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# Proskauer Rose Discusses The Promise of Blockchain

*By Jeffrey Neuburger* March 21, 2017

**Edit |**

The blockchain protocol (a form of a 'distributed ledger system') was originally designed as a platform to process Bitcoin transactions. The protocol enables peer-to-peer transactions and eliminates the need for a trusted intermediary to verify and process the transactions.

The blockchain protocol as a platform is actually independent of Bitcoin, and is therefore transferable to other applications. Naturally, because blockchain was conceived of as supporting a specific digital payment system, the initial and most obvious use of the blockchain outside of Bitcoin is "fintech" – technology-based payment and financial transaction systems. The goal of recent experimentation and development in fintech is to reduce inefficiencies in the existing payments, clearance and settlement systems. Conceivably, many of these functions could be conducted through a "smart contract" – a completely automated process, executed via a software application that runs "on chain." In pursuit of these goals, many in the financial services area have made significant investments in research, development, and pilot programs, in many cases through coalitions or in partnership with large technology companies as well as with blockchain-focused startup companies.

Beyond fintech, however, blockchain offers many other opportunities. The digital values that are tracked and processed through a blockchain implementation can represent any other type of information or assets. This capability has evoked the early development of new applications and technological developments involving many industries beyond financial services.

For example, the promise of blockchain and smart contracts has been taken up by existing players and new entrants in industries such as:

- Real estate – The real estate industry has recognized the efficiency that blockchain presents with respect to core industry functions such as property title transfer and recording, escrow agreements, listing services, insurance, and other aspects of the industry.
- Healthcare – Blockchain presents a very efficient and elegant solution to many of the regulatory and operational issues that the healthcare industry is facing in this turbulent time. Blockchain is being implemented to facilitate electronic medical records, patent data management, hospital and pharmacy administration, insurance and claims processing and related patient care systems.
- Sports, Media and Entertainment – Blockchain is being used to enable decentralized content management and distribution, providing a means of digital rights management that eliminates a fair amount of centralized infrastructure. Blockchain systems are being developed to facilitate direct transactions between creators and consumers of content. In addition, rights management and royalty accounting systems are being developed. Modernized ticketing systems running on chain might aid in eliminating intermediate ticket sellers, reducing fraud, and easing consumer to consumer ticket resales. Wagering, fantasy sports and memorabilia businesses based on the blockchain are rapidly being developed.
- Advertising – Blockchain is being used to re-engineer the way online advertising is sold, measured and paid for. In addition, the implementations offer means of collecting and using consumer response data in an efficient and secure manner, and in compliance with applicable laws and privacy policies.
- Retail – The retail industry is exploring blockchain as a means of securing transactions, avoiding hacking incidents, and reducing bad debt and customer fraud.
- Supply chain management – Blockchain technology is being tested, in conjunction with IoT devices and smart contracts, to automatically release payment for goods when they have arrived at their shipping destination. Blockchain is also being used to trace the chain of title to ensure authenticity of merchandise as it travels through distribution channels.

We will briefly outline the basics behind blockchain and smart contracts and the potential benefits and concerns.

**What is blockchain?**

In a "blockchain" or distributed ledger network, individual transactions are grouped into "blocks." As a block of transactions is verified, the block is distributed to all the participants on the network (often referred to as "nodes"), and is logically and irrevocably linked to the block before it (creating the "chain"). In this way, all of the nodes have a full and complete copy of every transaction ever conducted in through that network. Unlike centralized ledger networks, the chain can be updated with a new transaction by any node on the network, with all nodes' copies of the chain being identical.

There are public or "permissionless" blockchains (such as that underlying Bitcoin), where every member of the public can be a node on the network, and the transaction ledger can be accessed by everybody. For developing commercial applications, the preferred implementation seems to be a private (or permissioned) blockchain implementation, with limited or pre-selected participants authorized to transact on the network. In either case, however, no single entity or node controls the ledger – the network itself verifies the transactions through a "consensus mechanism."

This peer-to-peer chain of linked blocks and the transactions embodied within them makes it "impossible" from a computational standpoint to modify the data once a block is created and verified.

**What are Smart Contracts?**

Smart contracts are software applications which run on the blockchain platform, and which automatically execute, verify and enforce the performance of an agreed-upon transaction. The fully automated nature of execution provides for self-enforcing "automated trustworthiness" with no counterparty risk of non-performance. The system typically requires the use of "oracles" – that is, "web services" or other external sources of information to trigger contract execution.

In short, a smart contract can be used, for example, to facilitate paperless transactions with strangers across borders in a secure way. They are particularly well-suited for transactions with few contingencies, such as escrow agreements or conditional payment arrangements that can be automated and self-enforcing. A smart contract is written by a coder who authors software to embody the arrangement agreed upon by the parties to a transaction. This leads one to think about how the roles and required skill sets of lawyers might evolve in the future.

**What are the cross-industry upsides of blockchain?**

- **Reduced transaction costs**: The financial sector believes that blockchain can bring down settlement, regulatory and cross-border transaction costs. Other industries also see the potential for lower operational costs as well.
- **Greater efficiency**: Elimination of intermediary entities can speed up transactions and eliminate costs and delays. The blockchain and smart contracts will also eliminate the inefficiencies in generating "trust" in any particular transaction. Errors will be reduced. The blockchain offers the possibility of increased throughput of transaction volumes with minimal incremental cost.
- **Visibility and Predictability**: The blockchain offers the possibility to bring visibility to transactions and transaction data that was previously unavailable. In addition, the blockchain and smart contracts promise predictability and reliability in outcome.
- **Irreversible transactions**: Unless a "back door" is built into a private, permissioned implementation, blockchain transactions are irreversible. Fraud will be reduced and record management will be more auditable.

**What are the downsides of blockchain?**

- **Unproven applications**: Blockchain was designed for Bitcoin to replace intermediaries in the banking system. While there is great enthusiasm, optimism and resources associated with applying the blockchain in other industries, the viability of these implementations as part of a general commercial rollout is still unproven.
- **Security**: The key security vulnerabilities associated with blockchain appear to actually be in technology ancillary to blockchain but not the blockchain itself (e.g., digital wallets, smart contracts). Efforts will be necessary to address those concerns.
- **Confidentiality**: The nature of the blockchain is that transactional data is published and publicly available. Clearly, there are concerns associated with confidentiality around blockchain transactions and the shielding of proprietary information.

**The Regulatory and Legal Environment**

As expected with such an important technological development, lawyers are studying the legal issues behind blockchain and the interplay between regulation and the technology. As is always the case, the law lags behind technology and evolving business models. It remains unclear how the blockchain fits under current regulatory structures and what reengineering is needed to accommodate this new way of doing business.

Questions include:

- Regulatory Structure: How will new entrants, technical and otherwise, with novel roles in blockchain-enabled transactions fit under the regulatory structures or licensing schemes?
- Open Standards: How can regulators maintain a technology-agnostic approach?
- Audit and Record Keeping: Will a blockchain record satisfy audit and record keeping requirements? How will one linking a blockchain address to an identity satisfy "Know Your Customer" and related obligations?

- UCC: How will smart contracts be analyzed under the constructs of the Uniform Commercial Code? What portions of the Code will need to be revised to reflect this new automated execution paradigm?
- Verifications, Registrations and Certifications: How will titles, verifications and third party or government certifications work on blockchain-based networks?
- Tax and Bankruptcy: How will intangible blockchain assets be deemed under tax or bankruptcy law?
- Jurisdiction: In decentralized arena with transactions running on an international computer network without a central place where data is stored, which laws apply in the event of a dispute or fraud?
- Force Majeure: What is an unforeseeable "force majeure" in the blockchain/smart contract environment?
- Privacy and Security Issues: The balance of confidentiality, traceability, and cybersecurity will need to be addressed.
- Patents: There has been a land rush to patent blockchain developments. With many industries looking toward collaborative blockchain uses, patent filings can help maintain control until the technology matures, or translate into a "seat at the table" of a future initiative. Litigation is likely to ensure. Companies and startups might see defensive filings or patent pools as a good strategy in this area.
- Open Source Software: The code underlying blockchain technology is available under a series of open source licenses. Some are more restrictive, with copyleft provisions and limitations on enforcing patents (GPLv2, v3, Apache 2.0); others are more permissive (e.g., MIT, BSD licenses). Companies working on blockchain projects need to understand the implications of the open source nature of the available blockchain code and the relevant underlying licenses to fully understand their rights and obligations with respect to their code.
- Antitrust: Exploitation of blockchain across an industry will, by definition, involve collaboration among competitors. This obviously raises antitrust sensitivities, and participants must be cautious as they get involved in such collaboration, including the creation of closed systems, information sharing, and standardization efforts.

**Conclusion**

If the promise is realized, blockchain will prove to be very important – a game changer – for many industries. To get there, however, many legal and regulatory issues must be resolved. Each industry adopting the chain will face its own unique set of concerns. We are at the beginning of the road, a road which leads to great business opportunities for many industries.

*This post comes to us from Proskauer Rose LLP. It is based on the firm's client update, "The Cross-Industry Promise of Blockchain" dated March 15, 2017, and available here.*

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