Chain of Custody for Evidence Using Blockchain Technology

Monday, September 10, 2018

Most of those familiar with blockchain technology are familiar with it within the context of cryptocurrency. However, there are several more uses beginning to wind their way through the evolution of blockchain technology – especially in the legal industry. With blockchain technology, we’re now able to point to the origin along the chain of custody steps, revolutionizing chronological documentation, custody, analysis, control, and disposition of both physical and electrical evidence for all types of cases.

Background information

First of all, what is blockchain and how does it work? Simply put, blockchain is a decentralized ledger that is impervious to hacking, immutable, and anonymous. Cryptocurrency is just one example of the use of blockchain technology. This distributed ledger technology is the underlying force behind bitcoin, ethers, and other blockchain projects. DLT is decentralized – transactions are recorded onto millions of computers simultaneously. Each block of data is linked to a previous block of data – that is, “chained” together.

The transaction is synchronized among hundreds of computers and all nodes reflect the updated data as it occurs. Once a transaction is validated and added to a blockchain, the transaction or asset is theoretically immutable. A change in one copy or block of data on a system still leaves hundreds of other copies existing on hundreds of other computers. It would be virtually impossible to change the data on all of the decentralized systems.

Since its inception almost 10 years ago, blockchain has developed into a mainstream technology that is trusted and transparent.

Chain of Custody

Today, the chain of custody is the process of handling evidence from the time it is collected until the time it is presented as evidence in a court of law. During the process, several people typically handle the evidence, logging it out and logging it in and physically signing forms to complete the process. There are many opportunities to taint the evidence and more importantly, to have defense attorneys claim the evidence has been tampered with.

It is therefore critical that the evidence can be reliably traced from collection to presentation in court.

B-CoC: A Blockchain-based Chain of Custody for Evidences Management in Digital Forensics presents requirements that a Chain of Custody process should have:

1. **Integrity**: the evidence has not been altered or corrupted during the transferring.
2. **Traceability**: the evidence must be traced from the time of its collection until it is destroyed.
3. **Authentication**: all the entities interacting with a piece of evidence must provide an irrefutable sign as recognizable proof of their identity.

4. **Verifiability**: the whole process must be verifiable from every entity involved in the process.

5. **Security**: Changeovers of an evidence cannot be altered or corrupted.

By using blockchain technology with the chain of custody process, officials could greatly improve the process of ensuring all five of these criteria are met. Blockchain has become a trusted technology that is traceable through its blocks of data, which is vital when examining the historical chain of custody. Any parties with the need to interact with the data that are in the chain of custody have had their information immutably recorded in the blocks of data, thus rendering it untraceable. The chain of blocks also makes authenticity and verifiability evident. Basically, when the evidence changes hands, a digital token is then moved along the chain, therefore identifying the real-world chain of transactions on the blockchain. Finally, because blockchain is a decentralized ledger system, it is, at present, literally tamper-proof.

**Vijay Rathour of Grant Thornton** explains how to use blockchain in the evidential chain. “In practical terms, this is achieved by generating and tracking a unique evidence token for every item of data we collect and receive – stored and auditable in our own private blockchain.”

**Conclusion**

The blockchain is a powerful technology that is just now coming into its own. There will be many more uses for blockchain as more people who have a need for the unique characteristics of blockchain come across the technology and its possibilities. Since the beginning of civilization (yes, that long), it’s been a common practice in legal disputes to cast doubt on the authenticity and integrity of an exhibit’s ‘chain of custody’ while discrediting both evidence and credibility of the opposing team. By using blockchain technology, the chain of custody portion of the equation is a thing of the past.

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