

Distributed Ledger Technology, Blockchain, and Traceability

What is “Blockchain” and what function does it have in traceability systems?

Blockchain is a type of Distributed Ledger Technology (DLT). In traceability systems, it can be used to document and maintain records of transactions and other traceability data on a distributed ledger. DLT, including blockchain, allows multiple actors to input and access data along the supply chain in an immutable way, meaning once data has been input it cannot be changed. In the context of supply chains, blockchains can enable stakeholders to follow a product’s journey through the ledger of chronological, recorded transactions.

Multiple users can access and record transactions on a distributed ledger database (as determined by the privacy and permissions set up when the system is established), and all data records are tamper proof. The immutable and distributed nature of blockchain makes it an appealing way for many users to document and maintain data related to supply chain transactions and other traceability processes, as the ledger is not maintained by a central authority.

DLT, including blockchain, can support [Product Tracking](#) by providing a platform where chain of custody information can be stored and accessed by multiple parties. When paired with other traceability technologies like [Tags](#) or [Additive Tracers](#), it can support streamlining and automating the collection of data from products as they pass through the supply chain.

DLT, including blockchain, can also support traceability methods that involve [Supply Chain Mapping](#) and [Artificial Intelligence and Machine Learning](#) since it can act as a source of data for these analytical tools. Blockchains can also be programmed to automate transactions and workflows through the use of Smart Contracts (coded programs stored on a blockchain that are executed when specific, preestablished conditions are met).

For a more detailed description of DLT, including blockchain, read the OECD’s [Blockchain Primer](#).

What Traceability System Elements does blockchain support?

DLT, including blockchain, can be used to support any traceability method that relies on verifiable records of transactional information or other traceability data, including [Product Tracking](#) and maintaining a digital chain of custody as well as [Supply Chain Mapping](#) and management of supply chain data.

What supply chain characteristics need to be considered regarding blockchain implementation?

DLT, including blockchain, is particularly well suited to supply chains where there is a need for sharing information in a secure way across multiple parties. Cooperation among participants and access to technical infrastructure are necessary requirements for successful implementation of a blockchain database, as the ledger depends on actors recording transactions.

What are some examples of blockchain being used for traceability and/or labor rights due diligence?

1. Title: [Blockchain: Transforming the Seafood Supply Chain](#)
Author/Implementer: WWF, Traseable Solutions, Viant, Sea Quest (Fiji) Limited, Sealand Processors (Fiji) Limited.
Technology: Blockchain
2. Title: [Blockchain for Made in Italy Traceability: Origin, Quality, Sustainability](#)
Author/Implementer: Italian Ministry of Economic Development in collaboration with IBM
Technology: Blockchain
3. Title: [Policy brief – Harnessing the potential of blockchain technology for due diligence and sustainability in cotton value chains](#)
Author/Implementer: UNECE in collaboration with 48 partners worldwide
Technology: Blockchain
4. Title: [TextileGenesis Fibercoins technology](#)
Author/Implementer: TextileGenesis
Technology: Fibercoin (Digital 'twin' to mirror the physical flow of goods)

Additional Resources

1. [OECD Blockchain Primer](#), OECD
2. [Is there a role for blockchain in responsible supply chains?](#) OECD & KPMG, 2019
3. *How Can a Blockchain Drive Transparency, Trust and Efficiency?* ChainPoint
Download the paper [here](#).
4. [Continuous Interconnected Supply Chain: Using Blockchain & Internet-of-Things in Supply Chain Traceability](#), Deloitte, 2017
5. [What is Blockchain Technology?](#) IBM