



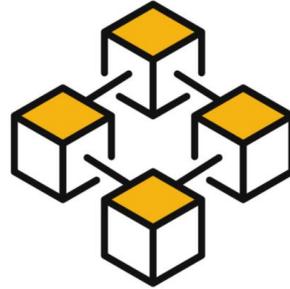
Blockchain's Prospects for SCM

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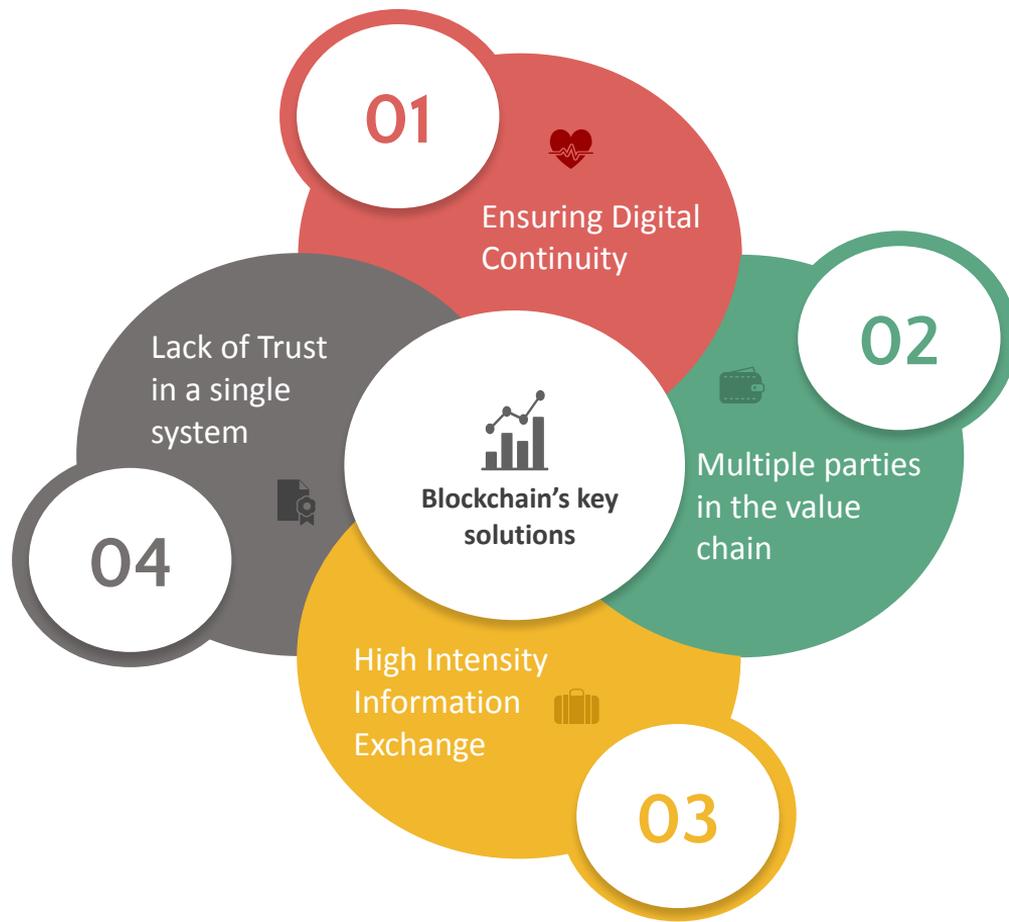
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Blockchain's prospects for SCM



By Amurut Mathew Koshy
May 2021



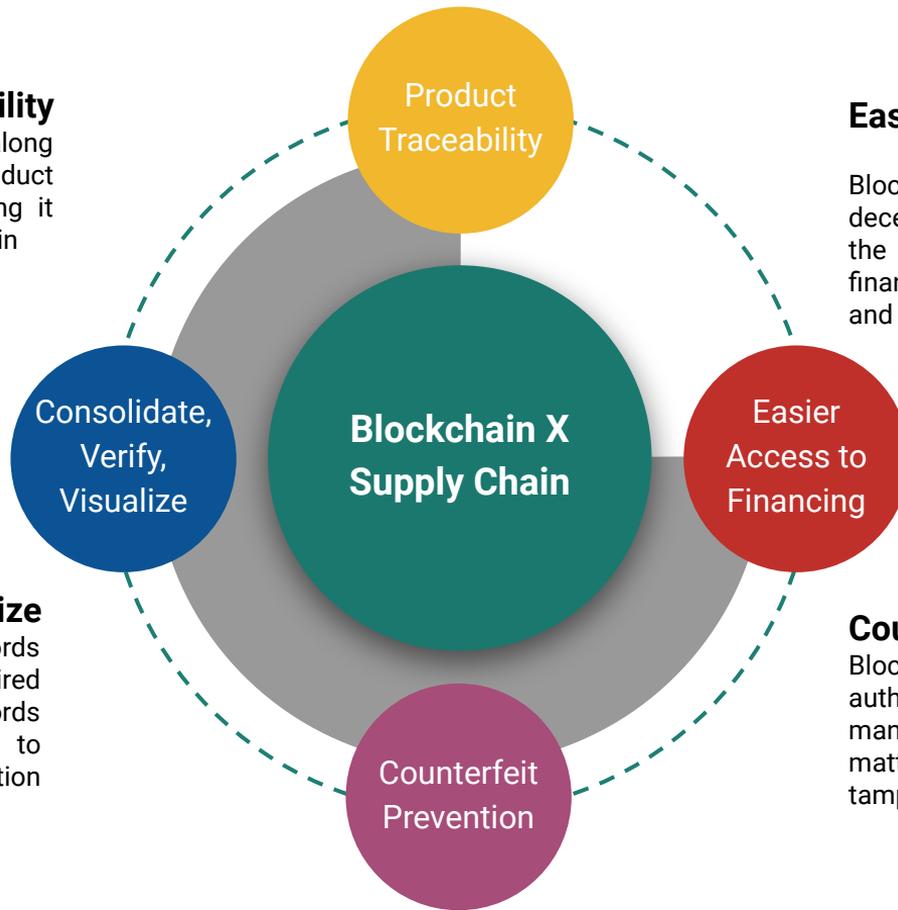
When does using a Blockchain System make sense ?

Product Traceability

All entries in the blockchain are added along with the history of ownership of the product and details of the transactions, making it simple to trace a product right to its origin

Easier Access to Financing

Blockchain by definition is trustless and decentralized, which means that no element of the chain is left to chance. This enables financiers to take financing decisions faster and based on verified data



Consolidate, Verify, Visualize

Faster Processing, and error free records make it easier to consolidate all required records from a set, verify said records accurately without susceptibility to tampering and have real time visualization of a product from origin to destination

Counterfeit Prevention

Blockchain by protocol, establishes authenticity. The details of the product from manufacturer to retailer and resale are a matter of public record and immune to tampering.

Use Case 1 : Maersk – TradeLens



Prior to adoption of BlockChain, Maersk Shipping had

- ❖ An Average of 30 people involved in shipping a single container
- ❖ Over 200 sets of transactions per shipment
- ❖ Each Set requires its own supporting documentation, which is still susceptible to error and tampering

Maersk alone is responsible for 18-20% of the world's shipping traffic, with 630+ ships and a valuation of upwards of 250 billion USD.

TradeLens

- ❖ Maersk, along with IBM piloted a concept blockchain system using HyperLedger in 2018
- ❖ The goal : track vessels & shipping containers via the immutable electronic ledger
- ❖ Formally adopted as TradeLens
- ❖ Features : Smart Contracts, eBLs
- ❖ Today, the world's top 5 shipping firms have incorporated TradeLens into their systems



P&G, which is one of the world's largest importers of raw materials, is extending the use of TradeLens to its own Supply Chains to get a comprehensive view of the cargo data

Other Use Cases

FOREVERMARK



DE BEERS GROUP

Diamond Tracking :

- ❖ Blood Diamonds are diamonds often mined in violent circumstances and proceeds are used to fund many regional conflicts
- ❖ De Beers introduced a blockchain supply chain system, **Tracr**, where diamonds were tracked from mine to store
- ❖ The blockchain stored information on quality, color, location etc. Live photos of the diamond were added to the blockchain at various stages for added protection.

Oil Supply :

- ❖ **ADNOC + IBM** launched a blockchain to track individual barrels of Oil from wells to refineries and further along.
- ❖ Automated transactions, live tracking, hassle-free shipping

Fashion: Provenance + Designer Martine Jarlgaard implemented blockchain as part of their cloth supply chains.

Garments could be easily tracked and traced to ensure customer satisfaction and authenticity

Supporting Systems

While data stored in a blockchain is highly resistant to error, tampering and manipulation, the same cannot be said for the physical goods/cargo. To this effect, blockchains are now being paired with Dapps and IOT

D-apps/ Distributed Apps

- ❖ Specially designed apps called distributed applications,
- ❖ Used to check data integrity, and communicate with the blockchain to prevent errors or miscommunications
- ❖ Specially designed apps having a carefully constructed Frontend UI with smart contracts having an underlying blockchain protocol.
- ❖ The apps are decentralized and often have multiple validations at different stages for a single product

IoT

- ❖ Sensors installed in cargo bays and warehouses.
- ❖ Shipping Containers are also reused which makes some of the investment costs viable over long term returns
- ❖ Sensors are automatically connected to the blockchain
- ❖ Can scan products and add/update records without human intervention

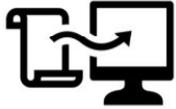
The Near Future

- ❖ Triple-Entry Bookkeeping :
 - Bookkeeping has traditionally involved 2 records.
 - 3rd entry to be the transaction verification or the seal of the transaction which can be added with blockchain

- ❖ Autonomous, Distributed Marketplaces
 - Decentralized records allow for better overall view of products in a system.
 - Products on the system will be authentic.
 - Lesser need for manual entry at individual retail level etc.
 - Blockchain will keep records of inbound and outbound products, as well as stock levels without any human intervention

- ❖ Digital Supply Chains
 - Supply of digital products like games, books, documents, software etc can now be protected with Blockchain preventing illegal copies and so on.

Challenges



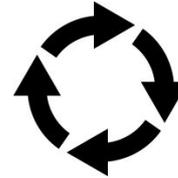
Errors in **Digitization** /
Intentional malpractice.
Can be overcome by integrating
Blockchain and IoT



Different and sometimes, conflicting
legislations exist for blockchain in
different parts of the world, need to
account for all of them



Complexity and Lack of
understanding of parties
involved



Ecosystems need to be educated and
created around the use of blockchain in
order for it to be successful



Data **Governance** and
Confidentiality.
Can be overcome by using
suitable codes for products



Blockchain implementations may often
require supporting **architecture**, which
may prove to be too costly

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2. https://medium.com/@infopulseglobal_9037/blockchain-in-supply-chain-management-key-use-cases-and-benefits-6c6b7fd43094
3. Deloitte Perspective : Using blockchain to drive supply chain transparency
(<https://www2.deloitte.com/us/en/pages/operations/articles/blockchain-supply-chain-innovation.html>)
4. Blockchain technology for supply chains—A must or a maybe? : A McKinsey Report
(<https://www.mckinsey.com/business-functions/operations/our-insights/blockchain-technology-for-supply-chains-a-must-or-a-maybe>)
5. <https://consensys.net/blockchain-use-cases/supply-chain-management/>

Thank You