XYO Network in Airports

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Contents

Abstract

One of the largest fears an airline traveler faces is having their luggage lost or stolen. Accounting for all baggage moving through TSA checkpoints, gates, and airplanes is important not only for travelers' piece of mind, but to the overall safety and security of airports as a whole. The XYO Network (XY Oracle Network) can provide independently verified location data that can help minimize luggage mishandling and can ultimately save travelers and airport staff time and money spent trying to track down missing baggage. Due to its decentralized nature, the integration of the XYO Network's unique blockchain technology also allows different airlines to access the same data without needing to implement of a unifying system. Usage of the XYO Network's technology to improve efficiency and safety for airlines has long-term benefits which include increased cost reduction, customer loyalty, and better business reputation.

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1 Problem

Lost and mishandled luggage costed airlines $2.1 billion dollars in 2016, according to a study by SITA [1]. While systems are improving, the complexities of air travel still result in millions of angry passengers with lost bags each year. The baggage-handling and tracking systems currently used by airlines is not only error-prone, but also lacks transparency and the proper infrastructure needed to track and verify the location of their passengers' items.

2 Solution

The XYO Network has implemented a decentralized, trustless system for tracking and locating luggage. Its decentralized nature even allows airlines to utilize each other's networks

without compromising the airlines' network security or needing to coordinate system updates - this means that if you're at the United desk in Dallas, but your bag is at the Delta desk at SFO, the bag can still be instantly located by accessing the XYO Network Ledger. Should a bag be permanently lost and a passenger file a claim with the airline, the decentralized and trustless nature of the blockchain ledger allows both parties (the airline and the passenger) to independently verify who had possession of it last.

3 How it Works

The XY Oracle Network makes use of affordable hardware devices called "Sentinels," which record heuristic data like location, temperature, motion and other signals. Each of these Sentinel also share and record the activity of other nearby Sentinel creating a blockchain (decentralized ledger). For example, every bag in a cargo hold would be able to communicate with other bags in the hold, sharing information like when they were checked in, when they were moved, and what baggage handlers or TSA staff handled them. IoT devices called Bridges hand off all of this heuristic data to decentralized nodes. These nodes will be rewarded with XYO Tokens for relaying and archiving the information. This way, a cryptoeconomics-based incentive aggregates within the system to provide accurate and trustless historical data.

The decentralized nature of the XYO Network means that the tracking systems put in place by the different airlines can support each other without the need for the airlines themselves to implement a unified baggage handling system. As in the example above, a Delta-owned Bridge will be able to report the history reported by a United-owned Sentinel, and vice versa. Since the location and tracking information is communicated via a decentralized ledger, there will be no need for Delta and United (nor any other airline) to waste resources building out systems that need to communicate directly.

References

[1] Garcia, Marisa. *This is How Much Luggate the Airlines Lost Last Year* Fox News Travel, May 5, 2017.

Glossary

Bridge A Bridge is a heuristic transcriber. It securely relays heuristic ledgers from Sentinels to Diviners. The most important aspect of a Bridge is that a Diviner can be sure that the heuristic ledgers that are received from a Bridge have not been altered in any way. The second most important aspect of a Bridge is that they add an additional Proof of Origin metadata. 2

heuristic A data point about the real world relative to the position of a Sentinel (proximity, temperature, light, motion, etc...). 2

Sentinel A Sentinel is a heuristic witnesses. It observes heuristics and vouches for the certainty and accuracy of them by producing temporal ledgers. The most important aspect of a Sentinel is that it produces ledgers that Diviners can be certain came from the same source by adding Proof of Origin to them. 2

trustless A characteristic where all parties in a system can reach a consensus on what the canonical truth is. Power and trust is distributed (or shared) among the network's stakeholders (e.g. developers, miners, and consumers), rather than concentrated in a single individual or entity (e.g. banks, governments, and financial institutions). This is a common term that can be easily misunderstood. Blockchains don't actually eliminate trust. What they do is minimize the amount of trust required from any single actor in the system. They do this by distributing trust among different actors in the system via an economic game that incentivizes actors to cooperate with the rules defined by the protocol.. 1, 2

XY Oracle Network XYO Network. 1

XYO Network XYO Network stands for "XY Oracle Network." It is comprised of the entire system of XYO enabled components/nodes that include Sentinels, Bridges, Archivists, and Diviners. The primary function of the XYO Network is to act as a portal by which digital smart contracts can be executed through real world geo-location confirmations. 1, 2