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Making Blockchain Real for Business

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IBM Blockchain

1980



....a few weeks later









2017

Instantaneous network of communications





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Blockchain will fundamentally change business processes



... Inefficient, expensive, vulnerable

... Consensus, provenance, immutability, finality

Blockchain works with the current legacy systems



Blockchain for business ...

Append-only distributed system of record shared across business network

Ensuring appropriate visibility; transactions are secure, authenticated & verifiable



Business terms embedded in transaction database & executed with transactions

All parties agree to network verified transaction

... Broader participation, lower cost, increased efficiency

Blockchain Benefits





Removes cost



Reduces risk



Increases trust

IBM

Go!!!!

- Shared profits (+1 party)
- Several parties

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- Shared data /interaction
- Elements subject to dispute (TRUST)
- De-intermediation
- High value benefits

Don't'go III!

- Real Online Time transactions
- Smalls organisations (No Network)
- Replace a Data Base or a transactional tool
- Small business benefits
- 1 party Benefits for one party/Only one data owner

Public Bike rent in the Netherlands





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Walmart & IBM are envisioning a fully transparent 21st century digitized food system



- 5 to 8 years for a mango tree to mature and bear fruits
- Mangoes grown by small farmers in Central or South America
- Shipped to a packing house to get washed and boxed
- Shipped to the US by air, sea or land (custom border)
- Washed, peeled, sliced and put into containers in a facility center
- Shipped to Walmart distribution center to get refrigerated
- Transported to store, refrigerated and put on shelves

© 2017 IBM Corporation SOURCE: Frank Yiannas and Walmart are the source for this slide content.

The Most Important Food Project in China



- secure documentation of key information on raw materials, machinery (certifications etc.) and processing
- create product packages with electronic bar/QR code informational labeling for regulators and consumers
- aggregate products into packages

- disaggregation of product packages and re-packaging for retail stores
- validation of packages to ensure no fraudulent replacements or inducing of counterfeit ones
- visibility of product packages across the transport lines

- retrieval of traceability information during checkout: easy to use mobile apps
- checkout transactions disabled for expired products (or alarm raised)
- customer ratings and
 preferences with regard to
 the source of the product

- end-to-end visibility of each product path across the supply chain
- check **compliance** w.r.t. machinery, expiry dates, product quantities, etc.
- certify the supply-chain;
 creation of audit records

UNDERLYING BLOCKCHAIN PROVENANCE CAPABILITIES

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association of labeling with data on Blockchain product data aggregation and disaggregation end-to-end permissioned visibility authentic traceability through immutability information retrieval in a simple manner

audit capabilities: handle changing regulations through smart contracts

Blockchain Letter of Credit: HSBC & BAML

Figure shows typical network participants in a Letter of Credit: Importer, Exporter, Importer Bank, Exporter Bank and Ports.

- Using a client app, the importer invokes chaincode to create a LC.
- The LC is distributed and replicated in the network (with consensus)
- Transactions can be triggered from any network node, but are always forwarded to validating nodes to all validating peers for consensus, or agreement, on the proposed order. (Example add docs as invoice)
- If the order of transactions is agreed upon, the transactions are executed and appended to the ledger on each validating node. The ledger is then replicated to all network nodes.



Maersk and IBM Unveil First Industry-Wide Cross-Border Supply Chain Solution on Blockchain

IBM And Maersk Apply Blockchain To Container Shipping





IBM and Maersk are using a blockchain built on the Hyperledger Fabric to manage the supply chain for container shipping.

Maersk, the Danish shipping company, is the largest container carrier in the world with 18% to 20% of the market, did a proof of concept (POC) with IBM in September, tracking a container of flowers from Mombasa, on the coast of Kenya, to Rotterdam in the Netherlands.

Ramesh Gopinath, IBM's vice president of blockchain research, said all the documents for shipping containers can be fully digitized and the containers can be tracked. In the September POC, the shipping cost \$2,000 and the paperwork could be about \$300, or 15 percent of the cargo's value.



Container shipping is paper-intensive.

Traditionally, a simple shipment of refrigerated goods from East Africa to Europe can go through nearly 30 people and organizations, including more than 200 different interactions and communications among them, said the IBM announcement.

Global Trade – Key Challenges



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

Important principles

- Detailed information remains under the control of the owner
- As neutral as the Internet
- Fault tolerant
- Everyone can work in their own systems



IBM Blockchain Engagement model



- 1. Discuss Blockchain technology
- 2. Explore customer business model
- 3. Show Blockchain Application demo



- 1. Understand Blockchain concepts & elements
- 2. Hands on with Blockchain on Bluemix
- 3. Standard demo customization



- 1. Design Thinking workshop to define business challenge
- 2. Agile iterations incrementally build project functionality
- 3. Enterprise integration



- 1. Scale up pilot or Scale out to new projects
- 2. Business Process Re-engineering
- 3. Systems Integration

| Remote | Digital | Face to face | Face to face |
|--------|---------|--------------|--------------|
| | | | |

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IBM Blockchain Offerings supporting Hyperledger Fabric



More Information



Blockchain Demo with Real Time IoT Events

https://www.ibm.com/internet-of-things/platform/private-blockchain/



Blockchain for Dummies

https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=XIM12354USEN



IBM Watson How it Works

https://www.youtube.com/watch?v=_Xcmh1LQB9I





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Thank you!



blockchain funding model options

Three financial model options for Founders (F), Network Members (M) or Solution Providers (SP)





Use case: Improved Documentary for Trade Finance

What?

 Automate current inefficient, manual and error-prone workflows in documentary trade finance (e.g., letters-ofcredit) via *smart contracts* on the blockchain

How?

- Shared ledger for storing all relevant documents
- Smart contract to model the workflows associated with the shared documents and data across participants

Benefits

- 1. Faster transactions with less complexity
- 2. Improved transparency and visibility => fewer errors
- 3. Lower cost of transactions



Supply Chain: Freight Transportation IoT & Blockchain

- Track instrumented package shipments
- Transactions shared between parties
- Smart contracts executed automatically



Use case: Efficient and cost-effective Trade Logistics

What?

Transform international trade through automation, increased transparency and effective multi-party co-ordination of logistics using the Blockchain.

How?

Logistical information continuously fed on to the blockchain

(good status/position, documents, container free capacity, etc.)

Maze of regulations effectively implemented through *smart* contracts

On-boarding of all the players on to the same distributed ledger

Benefits:

Reduced cost and risk through automation, verifiable and secure tracking of physical risk and events in supply chain. Increased visibility of logistic info. / docs. across the supply chain Enables new business model innovations for trade commerce e.g.: a global digital trade platform that enables logistics, finance and supply chain as a single integrated business

