

Smart Contracts Are Having Their Moment

Named in the 1990s, they took 15 years to arrive

By William Choi / AlixPartners LLP

Consider a situation where a product is covered under manifold patents held by multiple third-party patent holders. Imagine the time and costs of, among others, monitoring sales and royalty payments. Now imagine a technology that could (1) ensure that every time a sale is made, royalty payments are made to all patent holders in an eye blink; and (2) eliminate the need for an audit because the transaction history is readily secured and transparent. Such “smart contracts” have the potential to eliminate frictions (or transaction costs) common with traditional contracts. But would that also eliminate or materially reduce the role of contract lawyers?

The term “smart contract” was first coined in the early 1990s by Nick

Szabo, a computer scientist and legal scholar, to describe an automated contractual relationship. The concept, however, would remain elusive and obscure until about 15 years later, when the right technology – the blockchain – came along.

Created by pseudonymous developer Satoshi Nakamoto, blockchain underpins bitcoin (and other cryptocurrencies) as a distributed ledger that stores, time-stamps, encrypts and verifies every bit of data and could bring Szabo’s concept into reality. The ledger is not under any single entity’s control but is distributed across a network of computers and operates by consensus; all parties can confirm in real time the status of a transaction. If an attempt is made to change any data in a block already added to the chain, it is rejected by the network of computers

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(i.e., the chain cannot be broken as the blockchain is immutable). Trust rests in the record itself.

Given the enormous potential, it is not surprising that new blockchains far afield from cryptocurrencies are emerging, particularly where trust in the veracity of records and verifiability of transactions are warranted. Insurance, real estate and health care are examples of industries well suited to benefit from blockchain adoption. In law, immutable transaction records could change the way evidence is used in courtrooms.

An algorithmic smart contract is essentially self-executing code that enables the transfer of complex assets with automated exchange of rights. Business rules and arrangements can be encoded in software that execute themselves automatically under predetermined circumstances, and nothing outside the code can alter the rules of the transaction. Economic theory could provide clarity and guidance for such rules and

arrangements, in particular providing an understanding of the potential pitfalls when designing contracts – Oliver Hart and Bengt Holmström were awarded the Nobel Prize in Economics in 2016 for such research.

The proliferation of smart contracts could diminish demand for lawyers to the extent that they are part of the friction within the transaction process. But it is also possible that demand for lawyers could increase in other ways. Indeed, the prediction that smart contracts will diminish the role of the lawyer may be overblown, and yet another example of the “lump of labor” fallacy. This fallacy is the incorrect notion that only a finite amount of work exists, and when automation is introduced, the amount of work is reduced. The historical economic evidence, however, shows that the rise of new technology has generally ended up creating more jobs than it destroys, because automation increases the demand for humans to do the other tasks around it and shifts the work mix toward new types of services.

Whether economic history regarding the lump of labor fallacy repeats itself in this instance, the best contingency is to be smart about the economic impact of the blockchain. Gaining a better understanding of the economics of contract theory couldn’t hurt.



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Giancarlo believes might have changed history had the capability been available in 2008:

“What a difference it would have made if regulators had access then to the real-time ledgers of all regulated trading participants, rather than trying to assemble piecemeal data to re-create complex, individual trading portfolios. I believe that, if regulators in 2008 could have viewed a real-time distributed ledger (or a series of aggregated ledgers across asset classes) and, perhaps, been able to utilize modern cognitive computing capabilities, they may have been able to recognize anomalies in market-wide trading activity and diverging counterparty exposures indicating heightened risk of bank failure. Such transparency would not, by itself, have saved Lehman Brothers from bankruptcy, but it certainly would have allowed for far prompter, better-informed, and more calibrated regulatory intervention instead of the disorganized response that unfortunately ensued.”¹³

Systemic risk is further reduced by the removal of the need for a central

authority. There is no single point of failure, as there is if a clearinghouse, exchange or trading platform holds the only authenticated set of records on its central server. This danger was clearly illustrated by the recent Equifax data breach, which put millions of Americans at risk of identity theft after the system’s gatekeeper was compromised. The distributed nature of data storage gives the shared ledger far more resilience than it would have if it were just stored by a single central party, because it can be reconstructed as long as any single participant maintains a copy. But it cannot be modified unless 51 percent (or whatever other majority is specified by its consensus protocols) of the blockchain’s members agree that the change is valid, making hacking very difficult.

Yet, at its most basic, blockchain is simply a way of digitizing a chain of title or custody. And because of that, its potential use ranges far outside the financial sector. The Recorder of Deeds in Cook County, Illinois, tested a pilot program for using blockchain to track real estate conveyances.¹⁴ Illinois is

also exploring a proposed framework to issue birth certificates for citizens using a blockchain that could become the foundation for a government-issued secure digital identity. It would be the first of its kind in the U.S.¹⁵ Nevada’s Senate Bill 398, recently signed by the governor, gives legal recognition to blockchain-based electronic records, signatures and contracts, and it bans local authorities from imposing taxes, requiring any person or entity to obtain a certificate, license or permit, or imposing any other requirements in connection with the use of blockchains.¹⁶

Earlier this year, the U.S. Department of Health and Human Services hosted a “Blockchain in Healthcare Code-A-Thon” designed to explore blockchain’s potential to store medical records and manage patients’ digital identities.¹⁷ And the U.S. Department of State is holding a public workshop dedicated to discussing blockchain’s potential uses in development and diplomacy,¹⁸ building on a previous initiative, the Federal Blockchain Forum,¹⁹ that it

hosted in July in collaboration with the General Services Administration’s Emerging Citizen Technology program. The GSA maintains a database for federal agencies and U.S. businesses interested in implementing blockchain solutions within government, which so far has received more than 200 submissions.²⁰

As these uses in different contexts demonstrate, blockchain is “asset agnostic,”²¹ and its characteristics make it suitable for a wide range of potential applications. We believe that the explosion of attention paid to it in recent months is unlikely to slow down. If anything, as investment in research and development and adapting the technology to concrete uses progresses, and as new uses continue to be identified, we believe interest in blockchain will only increase.

Market participants should endeavor to keep up to date with what is happening in their industries and their markets, because at this point, one thing is very clear: Blockchain technology is here to stay.

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