

# Chain reaction

We're hearing more and more about blockchain, but what could this technology mean for law firms? Would its impact be positive, or does it come with more challenges than advantages? Suparna Mukherjee considers how we should prepare for a changing legal landscape.

**B**lockchain, the distributed database technology behind the cryptocurrency bitcoin, has the power to simplify all types of transaction and deliver enormous efficiencies to governments, businesses and individuals. Blockchain use cases range from clearing and settling any trade including corporate shares, securing digital rights and reducing piracy, automating real estate transactions, and eliminating transaction disputes. Given its benefits, it is not surprising that Dubai has launched a strategy that would see all government documents on blockchain by 2020.

One application that is gaining momentum is the “smart contract” – a computer program that is stored, verified and executed on blockchain. As blockchain technology becomes more mainstream, what are the legal implications? Are smart contracts a viable alternative to traditional legal agreements? How should lawyers prepare for this changing legal landscape and the commoditisation of legal products?

## WHAT IS BLOCKCHAIN?

Blockchain works by recording all transactions to a shared database of participants. Transactions are added as they occur using a set of pre-agreed rules, and transmitted across the network to ensure all peers have the same data in their databases. The distributed database or ledger is decentralised, i.e. it is not held by a central authority so there is no point of control. The network verifies the validity of each transaction using algorithms known as cryptography. Networks can be public where participants are anonymous and not vetted, or private where participants are known and may have different levels of permission to verify data.

## WHY IS BLOCKCHAIN IMMUTABLE?

As transactions are deemed valid by the

majority of the network, the network bundles transactions together in a “block”. The blocks are added to the chain chronologically and with a fingerprint; each block refers to the previous block by its fingerprint. As fingerprints are determined by the contents of each block, anyone trying to amend data within a given block would have to embark on an impossible task of regenerating all fingerprints from that block going forward. These blocks create a chain of secure, authenticated transactions, otherwise known as blockchain.

## WHAT IS A SMART CONTRACT?

The term “smart contract” was popularised by Nick Szabo in his 1997 paper *The Idea of Smart Contracts*, in which he suggested that computer code could be used to transfer ownership of digital assets such as intellectual property or shares. Lawyers should see a smart contract as a computer program or piece of code that is stored on a blockchain and can be used to replace all or part of a traditional legal contract. The terms of the agreement including the rules and consequences are set out within this code, which is then shared via the blockchain. Once the participants (computers) in the network receive the code, they each authenticate the results of the code execution, and then update the ledger to record execution. Given that the terms of the contract are validated by consensus utilising blockchain, the smart contract has the ability to self-execute without the need of intermediaries. While a traditional legal contract sets out the terms and conditions of an agreement between parties, a smart contract actually enforces the agreement by validating these conditions to determine the transfer of a digital asset.

## COULD IT REVOLUTIONISE REAL ESTATE?

Real estate has many intermediaries:

brokers, escrow companies, appraisers, insurers, mortgage lenders, notary publics, title companies, government property databases, etc. Using smart contracts, these steps could be simplified or replaced by blockchain technology, real estate transactions could be automated, and some of these middlemen could be removed from the process. Verification of ownership could be done by blockchain technology instead of third party verification. The contract could be signed electronically by buyer and seller, and payment for the property, and rights and title could be transferred digitally. Blockchain would be able to record the transaction history of each property, reducing the need for intermediaries, cutting fraud, improving transparency, and speeding up transactions. Lawyers may glean insight from the tests in Sweden<sup>1</sup> to put the country's land registration system on blockchain.

#### **BENEFITS OF ADOPTING BLOCKCHAIN**

- Faster transactions with less chance of human error
- Reduced costs
- Reliance on third parties that provide services such as escrow can be reduced or removed entirely
- Lowered risk of manipulation and non-performance, since the terms of the smart contract are validated by consensus including disinterested parties
- Compliance costs and transaction disputes

#### **CHALLENGES OF ADOPTING BLOCKCHAIN**

- Overcoming the usual obstacles to adopting a new technology, including lack of know-how
- As the smart contract depends on coding, the code must be drafted to achieve exactly what the parties want, taking into account the immutability of the blockchain
- Privacy and trust concerns may exist given code within smart contracts is visible to everyone within the network
- Legal and regulatory infrastructure requires updating, including the development of a set of standard and best practices for the coding language used in smart contracts
- Latency: while faster than a traditional legal contract, the time required to verify smart contracts and add them to the blockchain is considerably longer than the milliseconds we are accustomed to when

carrying out non-blockchain online transactions

#### **WHAT ARE THE IMPLICATIONS OF SMART CONTRACTS FOR LAWYERS?**

- As blockchain technology becomes more widespread, lawyers will be increasingly called upon to advise clients, identify and mitigate risks, and implement strategies utilising smart contracts. In response to this need, some law firms are adapting to include blockchain advisory services.
- Use cases for smart contracts range from clearing and settlement, supply chain and trade finance documentation, royalty distribution, registering trademarks, land registry record-keeping, voting, insurance claim processing and multiple uses for peer-to-peer transactions, to name but a few. Such wide-ranging uses offer endless opportunities for law firms to adopt new strategies to respond to this altering legal landscape.
- New blockchain-specific legislation and the development of a regulatory framework may be required to accommodate smart contracts as they evolve and become widely used to streamline processes and make documentation more efficient.

#### **IN CONCLUSION**

Blockchain will change the way we do business, removing the need for a lot of manual processing and reducing the role of middlemen. This will in turn result in faster, more efficient services for the customer, whether in banking and insurance, or on a more personal level with digital wills and digitised health records. How long this will take is not clear, but with public-private initiatives such as Dubai's Global Blockchain Council driving the technology forward, the smart law firms will be the ones considering smart contracts. 🏠

1. <http://www.reuters.com/article/us-sweden-blockchain-idUSKCN0Z22KV>



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