**Supply Chain- Block Chain**

Blockchain's buzz makes it sound like a panacea. Our supply-chain experts evaluate its real potential.

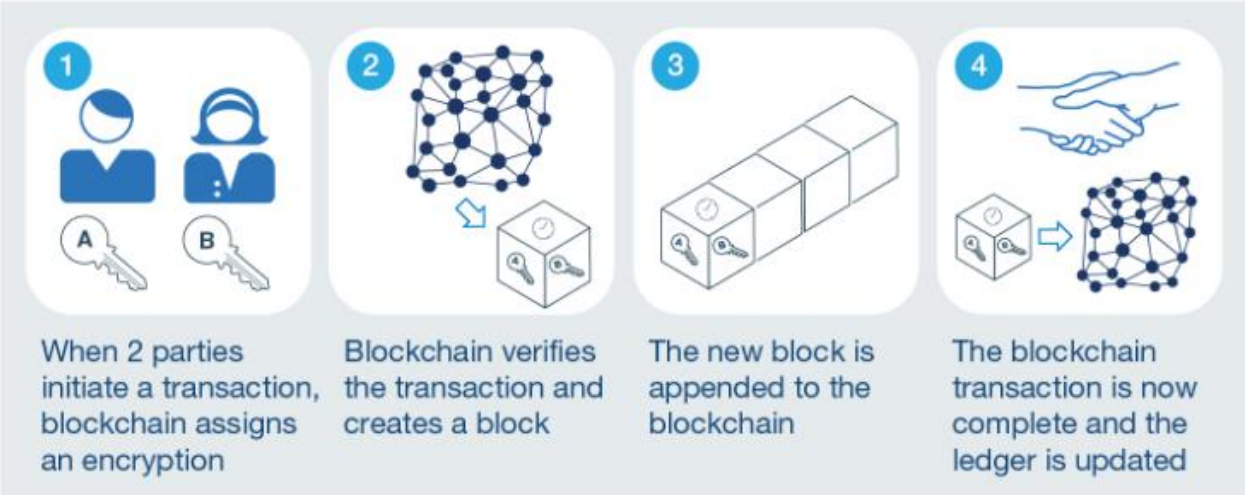
Another day, another new technology to consider. This time it's blockchain, the technology that was created to support bitcoin transactions. According to its cheerleaders, especially in the financial sector, blockchain technology has the potential to turbocharge the effectiveness and profitability of most (if not all) businesses—or even upend business as we know it. In fact, say these early adopters, businesses that ignore blockchain technology do so at their peril.

Strong words, but how true are they? Does blockchain technology really apply to the supply-chain world? Can it solve your supply-chain problems and increase your profitability? These are some of the very practical questions we've been asked by supply-chain executives. Our goals are to give you a clearer understanding of what blockchain technology is all about, and to save you the time of studying, testing, and assessing its value to your operations.

**Understanding blockchain technology**

Blockchain is an internet-based technology that is prized for its ability to publicly validate, record, and distribute transactions in immutable, encrypted ledgers. The technology was invented to support transactions in bitcoin, a digital cryptocurrency that operates independently from a central bank. In essence, blockchain technology provides the platform for creating and distributing the ledger, or record, of every bitcoin transaction to thousands, if not millions, of computers linked to networks in all parts of the world.

Because the transactions and ledgers are encrypted, blockchain technology offers more security than the banking model, and its instantaneous transmission via the internet eliminates banks' two- to three-day clearing process and accompanying costs for transferring money from one account to another. The term "blockchain" is derived from the "blocks" of validated and immutable transactions and how they link together in chronological order to form a chain (exhibit). Hence the term "blockchain."



**Blockchain's value in today's supply chains**

In most cases, today's supply chains operate at-scale without blockchain technology. Even so, the technology has excited the IT and supply-chain worlds. It has also inspired many articles and prompted established IT players and start-ups to initiate promising pilot projects, including:

- Walmart tested an application that traces pork in China and produce in the US, to authenticate transactions and the accuracy and efficiency of record keeping.
- Maersk and IBM are working on cross-border, cross-party transactions that use blockchain technology to help improve process efficiency.
- BHP is introducing a blockchain solution that replaces spreadsheets for tracking samples internally and externally from a range of providers.
- Provenance, a UK start-up, just raised $800,000 to adapt blockchain technology to trace food. It previously piloted tracing tuna in the Southeast Asian supply chain.

**The biggest blockchain barrier: who would give permission?**

In adopting blockchain technology for its supply chain, a company must first decide on the type of blockchain it would need to build. Recall that the bitcoin approach is a permissionless blockchain populated with parties that are not known or trusted. It resides in the public domain and uses a consensus verification protocol to establish trust in each block. There is no central database or central governance in these blockchains.

Conversely, in most supply chains, the parties are known and trusted. Moreover, the supply-chain world is unlikely to accept open access because its users don't want to reveal proprietary details, such as demand, capacities, orders, prices, margins, at all points of the value chain to unknown participants. This means most supply-chain blockchains would need to be permissioned, with access governed centrally and restricted to known parties who may be limited to certain segments of data.

In theory, this approach allows public or private verification of each proposed block. However, we believe it is unlikely that we will ever see public verification of proposed blocks in the supply-chain world when all the parties are known. In shipping, for example, there are only a few known parties in the chain—including haulers, ports, customs, shipping lines—that are responsible for validating each block. When the number of trusted parties is small, the need to independently validate consensus protocols used in the public domain is limited.

**A good-enough solution without blockchain**

In many cases, supply chains are already moving billions of transactions and data, often in real time. The systems are not perfect, and many supply chains have issues with data that is siloed, disparately formatted, difficult to access, or hard to visualize or analyze in the context of big data. Even so, well-managed central databases with good data management, combined with supply-chain visualization and analytical prowess, can be achieved at scale today.

These solutions do not carry the additional burden of some of the technical complexities that blockchain can raise (see sidebar, "Getting technical"). Thus, we maintain that when all parties in extended supply chains are known and trusted, a blockchain solution is probably not needed, as these known and trusted parties can be relied upon to provide a single, real-time version of the truth. In such a situation, centralized solutions like a cloud-portal, or decentralized peer-to-peer connections would suffice.

**Specific to ProdTrack**

## SUPPLY CHAIN – SEAFOOD

Seafood business is one of the world's oldest and the quickest flourishing sectors in the global food market. Seafood that is caught in one part of the globe might change hands dozens of times undergoing several form of packing and processing before reaching its ultimate destination. It is virtually not possible to trace the seafood from its origin in the entire supply chain journey.

Regardless of being the largest, this domain is repeatedly unregulated and unreported. There are high number of people who prefer going with all kinds of illegal and unethical ways to perform the fishing activities. Analysis and associated media have highlighted Illegal, Unreported and Unregulated (IUU) activities including fraud in the global seafood industry.

### Challenges

Seafood law-breaking are done in various ways for example: – overfishing, disposing, lower quality, inappropriate food status or giving incorrect data (mislabeling) etc.

The four major challenges a company has to face with regard to their seafood product supply chain approach as listed as under:-

- Improper storage conditions
- Manual record keeping·
- Illegal , Unreported and Unregulated(IUU) fishing·
- Mislabeling/Seafood fraud


### Problem To Solve

ProdTrack which is a fully traceable supply chain developed by Blockchain helps to eliminate such unethical and illegal frauds in the seafood industry, making the whole process transparent. ProdTrack stores every piece of information, entered at every phase, by the supply chain actors .

This application may be a payoff for lots of fishers and fish farmers who harvest the seafood we consume while we can harvest the information we need.The nature of the long-line fishery allows for each fish batch landed on a shipping vessel to be tracked by affixing tags before its placed on to the

hold. This tag follows the fish batches and registers automatically at various devices positioned on the vessel

This tag is usually removed at the time of packaging and is swapped with a unique QR code which goes with the seafood batch to the store or market. At each step the actors involved in the different stages of supply chain scan the QR code on packaging and enter piece of information maintaining a story of the fish batch.

ProdTrack platform enables users to create solutions for the supply chain with Blockchain application which also offers a specific ability for firms to share hand-picked information with the customers and by also sharing the provenance or traceability.

- Connectivity across payments networks
- Instant, on-demand settlement
- Real-time traceability of funds
- Low operational and liquidity costs