



Aston

Finally.
Speedy and Secure Document Authentication
on the Blockchain.

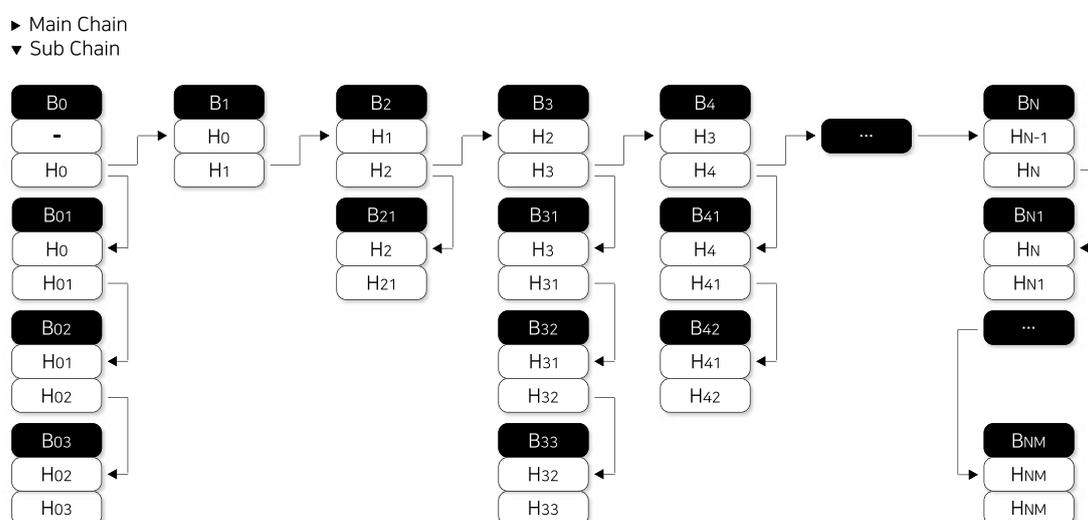
Aston's X-chain replaces linear blockchains with a multi-dimensional structure, finally making blockchain-based document authentication viable at scale. Already being tested in mission critical applications at hospitals and companies in Asia, Aston is document authentication built for decentralized networks.

The challenge of a “DocChain”

While it’s technically possible to store and authenticate documents using the linear blockchain technology that powers cryptocurrencies, it isn’t feasible. To examine a document stored in a linear blockchain, you can’t just examine a single block. You have to examine the genesis block for that document, and all subsequent blocks to check for modifications. This consumes far too much time, bandwidth and computing power.

Cryptocurrency transactions are already pushing the limits of linear blockchains. The average Bitcoin transaction is a mere 250 bytes. But during heavy loads, Bitcoin transactions can take minutes or even hours to be verified. If linear blockchains are inconvenient for cryptocurrency, they’re completely unworkable for documents that are several kilobytes in size. With a linear blockchain, each day the chain size would increase exponentially, slowing the authentication process to a crawl once you start to scale.

Aston’s X-chain is a new blockchain with a side of innovation



X-Chain uses a linear main chain, but every time a new document is created, it sprouts a sub-chain with blocks that contain only the modifications relevant to that document. This structure is fast and efficient, while retaining the immutability and cryptography that make blockchain so secure. In many examples that we’ve tried, it reduces the chain size by up to 70%.

Aston takes on many of the issues that make document authentication so important, including forgery, interception and modification – both malicious and negligent.

Paired with Aston’s multi-dimensional blockchain is Smart-Pass-On, a public key based biometric authentication and electronic signature system.

The platform can be integrated with existing ERP, groupware, or cloud systems to deliver and authenticate their documents. It is also forward compatible with the distributed networks that will likely replace current system by 2025.

Aston is trusted for mission critical applications

Large hospitals create more than a million sensitive medical documents each month, recording check-ups, discharges and prescriptions. The documents handed to patients are usually discarded without being shredded, leaving personal data vulnerable. The documents stored at the hospital may have many nearly-indistinguishable versions, which could lead to medical errors.

Aston allows hospitals to issue and confirm medical documents electronically on smartphones and tablets. Each new version of a document is immutably recorded to a secure blockchain, eliminating opportunities for documents to be stolen or manipulated. The Smart-Pass-On authentication layer ensures documents are legitimate, eliminating opportunities for drug prescription forgery and insurance fraud.

Cha Hospital and Hallym University Hospital, two of Korea's largest and most reputable medical facilities, have begun using Aston's medical certification technology. It's also being used by NH Bank, one of Korea's major financial institutions, and Coinlink, a cryptocurrency exchange. Aston developed its Smart Biometric Authentication Solution in conjunction with Samsung SDS in 2016, and a new version of the technology will soon be integrated into the service offering of one of Korea's big three telecom providers, LG U+.

The size equation

In an internal study we conducted, we modeled the advantages of storing Korea's address database on X-chain, rather than a linear blockchain. At the end of 2015 Korea had 51,525,338 citizens. Every year about 7 million of them move to new homes. If the block size is just 80 bytes, storing all of this data in a linear blockchain will require 9.1GB after 10 years, with an annual growth rate of 0.53GB. This makes examining the documents extremely difficult due to the computing power required.

Size of Blockchain

$$(51,525,338 + 7,000,000 * 10) * 80 / 1024^3 = 9.1GB$$

With Aston's multi-dimensional X-chain, the same data can be stored in just 3.93GB after the same 10-year period. Rather than being added to the main chain, the 70 million new blocks will be organized into sub-chains.

Average size of a sub-chain

$$(7,000,000 * 10 / 51,525,338) * 80 = 108.68B$$

Size of main-chain

$$51,525,338 * 80 / 1024^3 = 3.83GB$$

After 10 years

$$3.83 + 108.68 * 1,000,000 / 1024^3 = 3.93GB$$

Aston poised for future growth

As we upgrade from centralized cloud storage to distributed and decentralized networks, we need new security solutions. According to market research, the global market for electronic authentication management systems grew by an average annual rate of 7% over the past five years, reaching \$16.3 billion in 2017. Additionally, research from Tractica's biometrics market forecast suggests the global market for biometric signature authentication is expected to grow 22.9% annually from \$2.5 billion in 2016 to \$15.1 billion in 2025.

A suite of DAPPS ready for use

Aston Wallet

Enables individuals to authenticate their identities using their own smart devices, to easily confirm, request, or check the activity logs for documents.

Aston Business Wallet

Provides direct access to ASTON Gate ERP software for government and enterprise users.

Aston Vote

Allows for quick, secure and authenticated distributed decision making. Can be paired with the Aston Wallet to facilitate voting in democratic countries in the future.

Who is Aston?

Aston is incorporated in Singapore and the team is based primarily in Korea. They are closely tied with CertOn, a publicly traded technology company, and have a strong track record of providing services to some of the world's top multinational companies. CertOn's co-CEOs are Seungki Kim and Kyungok Park.

Token Sale

The Aston (ATC) token sale will begin with a pre-sale on December 6, which runs through December 10. There will be a 30% bonus for pre-sale participants. The crowd sale runs from December 11 through 17 and will include a 15% bonus. A total of 1,000,000,000 ATC tokens are issued through the pre-sale as well as the crowdsale and 20,000 ATC tokens are planned to be issued for each unit of Ethereum. Ethereum is the only currency that will be accepted during the token sale. Note that some countries restrict their citizens or residents from participating in token pre-sales or crowd sales.