry feedback
- An Industry Advisory Board will help to shape the platform and drive standards
- Maersk Line and Hamburg-Sud are participants under the same terms as other network members
- Core platform components are available today under an Early Adopter program; full release remains on target for Q4 2018

Update: 20% of the Global Market Shipping container market more than 100 organizations and 20 major port operators at the end of 2018
over 500 million transactions in less than 2 years

Now covers almost 50% of all global container shipping

Over >100 participants

Expect 5% growth in World GDP

Saves 40% of journey time on average

Over >100 participants
The TradeLens Platform
Digitizing the global supply chain

Connects the ecosystem
Brings together all parties in the supply chain - including traders, freight forwarders, inland transportation, ports and terminals, ocean carriers, customs and other government authorities, and others - onto a Blockchain-based platform with a secure permission and identity framework.

Drives true information sharing
Provides for the seamless, secure sharing of real-time, actionable supply chain information across all parties to a trade - encompassing shipping milestones, cargo details, trade documents, the structured data embedded in trade documents, customs filings, sensor readings, and more.

Fosters collaboration and trust
Enables the digitization and automation of the cross-organization business processes integral to global trade, including import and export clearance, with Blockchain ensuring secure, auditable, and non-repudiable transactions.

Spurs innovation
Lays the foundation for ongoing improvement and innovation through an open, non-proprietary API, the use of standards and promotion of interoperability, and the launch of an Applications Marketplace that parties can use to build and deploy TradeLens-powered applications for themselves, their partners, and their customers.
With TrandeLens, the entire supply chain ecosystem shares a single trusted view of shipping events and documentation filings.

**Export**
- Exporter / BCO
- 3PL Service Provider
- Inland Transportation
- Port / Terminal
- Customs Authorities

**Import**
- Port / Terminal
- Customs Authorities
- 3PL Service Providers
- Inland Transportation
- Importer / Consignee

**Global Trade Digitization**

**Shipping Information Pipeline**

**Paperless Trade Blockchain Network**

Not exhaustive list of Events tracked by GTD

**Note:** representative only; not all documents require Paperless Trade nor is this an exhaustive set of documents that could be processed by Paperless Trade.
World Wire
Current international payments

Correspondent banking fees, pre-funding requirements and exotic currency exchanges are just a few factors that continue to inflate the true cost of cross-border payments and transactions.

Cross-border payments rely heavily on traditional correspondent banking relationships — a process requiring multiple intermediaries — taking days or even weeks to complete.

Privacy and security concerns have given rise to new, often competing regulatory requirements — increasing the complexity of the governance structures among disparate payment systems, inhibiting coordinated change.

The involvement of multiple intermediaries creates a complex web of procedures hindering end-to-end visibility of cross-border payments — often resulting in error-prone and faulty transactions that must be reconciled later.
Using a digital asset model, World Wire enables the near real-time settlement of transactions with finality through the use and exchange of digital assets. Holding real-world intrinsic value, a digital asset is used as the means for settling transactions — serving as an agreed upon store of value exchanged between parties to fulfill payment obligations.

By leveraging a digital asset model, our solution is able to uniquely integrate the payment instruction messages and the chosen digital asset to settle proposed transactions, into a single network that enables value exchange and funds transfer to be executed in near real-time at a fraction of the cost and time of traditional correspondent banking.
The IBM Blockchain World Wire difference

Sending money across borders today requires a series of intermediaries for both clearing and settlement, each adding time and cost to the process.

With IBM Blockchain World Wire, clearing and settlement with finality happens in near real-time. The solution uses digital assets to settle transactions, serving as an agreed-upon store of value exchanged between parties as well as integrating payment instruction messages.

It all means funds can now be transferred at a fraction of the cost and time of traditional correspondent banking.

Key Takeaways

- The **IBM Blockchain Platform** puts the experience of over 500+ Client engagements and multiple active networks at your ecosystem’s fingertips.

- **It is the only** integrated business-ready platform that empowers a group of institutions to activate a decentralized blockchain network in record-time.

- The **IBM Blockchain the End –to –End partner**