

Digital Ledgers

Cryptocurrencies, Blockchain and Smart Contracts

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Technology serves a critical and transformational role for providers and users of transportation and logistics services, contributing to operational efficiency, improved performance, enhanced end-user experience, and ultimately, the financial bottom line. Will "smart contracts" that utilize "blockchain" technology offer similar benefits?

What is a Smart Contract? No universally accepted definition of a smart contract exists. Indeed, the term smart contract is a bit of a misnomer. In general, a smart contract is actually nothing more than a series of business rules that two parties may agree to adopt. In other words, a smart contract does not somehow perform its own reasoned analysis, unilaterally write or modify itself, or eliminate the possibility of disputes. Rather, a smart contract simply implements a series of "if-then" rules that will be performed at least in part by computers without the need for third-party human interaction.

What is Blockchain? Blockchain is a decentralized database or spreadsheet (often referred to as a "digital ledger") that is maintained and updated by a network of participating computers. This highly secure technology permits parties to create a record (known as a "block") that is timestamped and linked to the previous block such that it cannot be altered retroactively without the alteration of all subsequent blocks—making it functionally immutable. The digital ledger can be available to the public, but can also be made private. Blockchain is the technology infrastructure for cryptocurrencies like Bitcoin. However, just as the internet has many uses beyond e-mail, blockchain has many uses beyond cryptocurrencies.

How Could Smart Contracts and Blockchain Help Air Cargo?

Proponents of blockchain technology have identified a variety of potential applications that would benefit the providers and commercial users of transportation and logistics services. The following items are ways that blockchain technology could help the air cargo industry.

Track and Trace. A pallet or carton tagged with an RFID chip could be tracked and traced via blockchain technology as that particular load moves through various locations such as air cargo screening facilities, truck terminals, etc. The benefits include access to the internet and a

creation of a detailed and immutable record of the load's pedigree and chain of custody, which can, among other things, minimize claims. Having this data is particularly beneficial for those involved in the transportation of pharmaceuticals and high-end, lightweight electronics that are frequently transported by air.

Foiling Fraudulent Pick-Ups. Ground handlers of air cargo sometimes fall victim to schemes whereby a fraudster masquerades as a legitimate motor carrier for a scheduled pick-up. For instance, the criminal intercepts information about a high-value load, arrives at the outbound yard ahead of the legitimate carrier, obtains possession of the load with forged documents, and readily vanishes to fence the goods. However, blockchain may permit the yard operator to identify a given carrier as an imposter if the carrier lacks the proper credentialing record created through blockchain technology.

Expediting Payment. Shippers and air carriers or air forwarders could enter smart contracts where the rules provide that payment is automatically made when a given load arrives at destination under various conditions. For instance, carriers or forwarders may no longer need to devote substantial resources to billing and collection efforts if the network itself (rather than a third party) validates the blockchain such that payment is made automatically.

Impediments Moving Forward. Blockchain, like any technology, has its fair share of challenges. Two primary obstacles include:

No Current Uniform Standards. At present, no uniform standards govern blockchain technology. Various parties are developing their respective sets of standards, coding, and associated applications or other interfaces for deployment of blockchain solutions. For instance, the Blockchain in Transport Alliance (whose members include those involved in the air cargo industry) has been working on this endeavor.

Data Inputs. A system is only as good as the data it holds. In other words, blockchain is subject to "garbage in, garbage out." As with any other technology, parties exploring a blockchain-use case must ensure they have evaluated the integrity of the data inputs including the IoT sensors that feed data into the pedigree.

The air cargo industry should continue to explore blockchain technology and evaluate how it might add efficiency, increase security, and change the competitive landscape.



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