

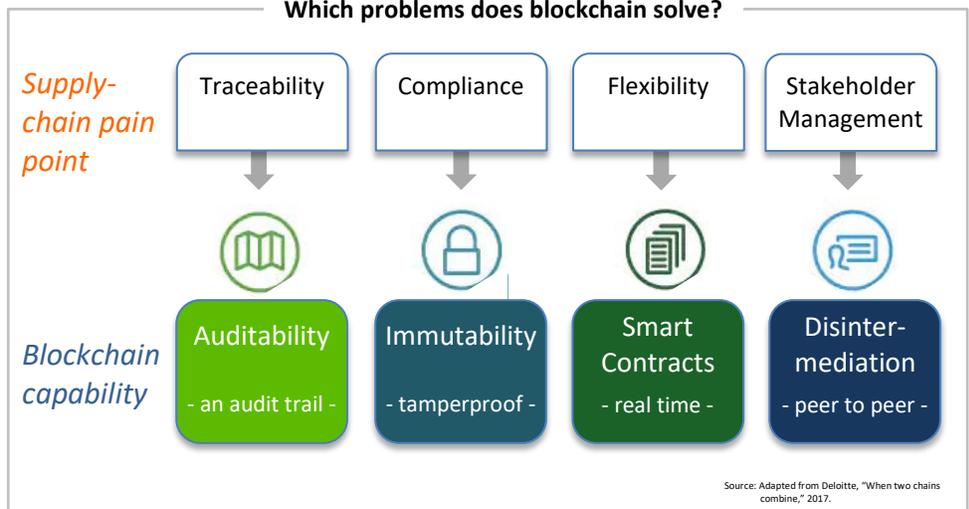
**Blockchain technologies carry enormous potential to transform seafood supply chains worldwide.** Blockchain promises to improve operational costs and efficiencies for seafood businesses as well as help combat illegal fishing, prevent mislabeling, and improve food safety, traceability, and even seafood trade financing. Indeed, the use of blockchain in seafood markets may open up an entirely new industry sector, with multiple layers of interconnected applications and business opportunities.

**Associated mainly with cryptocurrencies today,** blockchain is an electronic record-keeping and transaction processing system with cryptographic protection that offers many potential use cases. Unlike existing record-keeping systems, blockchain is a shared digital ledger that is derived through consensus among many independent computers, making it tamperproof and fully transparent. And contrary to the existing system of simply passing data from one supply-chain actor to the next, blockchain records transactions and any changes to data from each supply-chain actor, time-stamps it, and links it to the entire historical chain. This could be a game-changer for long, complex seafood supply chains.

**Blockchain addresses clear and important needs.** In light of such persistent issues as mislabeling, illegal fishing, and human rights and labor violations, the seafood industry needs to improve transparency and traceability if it is to build trust with consumers. Moreover, governments are increasingly making demands on seafood supply chains to capture, record, and store product and transaction data electronically. This poses a huge challenge for the industry — product and transaction data is currently very fragmented, nonstandardized, and noncompatible, and much of it is still recorded on paper and difficult to verify in real time.

**There are, however, significant hurdles to clear before blockchain’s potential for seafood can be realized.** It will require broad participation by all supply-chain actors, who are often found in geographically, economically, and socially disparate groups. At a basic level, all paper-based record systems must be standardized and digitized — a huge undertaking in itself. And, beyond the purely practical challenges of adoption, incentives need to be offered so that all actors input their data accurately and consistently, and share it willingly.

## Which problems does blockchain solve?



## Opportunities and Innovation Areas

### What will be the bitcoin of seafood?

There is a clear opportunity for new players to build the core infrastructure of a blockchain-based record-keeping and transaction processing system adapted to the needs of the seafood industry. Such a platform could effectively act as a standard setter for fish traceability data. A new platform might begin as a closed system serving particular supply chains (e.g., the Walmart food traceability system), but it will have to become open and decentralized in order to fulfill its promise.

### Building out the ecosystem

Platforms typically require a vast number of API (application programming interface) add-on tools that enhance, improve, and customize the functionality of the platform for its diverse set of users. These may include tools that help the platform translate and interact with a range of existing databases and systems — a necessary function for broadening participation in a blockchain platform. Also needed are data verification services to reference data in the blockchain against other third-party data, such as VMS (vessel monitoring system) data, landings records, and satellite data.

### Automate, automate, automate

Automated data-capture solutions will be central to advancing blockchain adoption, data standardization, and efficiency. Data capture by sensors, robots, computer vision, and Internet of Things (IoT) systems will overcome the core challenges of human error (or intentional fraud) and bad information entering a blockchain, and it will increase the overall data points available. Opportunities are plentiful in the IoT space to intersect with blockchain, as data must be captured and transmitted at all stages of the supply chain — on vessels, in the processing plants, and during transport. and storage.

### New financing opportunities

Broad blockchain adoption will open up new and cheaper financing avenues for seafood businesses. With better information and increased transparency, financial institutions can build more-accurate predictive models and develop more-suitable financing and insurance products for the seafood industry. Moreover, better supply-chain information will lower performance risk, which should have a positive impact on the cost of borrowing. And instead of financing rolling stock through working capital, it might eventually be financed under an asset-based scheme.<sup>1</sup>

Source:  
• Rabobank, Harry Smit, "Blockchain: The Trigger for Disruption in the Food Value Chain," Dec 2017.

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