



Dissecting the Blockchain Revolution:
*A Lawyer Friendly Guide to
Blockchain and Smart Contracts*

FIDES
RESEARCH

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Outline

We know this technology is coming, but what exactly can it do and how will it affect your practice and business?

The increasing pace of technological advancements is affecting every industry sector today. Even in the most traditional areas of business, we are beginning to see the emergence of automation and digitalisation of processes that only a few years ago, would have been hard to imagine coming into effect.

The impact on law firms is no different. However, with an overwhelming amount of hype circulating the legal market, it has become difficult to clearly assess what will become of blockchain and smart contracts technology, how it will affect legal services and what it will mean to the practice of the law.

The debate about how technology will change law firms and law as a business and the threat it poses is ongoing. What is evident though, is that law firms and the business of law will need to adapt and change as the world changes around it. Here we aim to outline the technology and how, if it is understood, appreciated and applied correctly by lawyers, it can and will revolutionise industries and provide opportunities to those lawyers and law firms who embrace it.

In this report, we look to debunk the myths of total disruption and provide an overview of what is being developed at the moment and how it could potentially be used by lawyers in the future.

With so many industries having the potential to implement this technology into their operations, we have listed some of the most prominent areas that are suggested to be crucial to the blockchain movement, along with example use cases.

We then go on to explore its impact on the legal marketplace, gathering advice from industry experts on how law firms should expect to be advising their clients and what exactly their understanding needs to be of this technology.

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1. What are blockchain and smart contracts?

Blockchain

A blockchain is a record keeping system i.e. a ledger, which differs from a traditional database due to the following attributes:

Decentralised

A blockchain is a form of distributed ledger technology (DLT) i.e. rather than a single database controlled by a single person or entity, to be accessed by the relevant participants, each of the participants hosts a copy of the database, which is automatically updated, providing every participant with access to an identical and up to date database and eliminating the need for trusted intermediaries.

Immutable

Due to this decentralised system, the data that's stored cannot be edited, which is what makes it so reliable.

Cryptographic

Cryptography is used to validate users of, and the data to be stored on, the ledger, as well as to encrypt the data that is stored, making the ledger secure and trustworthy.

Permissionless vs permissioned

A permissionless blockchain (as used by Bitcoin and Ethereum) is an open network, accessible to anyone with a computer, whereas a permissioned blockchain is closed and only accessible to pre-determined users. The latter is what can be harnessed by corporate organisations, and be built in line with a certain business model, layering in additional security and privacy measures.

Cheaper and faster

Without the need of an intermediary to handle or oversee a transaction, traditional processes can become less costly and time consuming.

Transparent

As the data is encrypted and immutable, it is possible to enable access to view the ledger to the public, only pre-determined users and/or to specific regulatory authorities.

Smart contract

Not to be confused with a legal contract, a smart contract is self-executing code that reacts to an input and executes a directed command i.e. a small piece of computer code that performs an action when the "if this happens then do that" conditions are met.

Smart contracts don't necessarily need to be used in conjunction with blockchain, but integrating these two technologies extends the level of automation in a process.

Smart contracts hadn't found real use cases until blockchain technology was created. Together, it is possible to create smart contract code, which is both stored and executed by the network of computers that run the blockchain, and subsequently update itself on a distributed ledger.¹

Whether it's executing terms of a legal contract or performing a transaction, the smart contract allows a process to take care of itself whilst blockchain ensures the result is recorded and can't be tampered with. In other words, it allows a process to be monitored, executed and enforced without the need for human interference.

Where does this leave lawyers? And how do they fit into this new age of service delivery?

This technology is expected to replace multiple steps in a business process during which points written legal contracts are usually negotiated and agreed.

That is not to say they will replace traditional legal contracts, but rather agreements need to be made based on conditions that are both managed and executed using blockchain and smart contracts. It is for this reason that lawyers must become better informed about this technology and build an understanding around how it can be used in business practices.

In order to examine where blockchain and smart contracts can be adopted by different industries, we must first identify how it has progressed and at what stage of development the technology has reached.

2. Current stages of development

2.1 Blockchain

Blockchain initially rose to fame as the technology behind Bitcoin, which has experienced major publicity over the last six years. In the aftermath of this, companies began to realise that the underlying technology that runs Bitcoin transactions (i.e. blockchain) was in fact the invention that offered the most potential to kick-start a digital transformation, more so than just cryptocurrencies.

Now almost every major global organisation ranging from the financial services sector to retail has been piloting blockchain and other distributed ledger technologies, whilst multiple blue chip companies (e.g. IBM, Accenture and Mastercard) have invested in patents for their own DLT applications. Meanwhile, there is a wide network of technology companies already building operations on distributed ledger technology in areas such as trade finance and government databases.

Accelerated efforts have been made in the development of blockchain technology through the work of consortia. A consortium often consists of companies, regulators and government bodies from a certain industry, fostering collaboration and experimentation of different use cases of blockchain and smart contracts, whilst also brainstorming the issues that could arise, in areas such as tax, disputes and data protection.

R3 were one of the first industry-leading consortia to emerge in the financial services industry, with collaborative efforts in areas such as healthcare and logistics now following the trend.



Below we've taken a look at just a handful consortia that have evolved in this field:

Consortium	Accord Project	Enterprise Ethereum Alliance	Digital Asset	Dutch Blockchain Coalition	Mobility Open Blockchain Initiative (MOBI)	R3
Description	<p>Industry: Legal</p> <p>Founded in July 2017</p> <p>Purpose: To create technology and publish standards for the use of blockchain, DLT and smart contracts in legal agreements.</p> <p>Supporters: Launched by Clause, Hyperledger, the International Association for Commercial and Contract Management (IACCM) and Clio.</p> <p>The consortium consists of 27 law firm partners including: Ashurst, Simmons & Simmons, Linklaters, Freshfields, Clyde & Co, Dentons and Slaughter and May.</p>	<p>Industry: Cross-sector</p> <p>Founded in February 2017</p> <p>Purpose: To define enterprise-grade software on the Ethereum blockchain by connecting companies and Ethereum subject matter experts.</p> <p>Supporters: 31 initial launch members including BP, Credit Suisse, ING, Intel, JP Morgan, Thomson Reuters and UBS.</p> <p>The consortium now houses over 300 members.</p>	<p>Industry: Financial Institutions</p> <p>Founded in 2014</p> <p>Purpose: Develop applications for global financial markets on The Digital Asset Platform.</p> <p>Supporters: Strategic partnerships include: ABN AMRO, Goldman Sachs, JP Morgan, BNP Paribas, Citi, Deutsche Börse and Santander.</p>	<p>Industry: Cross-sector</p> <p>Founded in March 2017</p> <p>Purpose: Stimulate the large scale deployment of blockchain in the Netherlands; set conditions for safe and legally compliant blockchain and create a Human Capital Agenda.</p> <p>Supporters: Founding partners include: Ministry of Economic Affairs & Climate, TU Delft, TNO, KNB, ING, ABN AMRO, Rabobank, CGI, Enexis, Pels, LedgerLeopard and CMS.</p>	<p>Industry: Automotive</p> <p>Founded in May 2018</p> <p>Purpose: To determine use cases for blockchain technology in mobility-related projects e.g. vehicle identity, history and data tracking; payments related to vehicles, and car sharing and ride hailing.</p> <p>Supporters: Participating partners include: BMW, Ford, General Motors, Hyperledger, IBM and Accentur.</p>	<p>Industry: Financial Institutions</p> <p>Founded in Sept 2015</p> <p>Purpose: Develop applications for finance and commerce on its DLT platform Corda.</p> <p>Supporters: Initially launched in partnership with Barclays, BBVA, the Commonwealth Bank of Australia, Credit Suisse, J.P. Morgan, State Street, the Royal Bank of Scotland and UBS.</p> <p>Network now consists of over 200 banks, financial institutions, regulators, trade associations, professional services firms, technology companies and law firms.</p>

2.2 Smart contracts

Smart contracts have been around since 1994 when Nick Szabo termed the definition, which described the idea of using electronic protocols over the internet for parties to determine a set of promises and perform on them. Presently, Ethereum has become best-known for enabling smart contracts.

Ethereum is a public blockchain network in which participants, alongside hosting the ledger, host a virtual machine programme which enables smart contracts to run on the network. The computing language of the Ethereum virtual machine is complex enough to execute the complex logic of smart contracts (this is called Turing complete).

When looking at the application of smart contracts in the real world, however, many examples are still in the exploratory phase and we are yet to see an influx of fully commercialised applications.

In many cases, smart contracts have multiple use cases, but the technology is still in its infancy, which can cause a barrier to adoption. There are questions that remain to be answered concerning its commercial application, such as the complex and potentially conflicting international regulatory requirements for businesses, as well as the well-publicised instances of vulnerabilities in smart contract code which could offer significant deterrents for anyone to rush out an application. The most well-known example of this was the DAO (Decentralised Autonomous Organisation), which was built as a smart contract on the Ethereum platform, and hacked into by a user, who was able to siphon off 3.6 million – the equivalent of \$70 million at the time.

Nonetheless we have seen the use of smart contracts beginning to emerge, as you'll come across later in this report, but smart contracts can currently only be used for basic executions. The more complex the requirements, the more skilled and expensive the development of the code would be.

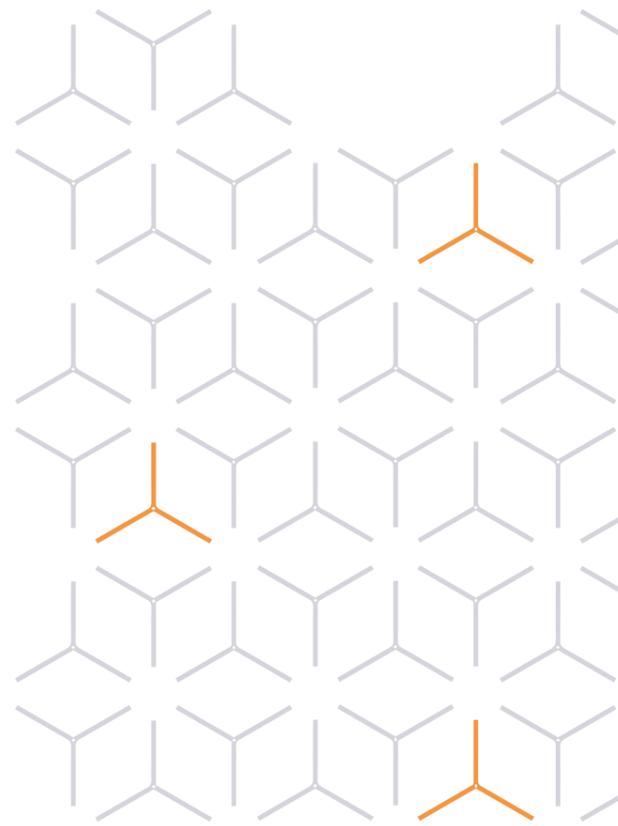
At present, most financial institutions and corporate organisations still need to become comfortable utilising blockchain technology before they consider adding a smart contracts element.

3. Key industries and use cases

The nature of this technology is such that it could facilitate gains in practically all industry sectors. There are use cases being presented to almost every business and it is expected that, similar to the internet, it will become an innate part of everyday operations.

However, as it remains at such an early stage of its lifecycle, we are only now approaching a point in the developmental phase where companies are adopting blockchain and smart contracts within live transactions. Many of these early adopter companies, however, aren't yet prepared to disclose details of their innovations due to the prospect of gaining a competitive advantage.

Having spoken to a number of different industry experts in the marketplace, we have assembled a list of areas in which efforts have been made for blockchain and smart contracts to transform and streamline current processes.



3.1 Logistics and supply chain management

Given the sheer volume of recording of movements of goods that needs to take place, logistics and supply chain management are the key areas where blockchain and smart contracts can add the most value. It is reported that the cost of administration and documentation currently accounts for one-fifth of the world's total \$1.8 trillion annual shipping costs.

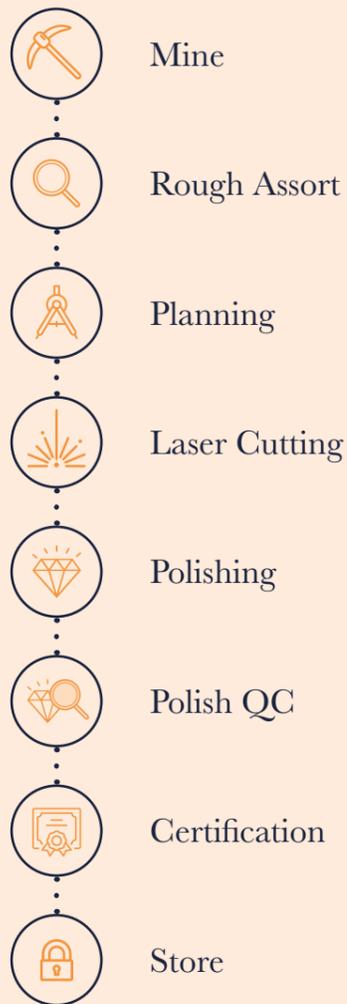
The benefits of digitalising the supply chain and transferring it on to the blockchain include not only cost savings, but reduced human error and faster, more reliable service delivery.

Most documentation involved in shipping transactions for example (e.g. sales contracts, charter party agreements, bills of lading, certificates of origin, port documents and letters of credit)² are already handled electronically. However, these still remain bilateral processes, with a large number of stakeholders involved. DLT could overhaul these processes

by allowing all parties to access all relevant documents and deliver oversight of an entire operation. Obtaining real time evidence of a shipment's location would massively accelerate the end to end process.

IBM and Danish shipping company **Maersk** are leading the charge in this industry, having joined forces to set up a blockchain company with two core deliverables: a shipping information pipeline and paperless trade. The goal of this is to help shippers, ports, customs offices, banks, and other stakeholders in global supply chains track freight as well as replace related paperwork with tamper-resistant digital records. DuPont, Dow Chemical, Tetra Pak, the U.S. Customs and Border Protection have already piloted the new technology.

3.2 Mining



In another use case that manages a supply chain, global startup **Everledger** has created a blockchain in the mining industry to record an asset's defining characteristics, history, and ownership, which as a result awards the asset with a digital thumbprint. This can be documented and monitored across a supply chain pipeline to form provenance and verify authenticity.

Using this blockchain, Everledger³ has launched the Diamond Time-Lapse Protocol, which is an initiative directed at the diamond and jewellery industry. By registering the provenance of diamonds on the blockchain, it displays transparency along the entire diamond's lifetime journey and facilitates awareness for all industry participants including manufacturers, retailers and consumers of a diamond's origins to its end customer.

“By registering the provenance of diamonds on the blockchain, it displays transparency along the diamond's lifetime journey”

3.3 Stock exchanges

The activities of a stock exchange are another example where blockchain could help to improve efficiency of process.

The opportunity here lies in increasing the speed of trading and settlement processes in a secure manner. More specifically, it has the ability to expedite trade clearing and settlement from the current equity market standards of three days to as little as ten minutes. For stock exchanges, however, blockchain technology could pose a risk. Unless they evolve to become front and centre during this stage of innovation, exchanges run the risk of becoming bypassed entirely, with regulators and other government entities developing the technology to allow for this transfer of value without an intermediary.

In response, **NASDAQ** has been testing blockchain systems since 2015, when it first launched the private blockchain Linq⁴. Hosted on blockchain provider **Chain**, private companies not listed on a stock exchange are able to use Linq to complete and record a private-securities transaction to a private investor⁵.

Since then, NASDAQ has partnered with **Citi** to integrate this blockchain solution with Citi's cross-border payments facility, which signifies a landmark end-to-end transactional process for private company securities.

With the speed and level of operational transparency this will bring, it is soon expected to impact back office administrative functions for all sorts of financial institutions.

“For stock exchanges, however, blockchain technology could pose a risk”

3.4 Derivatives

As has been highlighted with stock exchanges, this technology can save both time and money on the clearing and settlement of practically any financial asset, particularly in derivatives.

Since blockchain and smart contracts first began hitting headlines and shaking up the financial services sector, derivatives has been the key area in which people can see a clear use case. The **ISDA** Master Agreement, a standard form contract which must be negotiated and agreed upon for any derivatives trade to take place, has been seen to present a viable option for implementation as smart contract code.

Banks, law firms and consortia have all been collaborating in the development of repositories of smart contract templates for banks to download and use on blockchain platforms.

Meanwhile, ISDA has digitised the ISDA Master Agreement, which can be stored on a blockchain. It is programmed with smart contract code that incorporate terms and provisions that you would normally find in the usual referenced documentation and agreements, and then applied to a swap transaction.

There are multiple challenges, however, that the industry is currently working on. Firstly, there has been a lack of standardisation in the industry. Every bank's system used to track the life cycle of trades is different, which means code cannot be written to suit all processes⁶. Secondly, the number of legal and regulatory requirements involved is overwhelming. This includes checking counterparty eligibility, documenting the trade, determining whether the trade must be submitted to a clearinghouse, and regulatory reporting, as well as making payments⁷.

Barclays is one of the key players attempting to overcome these setbacks. The bank's key mission is to introduce a harmonisation of processes by using ISDA's proposed common domain model (CDM). Taking this form of common language, ISDA is expected to release the first iteration of the blockchain-compatible version of CDM early this summer⁸.

A further way implementing this documentation on a blockchain would help is in regulatory reporting. The immutable and traceable nature of a distributed ledger could essentially automate regulatory reporting by recording all documentation in line with the CFTC swap data reporting and margin requirements in the United States, and EMIR reporting requirements in the EU⁹.

“Derivatives has been the key area in which people can see a clear use case”

3.5 Trade Finance

Trade finance has traditionally been high volume, with a large amount of paperwork. Although it is an area ripe for disruption, and there are indeed elements of trade finance that can be brought on to a blockchain, the complexities and differences in financing transactions made it so far difficult to execute.

One company that demonstrates how blockchain and DLT is being deployed in this industry is **TradelX**. The TradelX platform developed the world's first open platform for trade finance facilitating the movement of assets and credit around the world.

TradelX is also managing together with enterprise software firm, R3 the Marco Polo Trade Finance¹⁰ network. Marco Polo that has become the largest network of commercial banks in the trade finance market which includes leading banks such as BNP Paribas, Commerzbank, ING, Standard Chartered Bank, Natixis, Bangkok Bank, SMBC, DNB and OP Financial Group.

Marco Polo is focusing on a Trade Finance Platform built on an interoperable business network powered by open Application Programming Interfaces (APIs) and blockchain technology. It enables end-to-end, real-time, seamless connectivity between trade participants, eliminating the data silos which prevent free flow of trade data and assets causing inefficiencies and discrepancies.

Recently, TradelX launched the first trade finance transaction leveraging blockchain technology in the world. The receivable finance facility was implemented for **DHL**¹¹ funded by **Standard Chartered**¹² and insured by **AIG**.

By recording all the details of invoices and the eligible insured amounts on Fabric by Hyperledger invoices were then sold to the finance providers and credit insured by AIG. The process ultimately eliminated the risk of duplication, inefficiencies and minimal standardisation, which can often occur in trade finance due to the variation of payment terms and laws globally.

One of the first blockchain-enabled transactions of its kind, it paved the way for future operations in trade finance.

More recently in trade finance, **HSBC** and **ING** announced a deal completed for Cargill¹³, which marked the first use of a single blockchain platform. The banks used R3's Corda platform to document the shipment of soybeans from Argentina to Malaysia, and successfully proved that the platform can indeed be used for commercial application across the industry.

As the world's largest banks and some of the most advanced fintech startups have recognised trade finance as the priority for implementing blockchain technology, it is expected to be one of the first strands of transaction banking to undergo major digital transformation.

3.6 Insurance

The insurance sector, although slow in taking advantage of innovative technology solutions, has had specific breakthroughs over the last year.

One of the first successful commercial insurance applications for smart contracts on a blockchain was implemented by global insurer **AXA**. The application, named Fizzy, is used to automate flight delay insurance. It is a clear concept: your flight details are registered using a smart contract and stored on a blockchain. If your flight is delayed by two hours, the smart contract is automatically triggered and the insurance payout is sent directly to your bank account.

Fizzy is a great example of the benefits of smart contracts in a relatively simple binary process to trigger an insurance payment, with minimal risk of error and a clear value proposition.

The main hurdle for smart contracts in this space is the necessity for an insurance payment to be unconditional i.e. if there is any subjectivity surrounding the terms of an insurance agreement, and more specifically if these clauses cannot be translated into code, a smart contract would be ineffective.

More recently, Australian bank **ANZ** announced this year it has partnered with **IBM** to build a blockchain solution that looks to ease the transfer of data and payments between brokers and insurers. Reconciling policy information and payments between two parties is a major hurdle to efficiency in the insurance industry, and applying blockchain technology could permit payments to be forecast and made without the need for reconciliation¹⁴.

3.7 Government

Surprisingly, some government bodies have been ahead of the curve in the implementation of blockchain and smart contracts. Whilst the major global economies (UK, US, China etc.) are still considering all risk aspects associated with this technology, some smaller economies have already begun migrating their data to DLT.

The **Dutch government** is a primary example. Having piloted over 30 projects across different government sector frameworks to test the use cases for DLT and blockchain, the Dutch government has developed a wide network of technical experts who have programmed blockchain into the Dutch Tax Agency, the Dutch Ministry of Infrastructure and Water Management, the Ministry of Justice and Security and the Dutch Healthcare Institute, to name a few!

On 7 June 2018, working in collaboration with **TU Delft**, the **Netherlands Data Identity Agency** (part of the Ministry of Foreign Affairs and Kingdom Relations), **IDEMIA** and **CMS**, a 'self-sovereign' digital identity based on the TU Delft blockchain technology Trustchain was launched. The prototype will be tested in two municipalities and you can find a video explaining the technology in the referenced endnote¹⁵.

Digital identities could facilitate an exponential increase in the efficiencies of blockchain technology. Integrating this would allow blockchain to also handle verification processes, and with smart contracts as a further layer, process automatically any transactions that require this type of authentication. For government systems it will transform their policies, but extending this to AML and KYC requirements for financial institutions could bring phenomenal gains.



The **Estonian government** is a further case study that showcases what future governments would like once state services are digitised.

In 2007, the country experienced a major cyber-attack which lasted weeks and affected operations for government employees, newspapers and broadcasters, and even ATM machines. In the wake of this, Estonia designed a solution called KSI Blockchain. The platform makes sure networks, systems and data are free of compromise, all while retaining 100% data privacy and is now used by the government to secure all e-records utilised in state services.

Having worked on this digital identity system since 2007, and used the outcomes of the cyber-attack to make its digital systems even stronger, Estonians citizens can now use their digital identities in daily activities including voting online, accessing their government records, managing healthcare and prescriptions, and accessing bank accounts.

4. Evolution in the legal market and the practice of lawyers

During our conversations, it became apparent that there are multiple opportunities for lawyers to take advantage of if they were to embrace this technology. Gaining an awareness of the benefits of blockchain and smart contracts is crucial, and below are some ways you can capitalise on this emerging technology.

New revenue streams

Many law firms advising on blockchain and smart contracts are currently undertaking audit type work for their clients. That is to say, they are testing different products to assess the use case, the barriers and the possible pitfalls that could arise.

Once this technology is rolled out into general practice, legal agreements will still need to be signed, negotiated and agreed. It is crucial to understand that smart contracts themselves are unlikely to replace written legal contracts (even in the longer term, as legal contracts often include subjective elements which cannot be executed simply by code) but rather business processes. Core requirements such as framework agreements, ancillary agreements, terms of use etc. will need to be termed with opposing parties in relation to these innovative processes, and lawyers will be required to structure these agreements.

The Smart Contract Working Group as part of the Dutch Blockchain Coalition confirms if a smart contract is to be executed in a business transaction, "then it is necessary to pay attention to all relevant legal issues in the design phase. This includes setting standards in code or pure execution, methods for dealing with issues that cannot be captured in code, specific case-specific legal requirements and more general legal questions."¹⁶

As blockchain and DLT continues to advance, the expectation is that there will be much interoperability between blockchains i.e. the ability for multiple blockchains to be used in conjunction with each other. With this in mind, lawyers will need to help form legal agreements between parties who jointly collaborate and integrate systems. Framework agreements will need to dictate how the technology is governed, how disputes are handled if they are to arise, how governing law could be amended etc.

Gaining a deep understanding of the business

Needless to say, when a lawyer looks to win work from a client, it is imperative to have a full appreciation of the client's business. This is no different when a business uses blockchain and smart contracts technology.

An awareness around how this technology benefits the business and how it is implemented is crucial if you are to understand the value proposition businesses will soon offer. It will affect a multitude of industries and practice areas, impacting even the most traditional of businesses. It will become common that individuals with long-standing practices in insurance, financial services, logistics and oil & gas for example will have to become more informed in this technology.

This technology is so new that automatically the pool of lawyers available to those operating in this space shrinks. There are also more technology companies than ever entering the mainstream market, all of whom would need this skillset from external counsel, so any lawyers who can grasp the technical workings of these businesses and their technologies will benefit.

Be prepared for disputes!

It is common to find flaws or gaps in coding, and smart contracts will be no different. Using smart contracts to execute more complex transactions in the future may face this issue, which could result in the need for dispute resolution.

A further potential for disputes may arise when companies become more serious about the interoperability of blockchain technology. With multiple parties involved, carrying out a range of different transactions and processes, it is likely we'll see legal disputes arising where they clash.

Moreover, there is even research looking into where dispute resolution can be automated or programmed into coding¹⁷. Lawyers would undoubtedly have to be involved at the design stage if these types of solutions ever took off, which would further increase the demand for tech savvy lawyers.

Should I learn to code?

There is mixed opinion in the market on whether or not lawyers should learn how to code. There are definite benefits that come with an understanding of how code is written and what information is contained within it; however, the most important thing to ascertain is what elements of a piece of smart contracts code will make it legally enforceable.

The technical aspects of coding will also be relevant where at some point lawyers will be able to advise clients on what can and cannot be coded into a legally binding agreement. Having the ability to liaise with in-house software engineers on this subject will be imperative, as there is a risk to law firms that technology companies will bring in a legal capability to complement their product offering, thus taking a lion's share of the work.

This is why various law firms, some of which include Clifford Chance, CMS Cameron McKenna Nabarro Olswang and Norton Rose Fulbright, are offering courses for their lawyers to code – not to become expert coders, but to understand how it works, how much you can write into code, what are the key terms / words / phrases etc that make it legally binding. This will help them advising on smart contracts both before terms are negotiated and after if there is an issue.

The main priority in the short-term is that lawyers are able to communicate with those who write code and that they are able to verify the validity of a smart contract from a legal view.

Bridge the gap between law and technology

There is an increasing need for lawyers whose breadth of knowledge spans from law to business and technology. As more companies begin to implement smart contracts and blockchain technology in everyday transactions, there will need to be better communication between the commercial parties (i.e. bankers and lawyers) and the programmers. Where programmers need to understand the context behind a transaction/contract in order for the code to be accurate and comprehensive, lawyers could provide the role of intermediary in explaining not only the reason for the smart contract, but the legal requirements also.

Current law firm developments

Ashurst

Running blockchain and smart contracts advisory workshops to educate both internal staff and clients on the workings and benefits of the technology.

CMS

Set up a legaltech academy, which includes the opportunity to learn to code.

The firm's team in the Netherlands has advised on the legal compliance of the digital identity based on Trustchain.

Clyde & Co

Set up ClydeCode – a consultancy service for clients to receive legal and technical advice on smart contracts.

Linklaters

Partnered with ISDA to publish a whitepaper on the use of smart contracts and DLT in derivatives transactions. In May 2018 Linklaters and ISDA released an automation tool that allows multiple firms and counterparties to electronically negotiate, deliver and store initial margin documentation simultaneously.

Norton Rose Fulbright

Classed as one of the leading blockchain advisory practices. The firm also offers coding classes to lawyers.

Simmons & Simmons

Highly rated for its work on ICOs and legal advice to fintech startups, having run its fintech incubator since May 2016.

5. Barriers for implementation

From a lawyer's perspective, here are some of the concerns that have or will likely arise as we move closer towards mainstream adoption of this technology:

Risk vs Reward

Smart contracts can make certain aspects of a contract or transaction more efficient, but the benefits of automating a certain process must outweigh the risk. There is a high level of risk involved in testing new tech to automate processes, and so the rewards must be great enough to justify automation, if not it is not yet worth the risk.

Regulatory requirements

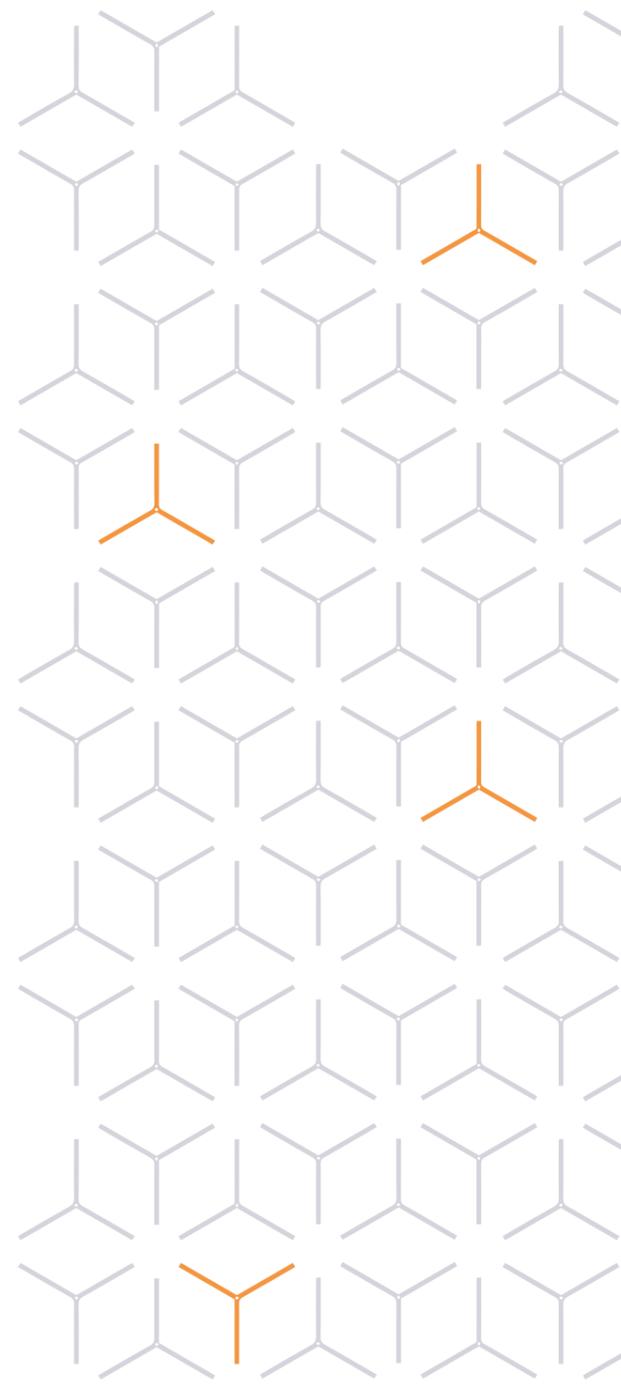
Some argue that the idea of legal/regulatory requirements holding back smart contracts is a red herring and it is in fact the technology that is not yet capable to do what we're looking for. Nevertheless, regulatory bodies across the globe will eventually need to make some adjustments to current regulation in order to accommodate for the use of blockchain and smart contracts – and how simple this will be it yet to be determined.

How to future proof blockchain

This is a key question that must be answered before we can look to migrate masses of data to this technology. It is crucial to ensure that down the line, when errors or disputes surface, we have the tools and frameworks to handle them.

Data protection and privacy issues

There is a longstanding question around data protection and privacy regarding the use of blockchain. Storing information in a way that is hidden (as it is encrypted) and unalterable could be affected by the safeguards required in GDPR. With the right to remove data, how could a blockchain keep information on people, particularly if we choose to create digital identities?





6. Conclusion

It is clear that businesses have invested a lot in the application of blockchain and smart contracts technology, which indicates how prominent it could become in many organisations and industry sectors. However, there remains a lot to be developed with this technology, and lawyers will play a major role in allowing this technology to reach the next stage of the adoption lifecycle.

The network of lawyers that possess an understanding around how this technology can benefit their clients is growing, as a market opportunity now exists to profit in advising on its implementation and integration. With a number of risk and regulatory concerns that remain to be solved, and a wealth of potential that blockchain and smart contracts could unlock, lawyers are well-positioned to advise clients on how they can bring their businesses into the new age.

Whilst trust in the technology needs to be built within the legal industry, those lawyers that look to understand it, help promote and develop it will ultimately be positioned at the forefront of the market.

The question is no longer about whether this technology will replace how we currently operate, but rather when. As it begins to emerge into all sectors, it is crucial that the legal industry sits at the spearhead of this innovation, and doesn't remain confined to traditional, antiquated processes.

End Notes

- 1 <https://www.ibm.com/blogs/insights-on-business/government/blockchain-smart-contract/>
- 2 Reed Smith LLP, Blockchain: Distributed Ledger Technology and Designing the Future
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