Blockchain – Today and Tomorrow

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For several years now, you have likely been hearing about "blockchain" and its potential impact on organizations of all sizes and in all lines of business. Yet, blockchain remains a mystery to many professionals, not only in terms of what it is, but also how it will potentially be used to drive the results many are expecting. Read on, and in this article, you will learn what blockchain is, how it is being used today, and how it likely will be used in the future to produce desirable outcomes.

What is Blockchain?

At its core, blockchain is an electronic, shared, distributed ledger that can be used to record transactions and track virtually any type of asset across a network. The assets that blockchain can track can be "hard" assets such as personal property or real estate, or they can be "soft" assets such as intellectual property.

Blockchain is a core technology that facilitates other applications and solutions. For example, Bitcoin is the most widely known application in use today that takes advantage of blockchain technology. Just as the applications on your computer run on top of an operating system – likely Microsoft's Windows or Apple's MacOS – so, too, do applications run on top of blockchain. In this regard, blockchain can be thought of as an "operating system" for commerce.

In a traditional, non-blockchain environment, each party to a transaction keeps its own set of records. For example, a bank would maintain its own ledger of a customer's activities and so too would the customer. Periodically, a third-party auditor might be brought in to compare the two sets of records to ensure their agreement. However, in a blockchain environment, all parties to a transaction have access to the same ledger because the ledger is replicated to each party every time a transaction occurs or is updated; therefore, the data remains synchronized amongst the participants in the transaction. Further, blockchain protects the transaction – and by extension, all parties to the transaction – through the following four key characteristics.

1. **Consensus**. Before a transaction is accepted into the blockchain, all parties to the transaction must agree to it. This ensures that only authorized transactions are recorded.

2. **Provenance**. Because the transaction ledger maintains a complete history of all events associated with the asset, the history of the asset is easily viewed and the ownership of the asset is easily proven.

3. **Immutability**. Once a transaction is recorded in the distributed ledger, no party can change it because the transaction is encrypted. If a transaction is recorded in error, a new transaction must be entered to reverse the error.

4. **Finality**. The distributed ledger becomes the single point-of-reference for determining the ownership of the asset or the history of the transactions related to the asset.

How is Blockchain Used Today?

While still a relatively new technology, practical applications of blockchain are appearing in today's business world with increasing regularity; following are four examples.

The first recorded use of blockchain technology is that of Bitcoin, a form of digital currency. By taking advantage of the distributed ledger concept found in blockchain technology, Bitcoin eliminates the risk of a digital currency being "spent" on multiple occasions, an issue that must be resolved for digital currencies to become mainstream. But blockchain usefulness is not limited to Bitcoin or any other form of digital currency. In fact, numerous organizations and various industries are taking advantage of blockchain technology today.

For instance, Capital One and Gem Health are using blockchain technology to reduce the amount of time it takes to process payments made to healthcare providers. The two companies take advantage of an application that uses blockchain to verify transactions more quickly than by using traditional methods, and in the course of doing so, reduces friction in payment processes. This in turn creates a more efficient payment processing system and yields faster payments to health care providers.

Likewise, IBM Global Financing has created an application that uses blockchain to assist over 4,000 trading partners to purchase goods and services from suppliers using credit supplied by IBM. As a result of implementing this blockchain-based application, each organization is able to have better visibility into the order-to-delivery pipeline and the number of disputes filed and the time necessary to resolve each dispute has been reduced substantially.

Bitproof is one of many companies that has developed a blockchain-based application to secure contracts and prevent tampering once a contract is signed. Using Bitproof's SealX application, a fully-executed contract is uploaded to a distributed ledger that is accessible by all parties to the contract. Thereafter, based on the four key blockchain characteristics listed previously, no party can alter the terms of the contract without the agreement of all other parties.

What Does the Future of Blockchain Hold?

Looking ahead, what types of problems will blockchain be used to solve? The options are nearly endless. For example, a car rental company could implement a blockchain-based application to speed the process of renting a car. The distributed ledger shared between the company and the customer could contain information such as driver's license number and expiration date, credit card number, and insurance information and all that data could be continually verified using blockchain. Therefore, when the customer arrives to pick up the car, the paperwork currently involved would be virtually eliminated.

Another example of potentially using blockchain to solve a business problem is in the area of supply chain. A supplier and a customer could use a blockchain-based application to facilitate commerce. Purchase orders, receiving reports, invoices, and even payments could be created, communicated, and settled with virtually zero friction and almost instantaneously, leading to reduced costs and a more efficient trading environment.

In the governmental arena, blockchain technologies could be used to facilitate digital voting. Voters could cast their votes from the privacy and comfort of their own homes. Then, they could easily and anonymously access the blockchain to confirm that their votes were recorded as cast. In turn, perhaps voter turnout rates would increase because voting would no longer require a trip to a polling location. Also in the governmental arena, blockchain could be used to create and validate identity documents such as passports, birth certificates, wedding certificates, and drivers' licenses.

In sum, virtually any type of transaction or event that involves an asset – "hard" or "soft" – and multiple parties is a candidate for a blockchain-based app.

Summary and Conclusions

Though still not widely understood by many, blockchain is one of the more exciting technologies to have appeared in decades. By ensuring consensus, provenance, immutability, and finality through the use of a distributed ledger, blockchain greatly reduces the friction associated with a given transaction and improves security for all parties associated with that transaction. In turn, businesses will be able to process transactions faster and less expensively than ever. Remember, blockchain is an underlying, core technology and applications are built to take advantage of blockchain's capabilities to improve business processes. To that end, be alert to the ever-growing list of blockchain-based applications and consider implementing those that can help your organization to become more efficient and more secure.