Blockchain & smart contracts: challenges for lawyers and businesses

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Blockchain – is it just hype, or does this technology really have the potential to disrupt the digital world and the economy? Blockchain offers enormous potential, for example in connection with smart contracts, but this technology is in its early stage of development, and legislation and legal interpretation also need to react.

What are the challenges that blockchain brings for lawyers and what legal challenges does it bring for businesses? Before approaching these questions, it is essential to first understand what blockchain is and how it works.

What is a blockchain?

Blockchain is a distributed ledger technology that works on a peer-to-peer network. It is a decentralized database, distributed and globally shared, having no central administrator. All records are held by each network user, and each user can read any record in the database (in public permission-less blockchain). However, if any user wants to create a new record or transaction, it must be validated by the consensus of other users. Different blockchains use different validating methods. Once validated, the transaction is recorded in the block. Each block is cryptographically secured, contains a timestamp and a cryptographic "hash" of the previous block, thus linking blocks together. Linked blocks form a chain – blockchain. Data recorded in the block cannot be altered retroactively without the alteration of all subsequent blocks, therefore blockchain is considered secure and resistant to data modification.

Blockchain technologies are mostly known due to cryptocurrencies, used to incentivize users for block creation or transaction validation, and some may also be used to pay for goods and services. The most famous cryptocurrencies are Bitcoin and Ether. Ether is generated by the Ethereum blockchain platform, which does not only record transactions, but is also often mentioned in connection with smart contracts.

Smart contracts

There is no uniform definition of smart contracts. Computer scientists mostly refer to "smart contract code" that is programmed to autonomously execute certain tasks, if pre-defined conditions are fulfilled, so smart contract is understood as a computer code. Lawyers refer to a "smart legal contract"— an agreement autonomously executed by software, if pre-defined conditions are met. Legal requirements specified by law must be met, in order to consider the agreement valid. Thus, not every smart contract code represents a smart legal contract, but on the other hand, every smart legal contract contains smart contract code enabling self-enforcement and self-execution. Both concepts have common features: automation, self-execution, self-enforcement and a pre-defined set of conditions. Smart contracts do not necessarily have to run on blockchain, but it is this new technology that provides the required level of security, trust and transparency.

In particular, smart contracts on blockchain technology allow transactions among parties to be automated and self-executed, without the need of a third party entrusted intermediary. They can automate many different kinds of processes and operations, the most obvious being payment and actions conditional on payment. Smart contracts can also facilitate property transfers, administer land registers, automate mortgage contracts, provide real-time visibility of steps in a supply chain, and calculate and pay rebates based on volumes and other factors, etc.

Transparency & irreversibility

One feature of blockchain is transparency — all transaction data is accessible to all users, every user can see copies of the ledger of other users. This transparency brings a challenge for privacy. If a specific application requires a link to a user's identity, personal information will be accessible for all application users. Compliance with EU data protection regulations and answering these questions would be a real challenge: who are the processors and controllers, where is the data located, and was the data transfer compliant with EU data protection laws? Technical difficulties or the impossibility to modify blockchain retroactively could avoid fraudulent transactions on one hand, but on the other, it creates another privacy challenge: how will data be deleted once the data subject enforces his right to be forgotten?

Another regulated area is consumer law, which strictly imposes the parties' rights and obligations, if one contractual party is a consumer. Failing to comply with mandatory consumer law, the contract may be held invalid retroactively, so the law looks at the contract as if it never existed and was never executed. This concept can be applied not only to consumer law contracts, but also to any other contract failing to meet essential legal requirements or mandatory law. It would be a challenge to establish how such invalid contract could be "deleted" from the ledger, as if it never had existed?

Subjective nature clauses & decisions

Another challenge that smart contract should address, are subjective nature clauses, whose meaning and interpretation are usually dependent on the circumstances and context, e.g. 'good faith' or 'commercially reasonable manner'. It is hard to imagine that computer code could assess the circumstances and enforce pre-defined action, based on such subjective clause. Of course, one possibility would be to prevent using such clauses in smart contracts, but smart legal contract is also governed by contractual law, which contains many clauses and terms of subjective nature.

Automated self-enforcement of smart contracts could bring trust and confidence to parties, that the action will be performed, if a pre-defined condition is met. For example, if the party is in delay, the contract may be terminated by the non-defaulting party. However, sometimes the non-defaulting party does not want to exercise its termination right, based on its subjective decision and other external circumstances and factors. This also seems to be a challenge if and how to program such actions with subjective aspects.

Summary

This article has highlighted only some of the legal challenges facing blockchain technology and smart contracts.Many others need to be solved in the near future to enable business development based on blockchain technology. Cryptocurrencies, ICO (Initial Coin Offerings), their legal characterization and applicable rules determination, are also at the center of interest of lawyers, but this topic is so complex that it deserves a separate discussion.