



BLOCKCHAIN IN SUPPLY CHAIN

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Supply Chain Excellence Strategies & Best Practices
for the Supply chain Professional



Executive Summary

- The use of blockchain technology offers a huge upgrade to the current supply chain system, which often relies on tracking physical paperwork between siloed parts of the multinational network. It is a trusted, decentralized network that allows for the transfer of digital values such as currency and data.
- By allowing digital information to be distributed but not copied, blockchain technology has created the backbone of a new type of internet.
- What follows we believe will provide you with enough knowledge to encourage you to do a “Deep Dive” and learn how Blockchain can help your business.

Background

The world of blockchain technology has undergone a big transformation over the past 10 years as the concept evolved from offering a simple means of exchange between two parties to a broad ecosystem full of protocols with real-world applications, ranging from decentralized finance to one-of-a-kind digital art.

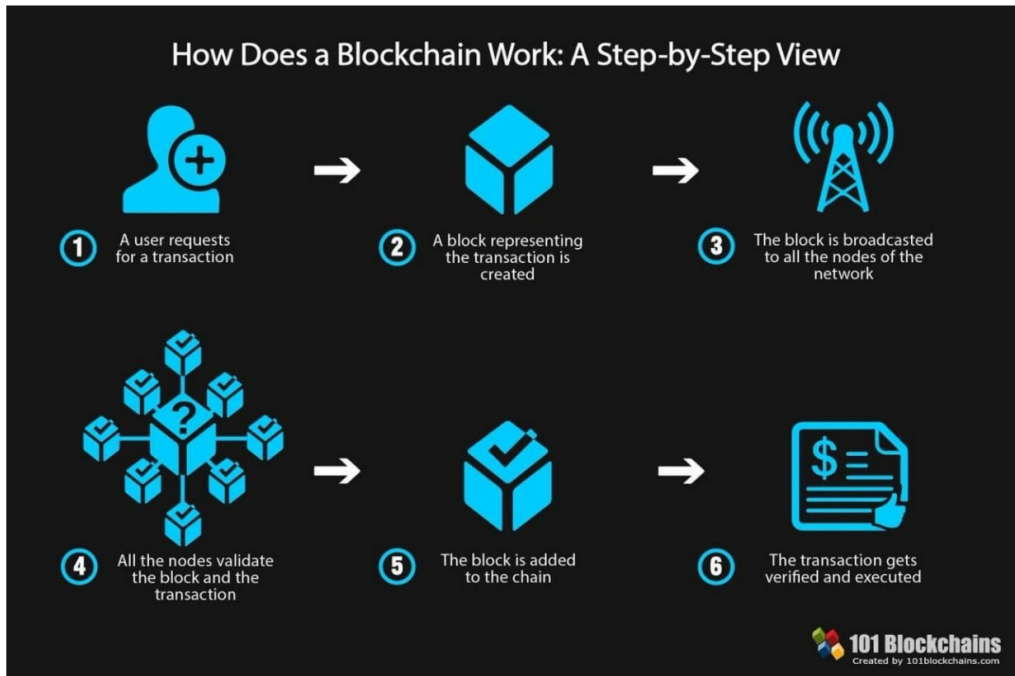
When it comes to the need for efficient and reliable management of supply chains, the cargo industry stands to benefit massively from blockchain. Each year trillions of dollars of freight are transported globally, 90% of which is sent via ocean freight.

Given that the major freight companies are among the **largest businesses in the world**, it is amazing to discover that much of their supply chain processes are still done using paperwork. The processing of such paperwork is usually very time-consuming as it must all be done manually, not to mention far riskier.

A lost document could cause huge delays as the handlers would need trace transaction documents by contacting the other party for copies etc.

A blockchain database could almost completely automate the entire process, all the way from the factory to the retailer. An initial block could be created for the goods as they leave the factory, thereby initiating the blockchain.

This block would detail the time, type, and quantity of goods, as well as the transport company's confirmation of goods received, etc. A new block could then be added for each step of the journey until the goods finally reach their destination.



Blockchain is a system of recording information in a way that makes it difficult or impossible to change, hack, or cheat the system.

A blockchain is essentially a digital ledger of transactions that is duplicated and distributed across the entire network of computer systems on the blockchain. Each block in the chain contains several transactions, and every time a new transaction occurs on the blockchain, a record of that transaction is added to every participant's ledger.

The decentralized database managed by multiple participants is known as Distributed Ledger Technology (DLT).

Blockchain is a type of DLT in which transactions are recorded with an immutable cryptographic signature called a hash.

This means if one block in one chain was changed, it would be immediately apparent it had been tampered with. If hackers wanted to corrupt a blockchain system, they would have to change every block in the chain, across all the distributed versions of the chain.

Examples of Blockchain

Think of a railway company, we buy tickets on an app or the web. The credit card company takes a cut for processing the transaction.

By using Blockchains, not only can the railway operator save on credit card processing fees, but it can also move the entire ticketing process to the blockchain.

The two parties in the transaction are the railway company and the passenger. The ticket is a block, which will be added to a ticket blockchain. Just as a money transaction on the blockchain is a unique, independently verifiable, and unfalsifiable record, so can your ticket be.

And the final ticket blockchain is also a record of all transactions for, say, a certain train route, or even the entire train network, comprising every ticket ever sold, every journey ever taken.

Another added bonus of using a decentralized technology is that it **helps prevent these records from being altered without authorization, as all parties have a record of the transaction.**

The same applies to a large cargo ship that can carry millions of dollars of freight, most of which is purchased on credit, the implementation of blockchain database technology will benefit the industry enormously.

The sooner manufacturers and distributors can agree on shipments and receipts, the sooner manufacturers can be paid for their goods. Getting paid faster improves financial liquidity for members of the supply chain.

Another advantage of the use of blockchain technology in supply chains comes though the ability to automate processes.

Smart Contracts

Smart contracts work by following simple: *“if/when...then...”* statements that are written into code on a blockchain. A network of computers executes the actions when predetermined conditions have been met and verified.

These actions could include releasing funds to the appropriate parties, registering a vehicle, sending notifications, or issuing a ticket.

The blockchain is then updated when the transaction is completed. That means the transaction cannot be changed, and only parties who have been granted permission can see the results.



The opportunities for the use of “smart contracts” as part of the blockchain within supply chain is endless the table below shows some examples.

 BANKING & FINANCE • Faster processing of cross-border payment • A higher level of security and privacy • Reduced costing and greater efficiency in transaction	 REAL ESTATE • Reduces costing of the property • Promotes fractional ownership • Increases scalability
 HEALTHCARE • Gets rid of drug counterfeits • Tracks patient information • Streamlines multiple test results at the same time	 MEDIA & ENTERTAINMENT • Better artist value • Connects artist with a better paycheck • Efficient marketing on social media
 ENERGY • Offer blockchain enabled energy delivery • Option to trade energy locally • Automate the billing process for the energy	 SUPPLY CHAIN • Secured ledger system with visibility for • Track all products • Quickly detects the corrupted personal with acute information
 GOVERNMENT • Secure way to preserve all citizen rights • Offers exponential growth of the economy • Digitizing citizen identification	 INTERNATIONAL TRADE & COMMODITIES • Improved transparency and trust for trade finance • More control for manufacturers • Reduced paperwork and cost
 OIL AND GAS • Secured freight payment and auditing • Improves efficiency by calculating shipment • Saves revenues with accuracy	 LAW • Templating of the legal documents to ease the creation of legal agreements • Electronic signing system for legal documents • Smart contract integration to streamline automatic payment for legal processes
 IDENTITY • Offers document less citizenship • Promotes portable identification • Reduces identity theft and data hacks	 INSURANCE • Reduces the number of paper trails • Faster insurance claims • No more exploiting consumers

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Blockchains have built in advantages

Blockchain technology’s biggest benefit to the supply chain is its ability to connect companies without giving one company a competitive advantage.

Blockchains also support the compatibility of tokens between locations, which means that not only will more information flow across a network, but it is likely to be more accurate. When you move digital tokens that represent an asset from one location to another, you must remove the tokens from the original location to put them into the new one.

This sounds simple, and its exactly what banks do with money. But it’s not standard procedure in supply chain interactions between companies.

Traditional Supply Chain - Challenges



Supply Chain with Blockchain - Benefits



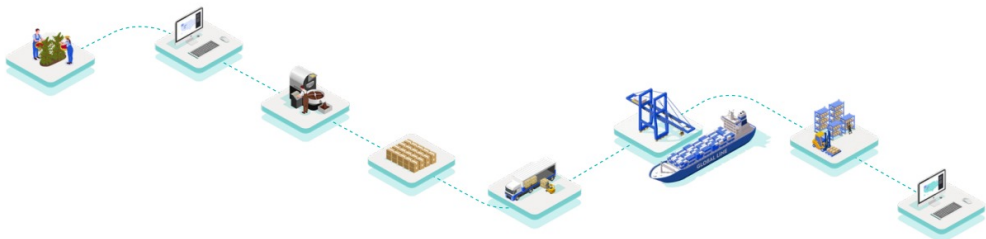
Another big benefit in the current environment is product track-and-trace/proof of provenance which continue to be key areas of investment.

So, are invoicing and inventory management, by removing friction from multiparty workflows, these systems save cost and time.

Being able to prove data provenance and integrity is another key use case.

We will increasingly see blockchain-based systems used to demonstrate compliance with regulations regarding data source and data handling.

Trustworthy data is also key to sustainability reporting; a bonus is that many blockchain-based solutions (e.g., track-and-trace, or contract compliance in resource extraction) already have this data.



Transparent Supply is a blockchain platform solution that allows companies to build their own data-sharing platform with their supply chain partners.

Blockchain Transparent supply is a collection of common services needed for supply chain uses cases that's built on the Hyperledger blockchain fabric, we share some of these services and the benefits below.

WINE Network - Vineyards, Distributors, Retailers, Tech Providers, Consumers

Objective: Create a secure supply chain monitoring environmental conditions for higher quality.

Use Cases: Provenance, Authenticity.

TIRE Network - OEs, Distributors, Retailers

Objective: Drive efficiencies through the supply chain to capture \$2B potential.

Use Cases: Auto-replenishment, Dispute Resolution, Inventory Opti, Demand Forecasting.

SEAFOOD Network - Farms, Suppliers, Processors, Exporters, Retailers, & Consumers.

Objective: Generate higher margins on trusted products by enabling consumer verification.

Use Cases: Provenance, Freshness, Authenticity.

COFFEE Network - Farmers, Co-ops, Traders, Roasters, Retailer, Consumers, Certification Orgs.

Objective: Connect consumer to farmers and enable sustainable circular economy.

Use Cases: Provenance, Consumer Engagement, Inventory Optimization.

MINING Network – Mining Companies, partners, Investors

Objective: Align document and product flow and de-commoditize your minerals with a data driven approach.

Use Cases: Provenance, prove ESG compliance, demonstrate carbon emissions.

Trust between parties

It is very hard to get companies that compete to work together. If you do get them to work together on a single problem and it doesn't work – then that's a lot of work for nothing.

A classic example of a shared network is an airport, used by many different airlines that are competitive with each other. Imagine a world where each airline had to build its own airport, it would be a mess.

But that is the system that we exchange our data in today. **Blockchain** solves a “social problem” it enables privacy and transparency at the same time when sharing data.

This is very useful whenever there are “issues of trust” between parties.

Therefore, anywhere there is a lack of trust in the exchange of information that obstructs a process it becomes a potential area to apply Blockchain.

Triple EFF's View

In this briefing we have provided you with some insight into Blockchain within Supply Chain.

Why should you care about blockchain, particularly in today's environment?

For the past 3 years, Global Supply Chain disruptions have driven home the need to increase process efficiency, improve supply chain visibility, and find new ways of collaborating, both internally and externally.

Digitizing processes and paperwork go a long way to addressing these issues; adding a blockchain element unlocks even more value.

Blockchain-based systems further increase efficiencies and savings through enabling the automation of multiparty workflows and processes and allowing value chain participants to reinvent entire processes.

Companies are also working on entirely new business and service models that would not be possible without blockchain technology.

We are of the firm belief that ***“Knowledge not shared is Energy wasted”***.

This is one of the main reasons why we have prepared this paper, the other reason is to help you on your way to get to ***“What good looks like for your business”***.

Call to action

To get the best from blockchain, ***think big, but start small***.

Your goal may be to completely revamp all your businesses supply chain processes; our experience suggests that you will not get buy-in for that.

So, we say that it's best to start with a project that can go from pilot project to production quickly. One that makes an existing process more efficient, will result in a win/win situation.

Tangible business benefits will make it easier to get more funding; and as decision-makers get more comfortable with the technology, they will start championing the initiative.

And may even come along with new ideas.

To understand more about this subject or for that matter anything else related to Supply chain we can be reached via:

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Service Offerings

- Supply Chain Operational Health Checks
- White paper preparation on industry specific topics
- Safety Obsessed Health & Safety Reviews
- Supply Chain Diagnostics, considering maturity of Control Towers

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- Blockchain Transparent Supply
 - Real Time Transport Visibility Platform (RTTVP)
 - Creative Problem Solving.
 - Industry related training programs
 - 1 on1 consultations
 - Project management
 - Project implementations



