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Beyond bitcoin

Leveraging blockchain for forensic applications

Blockchain technology enables a comprehensive view of transactions back to their origination and provides enormous promise for the forensic community. Indeed, the ability of blockchain to replace the need for a centralized trust authority to authenticate transactions is perhaps its greatest promise for the forensic community.

Transactions among humans have always sought ways to reduce friction so that the free exchange of value can occur. As in most human interactions, the optimal way to reduce friction is to increase trust. In money-transfer situations, for instance, blockchain technology reduces friction by obviating the need for a third-party enforcer to a transaction. Indeed, in such scenarios (such as bitcoin, discussed briefly below), it is the system itself that secures the transaction through cryptography, which creates an unimpeachable audit trail via a verifiable and immutable ledger and guarantees a transaction will take its full course without third-party involvement. This same concept – of friction reduction through increased trust – is the real promise for the forensic community.

An enormous amount of time, energy and, correspondingly, money in the forensic arena is consumed in the observation, authentication, and verification of certain facts. Of course, a great deal of analysis and argumentation is then applied to these facts, but the reasons for this evidence-based rigor hinge largely on the need to create an unimpeachable audit trail. That, in turn, works to ensure just and defensible outcomes. Blockchain addresses several of these areas simultaneously.

Principally known for its connection to bitcoin, blockchain is now beginning to be used for virtually any transaction that is part of a closed-loop system or cycle (e.g., shipments of physical assets, inventory tracking, transfer of title/ownership), providing a trust factor and an audit trail that is useful to all parties in the transaction. Blockchain has expanded into the financial services, technology, manufacturing, pharmaceutical, and energy industries, creating a tamper-proof history of how products are manufactured, moved, and maintained throughout complex networks with numerous stakeholders.

A brief overview of the technology

Blockchain is a distributed ledger system in the form of a decentralized database that stores linked records. These records are time-stamped blocks, each of which links to the preceding blocks in the chain and is immutable, publicly visible and validated by a consensus -based proof of trust. This provides an unimpeachable audit trail, showing both a transactional history and confirming the transactional integrity to all participants in the blockchain application.

The audit trail itself is visible to all participants, though the individuated transactions may be encrypted. Accordingly, you might be able to confirm that a transaction happened without having any visibility into its orgins Because both the components (blocks) and the blockchain (ledger) are immutable, participants can review the entire transactional history from the ledger's inception. This consensus-based proof of validity replaces the need for a centralized trust authority.

How blockchain supports forensic investigations

Blockchain can bring substantial benefits to forensic applications, where establishing integrity is crucial to achieving the desired end. Collecting, preserving and validating evidence can be strengthened through the use of blockchain. The provenance of any transaction can then be traced back to where it originally entered the process in question. Leveraging these closed-loop systems provides significant evidentiary benefits and allows for the reduction of spend in areas that typically consume significant resources in forensic investigations.

The forensic implications of this powerful technology also include improved transactional efficiency (owing to increased trust in the exhanging parties), the reduction of fraud (owing to the increased transparency of the audit trail) and the reduced costs of certain kinds of

transactions, such as M&A (again, owing to the increased transparency and trust factors which mitigate against the need for third-party validation of certain claims, like valuation amounts or the specific ownership of an asset at a given point in time).

Blockchain permits parties to trust in a specific protocol assuming it is properly vetted without the need for costly and cumbersome third-party involvement. Accordingly, this reduction in friction allows for potential cost savings from transactions that rely upon third-party verification, e.g., due diligence, evidence collection, proof of title/ownership and verification of a given asset's existence, etc. Indeed, Grant Thornton LLP is already addressing and leveraging blockchain technology in certain service lines, ranging from financial statement audit testing to complex M&A scenarios to companies incorporating blockchain offerings among their product lines.

Advantages of blockchain technologies

Establishing a definitive record for a given transaction is extremely important in auditing transactions of all kinds. The advantage of leveraging a technology like blockchain is that an organization can embed the verification for the transaction within the transactional record itself, thereby enabling an established and ongoing record, which is both accessible and verifiable. As organizations audit their own books, they can obtain assurance across all transactions subject to the blockchain. By extension, when organizations have their books audited by third parties, the need for such third parties to sample a portion of transactions and extrapolate from the sample based upon statistical probabilities becomes unnecessary, because the blockchain exposes the full population of transactions for testing of the entirety. By extension, blockchain also permits ongoing auditability — auditors, as well as fraud and forensic investigators, could perform reliable spot-checks at any time because the record would be verifiably complete as of that point in time.

Challenges to adoption

Business leaders struggle with the applicability of blockchain to everyday business problems. Many of these issues, especially in a forensic context, involve the integrity, value and/or ownership of specific assets. These same business leaders need practical applications of technology in order to ground it into investments they can support. Providing practical — and practicable — examples will do much to advance the adoption of and comfort with blockchain technologies in forensic contexts. This means tackling some basic stumbling blocks to adoption, such as the need to adopt thoroughly vetted standards to which the parties to a transaction can agree. It likewise means that the technological limitations be properly considered, e.g., the performance of distributed ledgers over time as they are significantly slower than centralized ledgers.

Another criticism that has been leveled against blockchain is a potential privacy issue. The industry is looking at advanced encryption technology as a way to protect the privacy of transactions in a public blockchain ledger. This would allow only authorized people to see a transaction's value, but the transaction could still be recorded in a public ledger. This would restrict access to information that could be used for fraud purposes, for example, while letting accounting systems and risk managers rely on the information they can see.

Conclusion

Establishing the true value, integrity, and/or ownership of an asset can be streamlined profoundly via the proper adoption of blockchain technologies. The friction of traditional transactions can be addressed directly via the use of blockchain, and this in turn has forensic implications that are extremely promising – to speed up transactions, lower fraud risks, and cut costs. At Grant Thornton, we are focused on leveraging this important technology for our middle market clients, many of which likely do not have the extensive systems that a large company might have. We look forward to the challenges ahead, as blockchain systems are designed to lower uncertainty, increase auditability and reduce friction at every turn.

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