Blockchain

Evolving beyond its association with bitcoin, blockchain and other distributed ledger technologies can remove significant layers of complexity from global supply chains. It can facilitate greater trust and transparency between supply chain stakeholders, supporting the automation of administrative and commercial processes. Smart contract concepts will also create opportunities for new services and business models in logistics.

KEY DEVELOPMENTS & IMPLICATIONS

Blockchain is a nascent technology which at its core represents a fundamental shift from a centralized to a decentralized and distributed database system. By sharing information on a blockchain-based system, the technology can support collaboration and transparency in the highly fragmented logistics industry. The greatest application area lies in global trade, where solutions that reduce supply chain trade barriers can increase global GDP by nearly 5% and global trade by 15%.[4] Looking ahead, industry adoption, governance of standards, and interoperability will be critical to the success of this technology in enterprise applications.

Faster and leaner logistics in global trade using a common blockchain-based system creates transparency for all supply chain parties as they can view progress of goods, status of customs documents, and other data (e.g., Maersk/IBM joint venture). Key trade documents such as the bill of lading can be digitalized with participants issuing, transferring, and receiving the original document through a blockchain network (e.g., ZIM e-bill of lading). Industry-wide adoption will have significant impact, reducing delay, fraud, and costs across the supply chain.

Improving traceability and transparency of goods across the supply chain, from point of origin to last-life will be possible with blockchain technology. Several initiatives are monitoring goods provenance, from how they were made to how they are being managed. This data is stored permanently and shared across decentralized networks, enabling comprehensive track-and-trace beyond current capabilities. Users can verify if products are authentic or have met handling requirements (e.g., Walmart pilot on food tracking).

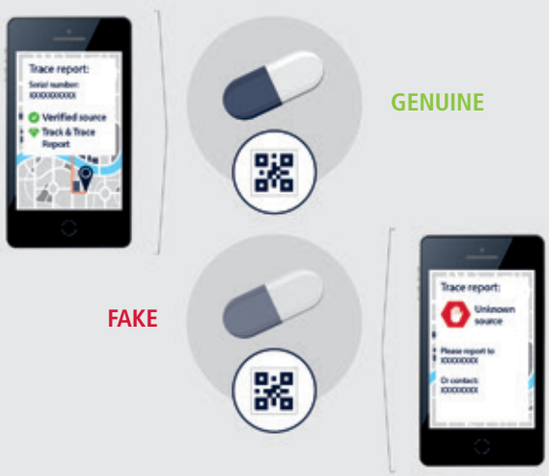
Automating commercial processes with blockchain-based smart contracts can greatly enhance payment times and reduce invoicing errors through instantaneous payment once agreed conditions are met (e.g., initiating payment as soon as a pallet arrives at the right location). A key application area in future will be machine-to-machine payments (e.g., IoTA).

KEY OPPORTUNITIES

- Higher levels of transparency can drive internal process optimization and better visibility for the customer
- Process efficiencies and cost savings through the adoption of smart contract principles
- New business opportunities and models (e.g., new track-and-trace capabilities)

KEY CHALLENGES

- Technical limitations such as scalability and power consumption need to be overcome to enable sustainable, large-scale deployment
- Industry adoption will be critical which is difficult to achieve in the fragmented logistics industry
- Governance and standards body will be required to ensure regulations and interoperability



Fighting Counterfeit Drugs through a Single Source of Truth – DHL

- DHL and partners developed a prototype to explore the use of blockchain for track-and-trace pharmaceuticals
- The vision is to authenticate the movement of a pharmaceutical item from point of manufacture and serialization to final delivery for consumption
- With the data securely stored on a shared network, customers can also check the authenticity and condition of each item

Source: DHL

Trend Assessment **Timeframe:** > 5 years **Impact:** Medium **Sector Relevance:** AUTO E&M TECH ENERGY LSH RET&CON

4. https://www.weforum.org/agenda/2013/01/how-can-supply-chains-drive-growth/