Blockchain-enabled supply chain

San Francisco, CA
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Agenda

A. Why blockchain for supply chain?

B. What is supply blockchain management?

C. Use cases

D. Journey to the future

E. Credentials
Why blockchain for supply chain?

- Blockchains in the **financial world** provide what is called ‘digital continuity’

- In **Supply Chain**, most exchanges bring together different parties that have no reason to trust one another

- Blockchains play a key role here and can help **eliminate** duplicative and error-prone transactions - helping create Digital Identity
Blockchain can provide a solution...

**Structural features**

- Technology for sharing information...
- ...which allows for multiple parties...
- ...whose entries are verified and therefore trusted...
- ...forming a public record visible to all..

**Common benefits**

- Decentralized
- Multiple owners
- Multiple writers
- Synchronized ‘real time’

**What it means for Supply Chain**

- ...such as the origin and authenticity of goods...
- ...including manufacturers, customers, suppliers...
- ...meaning customers can trust third parties...
- ...so all parties have access to data around a good...

- Trust through design and rules
- Verified through mutual consensus
- Chronological chain of activity
- Undeletable
Blockchain opportunities across the supply chain ecosystem

Planning and forecasting
- Demand forecasting and planning

Procurement and manufacturing
- Procurement ecosystem
- Carrier contract management
- Manufacturing ecosystem

Supply chain financials
- Carrier payment
- Customer billing
- Driver pay

Visibility
- Control center
- VMI - Vendor Managed Inventory (SKU)

Asset management
- Lease management
- Insurance management
- Maintenance management

Execution and operations
- Brokerage and freight forwarding (international trade)
- Digital BOL
- Trade compliances
Supply blockchain use case exploration
Could blockchain give us the luxury of a fake-free world?

There are three types of business affected most by counterfeiting:

- Brands
- Retailers
- E-commerce platforms

Impacts of counterfeiting

- Loss of Revenue - esp. resale (10% of sales)
- Loss of Market share
- Damage to Brand
- Lack of trust from consumers

Changing customer

- Customer demanding greater trust and supply chain transparency/audibility

Why blockchain?

- Allows brands to show path of a product from a raw goods to manufacturer to distributor to retailer to consumer and even then to the resale market
Use case: Supply chain product certification

Carve supply chain into the body of the blockchain

What could blockchain do?

Blockchain protected supply chain framework

► The product ledger will hold the key properties of components, quality, quantity and custody at a given point in time. These attributes are stored in a secure infrastructure and can be represented in consumer-facing applications. It will be readable and linked from pre-existing datasets.

► Every relevant participant will also be an interested party to perform quality assessment, audit network and get verification from relevant performing party. Participants are - producers, manufacturers, registrars, standards organization, customers, certifiers and auditors.

Impact:

- Incomprehensible network of product trace
- Supply Chain mass contamination of products
- Counterfeit parts in product inception

A Blockchain solution provides:

✓ Brand value for products
✓ Decentralizing the technology shared architecture
✓ Mutual trustless trust established
Use case: Blockchain powered Industrial IoT

Connect industrial assets to a protected and secure digital marketplace

What could blockchain do?

Blockchain can provide secure IoT digital marketplace

- Blockchain provides secure machine-machine communication and distribution of smartly produced data.
- It’s decentralized server adds a layer of security to file storage and transfer, determine roles and permissions, trustless peer-to-peer messaging, secure distributed data sharing and healthy equipment coordination.
- It can facilitate tracking production, distribution, consumption, and auto detect problems to initiate a response rapidly and cost-effectively.

Impact:

- Data gathered in IoT network is futile
- Centralized cloud infrastructure
- Manual tracking of production, distribution and consumption

A Blockchain solution provides:

- Safe distribution of smartly produced data
- Secure transfer of financially sensitive information
- Auto-installation service requests
Use case: Tracking and traceability of goods

What could blockchain do?

Blockchain can provide information around the origin of goods

- Blockchain provides an immutable, trusted and shared record of transaction data
- With its verifiable and decentralised nature, retailers and manufacturers can track the origin and location of a product at any point along the supply chain at any given time
- Blockchain could eliminate burden on one trusted centralized party when dealing with multiple parties in multiple jurisdictions exchanging multiple physical goods and multiple documents and settlements by decentralizing the authority

Impact:

- Lack of confidence in retailer
- Possibility for contamination
- Potential for mis-labelling of goods

A Blockchain solution provides:

- Reassurance to customers particularly those with requirements e.g. Kosher/Halal
- Helps avoid PR disasters
- Helps maintain status as an ethical retailer

Record trail and screen every product-trade transaction
Use case: Supply chain smart contracts

**Protected blockchain-enabled contract engagement**

**What could blockchain do?**

Blockchain can reduce countless hours of marketplace research

- Blockchain holds the secure coding of all documentation related to a particular object – patent, warranty, provenance, registration, insurance, inspection certification which helps in gaining control of that object.
- With this infrastructure in place an interested user can select a car lease option and sign the documents, record the signed contract to the Blockchain thereby eliminating third parties to sign for approvals.
- The vehicle itself being one of the intelligent object in the Blockchain marketplace has ability to diagnose, schedule and pay for its own maintenance services.

**Impact:**

- Scores of documentation review
- File through to find vacant assets
- Trust centralized single part for financial settlements

**A Blockchain solution provides:**

- Auto-monitoring of parties
- Secure financial transaction verification
- Reduce time in research
- Real-time discovery, usability, and payment
**Situation**
In shipping and logistics industry the traditional BOL systems are paper based and highly susceptible to fraud and inefficiencies.

**Problem**
Physical BoL is a non-enforceable contract today as well as replicable and insecure. Not easy to share the document with contract parties and stakeholders. The terms of the contract aren’t self-executing to trigger an alert via connected devices when the terms have been breached.

**Solution**
BOL is a pivotal document in shipping for both consigner and consignee. BOL can be digitized on a Blockchain and terms of shipping contract can be executed in code based on real-time data provided from IoT device (Smart Agents) that are installed on shipping containers.
Journey to the future
Experimentation to implementation

**Use case selection**
- Right representative
- Quick value delivery
- Set stage for revolution
- Unlock growth potential

**Platform selection**
- Thrust in development
- No compromise to business
- No or less limitations
- Customizable
- Business network model

**Partner selection**
- Blockchain and enterprise expertise
- Platform and Protocol assessment
- Understand your Ecosystem
- Experience to monetize
Credentials
Leading manufacturing company
Blockchain Proof of Concept (PoC)

Challenges

Our client’s procurement organization has compliance issues related to third party, pass through pricing from their Raw and Packaging (R&P) Suppliers to Contract Manufacturers.

There are defined instances where a contract manufacturer is directed to source from a specific suppliers(s) for R&P materials. Our client has already qualified the source and negotiated pricing, with price breaks aggregating from total volume usage and specified Minimum Order Quantities. Audits reveal a lack of adherence to the correct raw and packaging material pricing, necessitating time consuming and recurring reconciliation efforts on a quarterly basis.

Project Approach

EY provided the following services in a five week engagement to our client to evaluate a blockchain solution for the compliance related issue.

- Created a working prototype that demonstrates the key features required to manage a contract manufacturer supply chain in a blockchain environment
- Built a high level business case for doing the blockchain implementation across all of our client’s contact manufacturers and other targeted areas within supply chain
- Documented the solution design and architecture diagram, as well as functional requirements
- Built a roadmap based on the prototype, including next steps for a pilot expansion into the clients supply chain
- Provided the code repository and documentation of the developed prototype

Potential value – Blockchain enabled solution

- Significant reduction of value leakage across the contract manufacturing and supplier network
- Elimination of the Price Verification process
- Visibility of transaction across the entire contract manufacturing and supplier network
- Full cost pass through of raw and packaging pricing each time
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