Tech Mahindra

# EDI AND BLOCK CHAIN

## Predatory or co-existence

Connected World. Connected Experiences.

One of the most critical outcomes of an efficient supply chain is to get the right amount of products or services to the right stakeholders across right locations with the right service levels at the agreed cost. However, with multiple stakeholders and trading partners spread across various locations, the above may not seem as simplistic as we think it should be. Challenges are many and these become major impediments and stand in line of achieving thorough efficiencies across the value chain. Sharing of Real Time Information between different entities is core to the success of any supply chain. This makes Real Time information sharing an important element for planners & managers to make quick decisions influencing the success of supply chains. Information security, Data Visibility & Traceability are some of the other factors influencing the success of any supply chain.

# EDI as a Medium of Sharing Supply chain Information:

EDI helps in transacting business data electronically. It helps in sending & receiving data between multiple companies a.k.a Trading Partners. EDI is an accepted medium of data transfer across industry verticals such as Manufacturing, Retail, CPG, Finance, and Travel & Logistics. Some of the Supply chain document types supported by EDI include – PO, ASN, PoD, Shipment Status, PO Acknowledgement, Invoice and Payments.

EDI transactions happen one-way and supports point-to-point communication. Therefore, if there are multiple trading partners, an EDI transaction will happen only between two trading partners at any point in time.[1] Moreover, this means not all other partners in the system will have visibility to the contents of that particular EDI transaction. This creates a black box to the information amongst all Trading Partners. In EDI, standard data a.k.a payload is exchanged as XML files and has specific Standards and Transmission Protocols across the network. Data has to be converted to EDI Standards formats before and after transmission. There are two commonly used EDI Standards and there are multiple subgroups under them:

- EDIFACT - EDI for Administration, Commerce, and Transport
- ANSI ASC X12 - American National Standards Institute/Accredited Standards Committee X12 [2z

Though these standards have evolved over the years and well accepted by the industry, there still are some challenges that need to be addressed:

- Growing Transaction volumes affecting Data Quality, Security, sufficient resources.
- Increasing partners across complex networks does not allow data transparency.
- Multiple File Formats.
- Inability to support Real Time Updates. [3]

## Blockchain and its increasing adoption in supply chain:

Blockchain is a distributed digital ledger for data transactions across multiple trading partners. Once a transaction is committed in the network, it cannot be changed by any party. If a change has to be made to that transaction, all trading partners related to that transaction would get intimation of the change and they will have to agree to the change. This brings the required transparency to all transactions and the real time notification will bring the required speed into the system. Each transaction is approved to enter the ledger, and is placed in a "Block." All transactions are blocked together. Each block is connected to the preceding and succeeding blocks, and they are added to the next block in an irreversible chain. Blockchain also has digitized data called as Smart Contracts; that helps increase efficiencies all along the logistics and settlement process including F&A, and helps resolve disputes in Logistics industry. Block chain is being used concurrently along with traditional B2B integration systems in Supply chain industry. However, there are indications of synergising Block chain along with Traditional B2B integration systems starting with a few critical areas in supply chain.

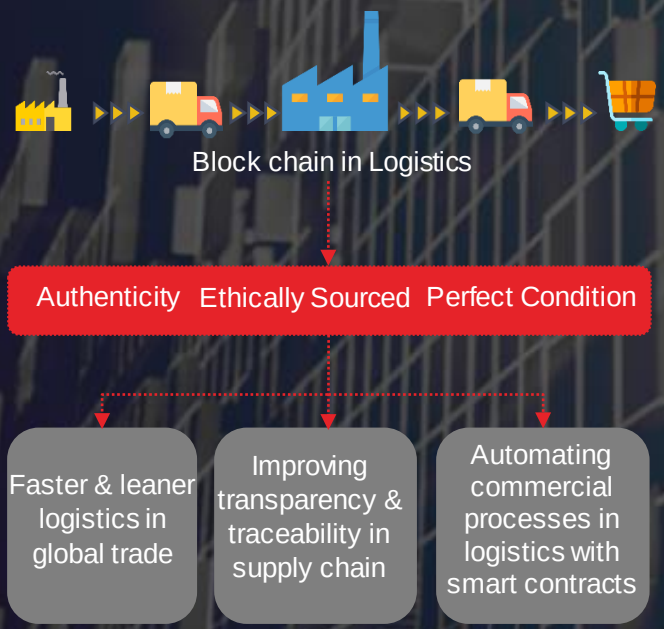



Fig 1 – Blockchain benefits in Logistics industry

## EDI and Block chain: will block chain be an alternate or will they co-exist?

EDI as a technology has evolved over several years and people have put in a lot of effort defining the Standards to ensure it addressed all related Business Use Cases. EDI standards were created for relevant reasons to help define a common format for all trading partners, enabling their independent systems to communicate with each other. There have been many discussions that Block chain would be an alternate to EDI and gradually replace EDI for Business Data Transmissions. While block chain may help partners to transact with speed, transparency, security and without errors, it may not be a replacement to EDI any time soon since the amount of effort that has gone into building the standards in EDI and acceptance of these standards by various industries makes it more lucrative to make EDI and Block chain work as an integrated system.

IBM Food Trust Block chain uses GS1 XML to transmit EDI payload to block chain network. This is a classic example of Block chain using EDI for transmission of critical data. While the EDI standard would help in efficient transmission, the Block chain system would help in the data being distributed over multiple Trading Partners and ensure Speed, Safety and Traceability. The next thing that can happen will be that EDI will be transmitted to a block chain network rather than FTP, AS1 or VAN.[4]

# Supply chain Use Cases that can adopt Block chain:

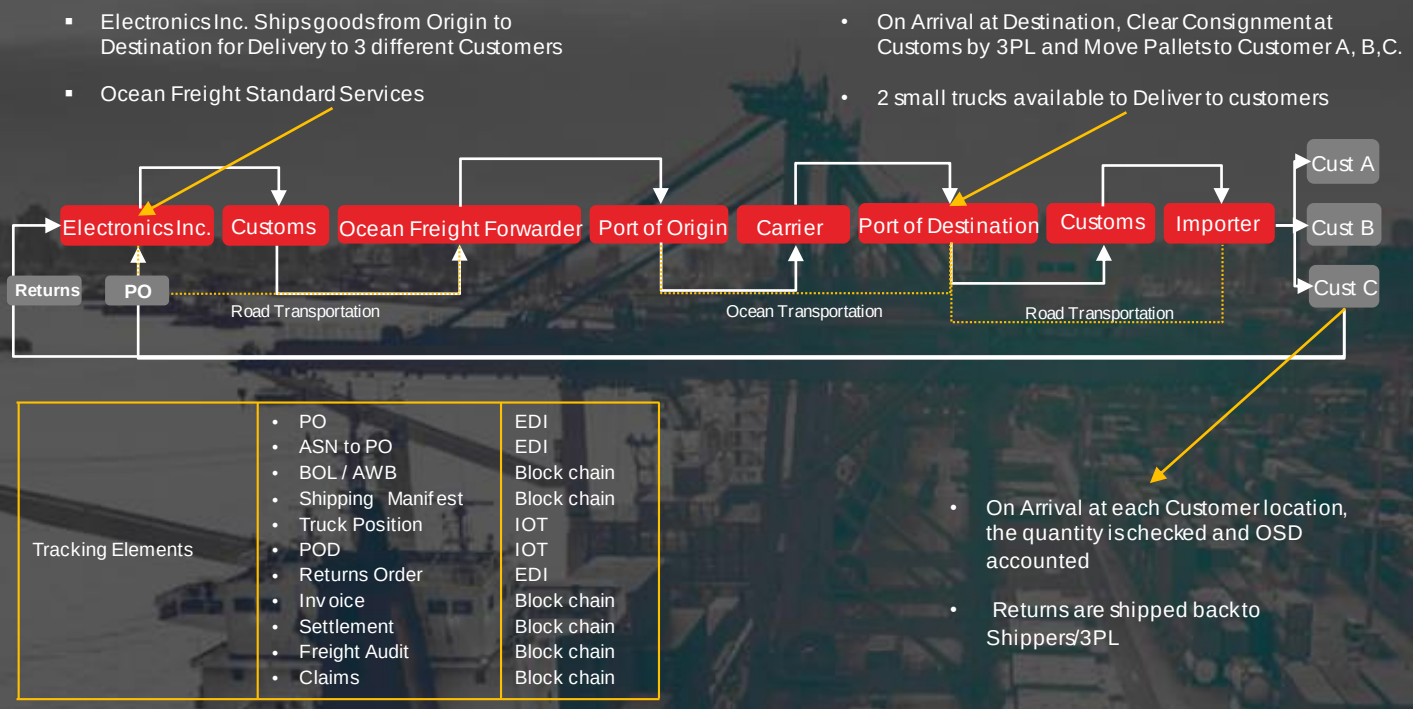



Fig 2 – Cross-Border Shipment Process

The schematic showcases the process of cross border shipment using EDI and blockchain. An electronics company (Electronics Inc.) is to ship goods to 3 different delivery locations. Electronics Inc. receives a purchase order from the customer via EDI, entailing the requirements and other necessary information. The electronics company uses an ocean freight standard service to pick up and drop the items. With the PO, an ASN (advance shipping notice) is generated, notifying the customer when shipping occurs and other information about the products being delivered. The ASN, also an EDI file, is shared by Electronic Inc. to the customer. An invoice is also created by Electronic Inc. on the blockchain portal and can be viewed by the customer. A Bill of Landing is generated by the transportation company, provided to the supplier, Electronic Inc., which is available on the blockchain. The shipped items can be tracked in real time with the use of IoT sensors. Information like truck position and Proof of Delivery can be accurately collected and displayed for the consignor and consignee to see on the blockchain portal. As the cargo leaves the port of origin and enters the port of destination, documents like shipping manifest are required by Custom agents for clearance. This data is available on the blockchain, making the verification process easier. After the delivery of the items, the Goods Receipt document is issued to acknowledge the receipt of the goods on the blockchain application.

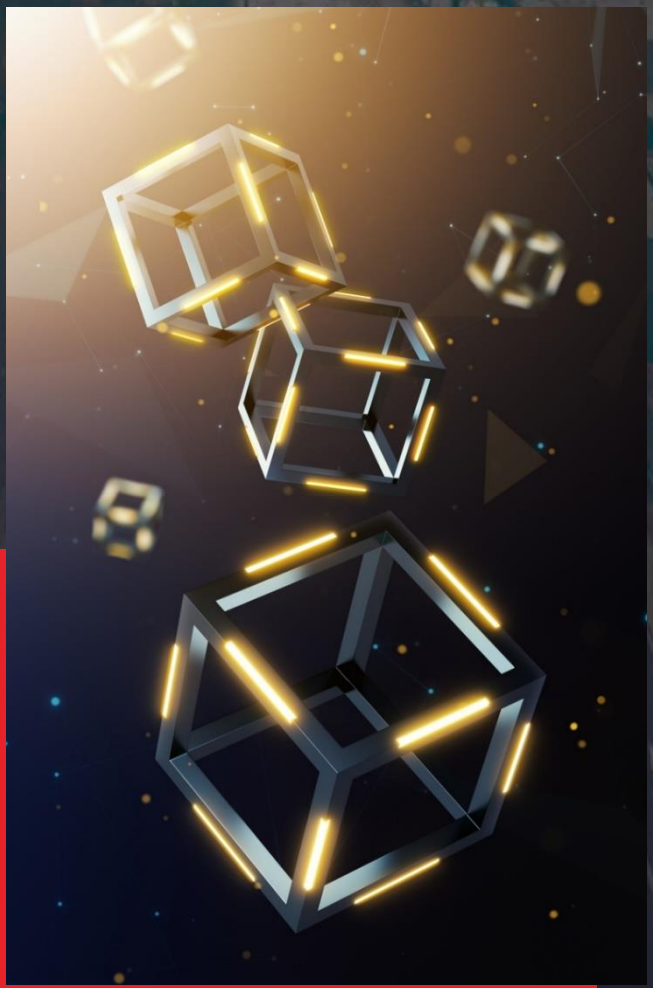
The 2-way match (PO and invoice) or 3-way match (goods receipt, PO and invoice) is done using smart contracts. If the matching is successful, the smart contract will trigger the payment. Blockchain essentially eliminates the need for parties to trust each other, making the freight audit process more transparent.

There are many benefits of using Blockchain and EDI together, such as –

1. **Enhanced Visibility** – With the use of this system, relevant data is made available to all parties on the ledger, with audit trail on any changes or comments made.
2. **Increased Efficiency** – This process eliminates the need to go back and forth for confirmations. All information is available to the parties, streamlining many processes like Custom clearances.
3. **Real Time Updates** – Whenever a PO/Invoice/ASN is raised or generated, real time status updates are provided to the stakeholders. With the help of IoT sensors, tracking shipments becomes more convenient. This allows stakeholders to plan better and diminishes the need for trust.
4. **Cost Reduction** – With the help of smart contracts, there is a reduction of cost of manual effort in 2 way and 3 way matching. The blockchain portal also reduces manpower with automated checks.

**The Verdict**

**Blockchain technology** is a distributed database and brings transparency and immutability in the ecosystem, whereas **EDI** is used to transfer the documents between two parties. Currently EDI is the industry set standard and total disruption of the technology is not possible, therefore, complete shift from Blockchain to EDI is unlikely to happen in near future. If both the technologies work in parallel, it will bring greater positive impact on the ecosystem. By combining Blockchain's Immutability and EDI's standards of file transfer, we seek to create a seamless experience for our customers.



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Hemanth has 20 years of experience with Logistics & Supply chain domain across industry verticals and helps leading clients through transformational supply-chain initiatives. He also Drives various Digital Initiatives pertaining to Digital Supply chain.

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Amey is responsible for Business Development – Consulting, Platforms & Solutions, Thought Leadership, and Strategic Alliances. He plays a key role in handholding clients into experimenting and implementing blockchain in supply chain, data privacy, and trade finance domains.

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