XYO Network in National Security

Johnny Kolasinski, Christine Sako

January 2018

Contents

Abstract

The presence of government-regulated firearms in establishments where weapons are strictly prohibited fundamentally introduces a considerable risk. Tightly controlled security is imperative at major transportation hubs (i.e. international airports) where traffic volume is high and potential dangers are inherently evident. Firearms are not only carried by security and police forces on the ground, but also by Federal Air Marshals in the sky. The XYO Network (XY Oracle Network) can confirm a weapon is exactly where it is intended to be by reporting independently verified and trustless location data. Through its decentralized blockchain technology, the XYO Network is able to provide an unparalleled element of safety and accountability to arguably the most targeted, at-risk establishments in the world.

---

1 Problem

In operations requiring a high level of security, it is crucial to ensure that any authorized firearms are strictly and safely controlled. Creating a system that is secure, reliable, and publicly accountable poses an operational challenge.

2 Solution

A high-profile government security agency has contracted with XY to secure firearms in major transportation hubs throughout the United States. The use of XY?s existing technology saves the agency millions of dollars, and the decentralized nature of its blockchain creates a system that is both independently secure and publicly accountable.

3 How it Works

The XYO Network is a web of devices that record and archive heuristic data using a blockchain ledger. Whenever a device on the XYO Network interacts with another XY device, it logs this interaction. By reviewing this ledger of interactions and the additional data they provide, it can be guaranteed with a high degree of certainty that a specific interaction happened at a distinct time in a precise location.

Each firearm protected by the XYO Network is affixed with a device called a "Sentinel" which records heuristic data like its location, temperature and movement. The Sentinel also records any interaction it has with other nearby Sentinels, and both devices share their histories with each other. IoT devices called "Bridges" relay Sentinels' records to decentralized nodes which archives this data on a decentralized ledger or blockchain. These nodes are rewarded with XYO tokens when they archive, process or relay accurate historical data. In this way, the XYO Network leverages cryptoeconomics to create a trustless, decentralized, unalterable location and interaction history for each protected firearm.

In other words, when the firearms are securely stored, they create a record of where they are stored and what other firearms are in storage with them. When a firearm is removed, each firearm's record is updated, noting what firearm was removed and by whom. The firearm's Sentinel records where it is taken, when it moves, who interacts with it, and when it is returned. Any other XYO Network Sentinels also record their interactions with the firearm's Sentinel.

This decentralized ledger serves two important purposes. First, it provides an unalterable, auditable archive of when a firearm was accessed and by whom, where it was taken, and when it was returned. Second, the XYO Network's decentralized nature means that the information in this archive can be independently audited and confirmed. This feature can also be implemented in other industries where accountability is critical, such as law enforcement, corrections, and health care.

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

certainty A measure of the likelihood that a data point or heuristic is free from corruption or tampering. 2

cryptoeconomics A formal discipline that studies protocols that govern the production, distribution, and consumption of goods and services in a decentralized digital economy. Cryptoeconomics is a practical science that focuses on the design and characterization of these protocols. 2

heuristic A data point about the real world relative to the position of a Sentinel (proximity, temperature, light, motion, etc...). 1

Sentinel A Sentinel is a heuristic witness. 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 geolocation confirmations. 1