

ASK THE
PROFESSIONALS

Leveraging the Power of Blockchain

Insights from a Business Law Firm's Perspective

Sean T. Peppard and Michael D. Stovsky are actively involved in Benesch's initiatives surrounding blockchain, a decentralized digital ledger technology that has vast implications for how we transact business.

As a partner in Benesch's Corporate & Securities Practice Group, Sean represents public companies, privately held businesses, and private equity and hedge funds. He has extensive experience in advising financial institutions and companies in the payment systems sector and regularly advises clients on financial technology — or Fintech — and other innovations in the financial services industry. "Blockchain has the potential to be a significant disrupter in the financial services industry, so I pay a lot of attention to its Fintech and payments applications," Sean says.



Peppard



Stovsky

Michael is a partner and chair of Benesch's Innovations, Information Technology & Intellectual Property (3iP) Practice Group, helping clients negotiate and execute high-value, intellectual property and technology transactions. Mike evaluates blockchain use from the platform level, exploring how, for example, a system like Ethereum can be used to create smart contracts for 3D and 4D printing. He focuses on how the technology can help companies conduct business more efficiently by negotiating smart contracts and processing transactions. "We work across a lot of industries," Mike says. "Blockchain is a much better way to secure, authenticate and validate communications, IP and contracts with vendors all over the world."

Crain Content Studio — Cleveland turned to the legal professionals for context on how businesses can harness blockchain's use and capabilities.

How exactly does blockchain work?

SEAN PEPPARD: That is complicated because there is no one "blockchain." Blockchain is in some ways a concept — that a decentralized ledger can provide a secure and efficient way to engage in transaction between widely separated and/or anonymous parties. All blockchains do share common characteristics.

First, they use cryptography to authenticate the parties involved in a transaction. All participants have a public and private key that encrypts and decrypts communications and acts as a form of digital signature. Second,

transactions are peer to peer and avoid the use of an intermediary. Third, they are validated by an agreed-upon protocol by participants.

For example, if party A wants to send bitcoin (a digital currency) to party B, it will announce this intent by entering party B's public key along with the amount of bitcoin to be transferred. Party B would enter its private key to decrypt and accept such transfer. The transfer would occur when a majority of outside validators agrees that the foregoing took place, and a new "block" is added to the chain to reflect the transaction.

The use of PKI, or Public Key Infrastructure, has been around for many years and ensures that communications have integrity (they have not been changed in transmission) and are authentic (they are from a specific participant). This adds certainty to a digital transaction in much the same manner as a notarized communication works in the paper world.

The manifestation of blockchain is just like any other digital tool — code that we can use to interact securely over the computer by use of software or a platform.

What makes it different from traditional transactions, and how are those differences beneficial?

SEAN PEPPARD: The biggest difference to me is that transactions are peer to peer. They avoid the use of intermediaries, such as Mastercard for the purchase of goods. Intermediaries cost money, take time to provide their services and provide a central location where sensitive data is at risk. By eliminating intermediaries, blockchain can be faster, more secure and less expensive than traditional transactions.

How are blockchain transactions validated?

SEAN PEPPARD: Again, this is complicated because there is no one blockchain. And validation for one type of blockchain — bitcoin, for example — may be very different than a blockchain that is used by two parties to enter into a contract or to post payment for performance of the contract. The validation process is generally similar in that participants "witness" the transaction and agree by consensus that the conditions to the transaction have been met and a new block should be added to the chain. All



ASK THE PROFESSIONALS

of this is coded into the transaction.

Sufficient computing power must be available to validate transactions. For this reason, most public blockchains provide incentives to validators. For bitcoin, the computer that actually creates the encrypted block that is added to the chain is rewarded with bitcoin and, in some instances, a transaction fee.

What are some of blockchain's weaknesses?

SEAN PEPPARD: The validation process is where I see the greatest weakness to blockchain. First, third-party validators need to be provided an incentive to validate transactions. As a result, blockchain is in some way limited to bigger transactions. For small transactions, there is simply insufficient incentive for the validators to dedicate the computing power to validate the transaction, or, if the incentive is paid, the transaction costs will be unreasonably high.

Second, the validation protocol is far from immediate. Thousands of credit and debit card transactions are processed every second worldwide. At this time, blockchain is not capable of validating that type of transaction volume (although Fintech companies in Japan are working on this limitation).

Finally, as mentioned above, blocks in the chain are created by consensus. With bitcoin, it is impossible for one "person" to control sufficient computer resources to control validation.

However, with more niche blockchain applications, particular attention will need to be paid to consensus and ensuring one party can't control the blockchain. The encryption used in blockchain transactions is highly secure by today's standards, and the blockchain has not, to date, been hacked (although several high-profile exchanges have been hacked and cryptocurrencies stolen from accounts). It is possible, as with any secure standard, that bad actors will eventually figure out a way to hack the blockchain, using faster and more robust computers and processors to do so.

What is the difference between cryptocurrencies like Bitcoin and Litecoin, and a blockchain platform like Ethereum?

MICHAEL STOVSKY: Cryptocurrencies are only one application that utilize blockchain technology. They are only

one basic embodiment of blockchain, much in the same way an individual computer app is one single embodiment of the computer programming language used to create the app.

Cryptocurrencies use blockchain technologies to execute financial transactions and to emulate traditional fiat currencies. Ethereum is much different.

Ethereum is a computing platform that uses blockchain-based technologies to create smart contracts. These are contracts that can be coded using a specific coding language and are self-executing. That means that they can be used to enter into contractual agreements with third parties that are highly secure, have integrity and are fully authenticated (much like a contract with a handwritten signature that is notarized).

The beauty of blockchain platforms like Ethereum is that they can be used to allow companies to enter into high volumes of contracts with third parties all over the world without extensive negotiations. All of the relevant contract information on which the parties are agreeing is built into the smart contract and stored in the blockchain.

These smart contracts can also embed specifications and other intellectual property in a way that cannot be changed during transmission. Therefore, a company can be sure its vendors securely maintain the intellectual property that is required for the particular contract, and the digital rights in that content are protected.

How will blockchain-based platforms such as Ethereum change the way in which business is conducted?

MICHAEL STOVSKY: Platforms like Ethereum help companies that need to enter high volumes of contracts with multiple vendors or customers.

Imagine a manufacturing company that wants to use 3D printing vendors all over the world to manufacture thousands of highly engineered parts for it. Rather than the inefficiency of having face-to-face negotiations with hundreds or thousands of vendors, the parties can agree in an electronic environment on the specific contract terms. They enter into the agreement and store the agreement in the secure, encrypted blockchain. The blockchain protects the intellectual property rights in the specifications, CAD-CAM renderings and other content transmitted to the vendor.

What do you think some of the major impacts of the use of blockchain-based platforms will be for Northeast Ohio?

MICHAEL STOVSKY: We believe that the use of blockchain-based platforms like Ethereum will revolutionize the manner in which large manufacturers, of which we have many in Northeast Ohio, do business in a world in which distributed and additive manufacturing methods (such as 3D and 4D printing) will become the norm.

Imagine a situation in which a large manufacturer can reduce its own capital expenditures by farming out manufacturing to 3D and 4D printers all over the world. These are companies that can manufacture precision parts to spec better, faster and cheaper — all while maintaining the integrity of the contracting process and the intellectual property rights of the company in the specifications and other materials provided to the vendors.

We also see the possibility for Northeast Ohio to redevelop underutilized warehouse and manufacturing space to create a 3D, 4D and additive man-

“We believe that the use of blockchain-based platforms like Ethereum will revolutionize the manner in which large manufacturers, of which we have many in Northeast Ohio, do business in a world in which distributed and additive manufacturing methods (such as 3D and 4D printing) will become the norm.”

MICHAEL D. STOVSKY, Partner and Chair, Benesch's Innovations, Information Technology & Intellectual Property (3iP) Practice Group

ufacturing zone. Establishing a center of 3D, 4D and additive manufacturing for the U.S. builds on the rich history of Northeast Ohio as a manufacturing powerhouse. Blockchain platforms like Ethereum could be central to this effort.

Where do you see blockchain having widespread application? What industries will it change?

SEAN PEPPARD: The answer most often given to this question is transportation and logistics, with good reason. First, it seems like a new transportation alliance, or pilot program, is announced every day, and there are big industry players backing these efforts. Second, there is a general consensus that paperless shipping management, standardized contracts and a more precise method of tracking the movement of goods

are needed. Blockchain is a potential solution for all of the foregoing. I think that transportation and logistics will be the first place where we see widespread use of the technology.

I also think we will see it used where the ownership of assets may be important, but in situations where it is has been harder to maintain adequate records. We are already seeing smart contracts being used to track oil and gas royalty rights and payments.

We see huge potential in basic manufacturing of heavily engineered parts that require the transmission of specifications in a manner that ensures integrity and authenticity. And as an offshoot to this, we see great potential for the real estate redevelopment industry to retrofit underutilized manufacturing spaces for 3D, 4D and additive manufacturing technologies and then to use blockchain-based platforms to drive sales.

WE'RE
GROWING
FOR IT.

MY BENESCH MY TEAM

Benesch's **Innovations, Information Technology & Intellectual Property (3iP) Practice Group** is taking its cue from our clients. They need to protect and benefit from an increasing portfolio of intellectual capital, and manage an array of IT-related related assets and issues. From patents, trademarks and copyrights to data security and privacy, technology licenses and usage agreements, and e-Commerce matters, our clients' needs are growing—and so is our practice.

Benesch
www.beneschlaw.com

“(Blockchain) transactions are peer to peer. They avoid the use of intermediaries, such as Mastercard for the purchase of goods. Intermediaries cost money, take time to provide their services and provide a central location where sensitive data is at risk. By eliminating intermediaries, blockchain can be faster, more secure and less expensive than traditional transactions.”

SEAN T. PEPPARD, Partner, Benesch's Corporate & Securities Practice Group



CRAIN CONTENT STUDIO
Cleveland