

CHAIN REACTIONS

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BLOCKCHAIN – A SIMPLER WAY TO BUILD TRUST?

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MANY PEOPLE HAVE HEARD OF BLOCKCHAIN – usually in association with the crypto currency, Bitcoin. But many struggle to define precisely what it is, even though it is a technology that will, we are clear, become central to many aspects of how our lives are organised.

In one phrase, Blockchain puts together databases, cryptography and peer-to-peer networking to create a ‘Computationally Efficient Trust Engine’.

Historically, wherever society arrived at a need for trust in a transaction or process, an intricate system of checks and balances was established to manage it. That often involved bringing in an intermediary – such as a regulator, a legislator or the law – to provide verification.

Blockchain systems do away with the need for a third party verifier, applying cryptography in a transparent way that allows individual participants in the network to establish complete confidence in the records being held.

This is achieved by making sure that each individual record is accompanied by a digital signature.

The records themselves are efficiently tied together in a transparent and tamper-proof way, to form a block. Blocks are either signed, or validated by random participants in the network – providing clear proof of fairness.

And finally, the blocks are chained together – ensuring that every subsequent block inherently validates the blocks that go before it.

It’s machine accessible trust, if you like. And its applications could be extraordinarily far-reaching.

SEEKING SIMPLIFICATION

As a process consultancy, Zerado started by looking at areas of society that have introduced trust in a conventional manner, and asking: how can this be simplified using technology?

But immediately we hit an interesting dilemma around understanding the notion of simplicity.

Traditional and established systems are often considered simple for a very obvious reason – because they are familiar. New-fangled technologies, such as distributed ledgers (of which Blockchain is a particularly efficient implementation), seem, in comparison, to be highly complex.

But if you take a step back and evaluate the actual complexity of the rival processes – by measuring, for instance, the number of actors involved, the relationships between them and the number of steps in the process – it often quickly becomes clear that technologies involving distributed ledgers are not only fundamentally simpler, but actually represent the business reality more accurately.

Here's a good example. One process change that does not need to involve Blockchain, but nonetheless benefits from it, is the business of controlling access to venues such as hotels or co-working spaces.

Historically, such venues had to grapple with relatively complex payment systems, usually involving cash or cheques, and the need to hire an abundance of trusted staff to administer them. Nowadays, a contactless payment occurs in under a second.

When managing meeting rooms or events, users often just bypass the traditional process because it is too cumbersome and inefficient. But this undermines the business model, meaning that there is a real risk that value will be lost.

We have worked on this using contactless payments cards such as identity tokens, meaning it's possible to charge at the point of use, or check if a particular user is entitled to free access. We are also able to use payment cards to issue visitor passes automatically, saving a substantial amount of time.

It's an example of a process automation that became possible thanks to the evolution of payment mechanisms and the Internet of Things.

But adding Blockchain technology adds yet another dimension, allowing us to support multiple domains – such as different office buildings spread, perhaps, across different countries – on one cryptographic system. This allows identities to be safely transferred between different buildings, with the system being able to reconcile these – without running the risk of undue interference between these domains.

It's an important example of how value can be added by bringing together different disruptive technologies – payments, the Internet of Things and Blockchain – to create simplicity that in turn creates added value.

WHERE IT'S BEGINNING TO WORK...

Financial services institutions have shown most enthusiasm to be early adopters of Blockchain where, typically, it is seen either as a potential disruptor or an enabling technology.

Our initial role is often to educate decision-makers and other stakeholders about how Blockchain can be used, and to learn as much as we can about what problems the client hopes Blockchain will solve.

This advisory work is about helping clients to understand where the technology might be applied. But where there's an appetite to actually develop solutions, we get involved in prototyping systems. Today, some of these prototypes are now graduating to the pilot or production stage – which speaks volumes for their viability. The final phase is build – that is, implementing a new business model or entity.

For example, work we have both done with a major Brussels-based financial institution has culminated in the creation of a finance solution specifically targeting a USD2tn gap in availability of trade finance for small and medium-sized enterprises.

...AND WHERE IT MIGHT

That said, some industry experts consider financial services to be a red herring. It's a slow-moving industry with internal governance systems that could stifle innovation, they argue.

Instead they point to a clearer example of a centralised ledger that has substantial trust requirements: government.

They have a point. Typically, governments maintain large databases of information on citizens, businesses, vehicles and other assets. They also have a clearer remit to manage these databases efficiently and cost effectively.

It's clear that this technology has much to offer public administrations, both in minimising cost and streamlining processes.

Indeed, the UK Government Office for Science has recently published a report on Distributed Ledgers¹, which clearly articulates the value this technology can bring to the public sector.

That's exciting for us and we're pleased to be involved in a number of initiatives that will allow Blockchain to serve, not just business, but the whole of society.

LAURA BAILEY

Co-founder, Zerado

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TOMASZ MLODUCHOWSKI

Co-founder, Zerado

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LAWYERS AS CODERS

Smart contracts promise great benefits in many sectors, but create complex technical and legal challenges, for developers, users, lawmakers and the courts. To help clients get the best from such disruptive digital technologies, lawyers need to become technology experts too, says Ahmed Baladi.

FROM FINANCIAL SERVICES to a mass of everyday consumer and social transactions, from the distribution of music by independent musicians through to the management of highly complex international supply chains, there's a new buzz – and it's all about smart contracts.

As one aspect of the application of Blockchain or distributed ledger technology, smart contracts look set to shake up the way transactions have been executed and verified, in some cases, since the 19th century.

Faster completion and lower costs are amongst the prizes that are promised. Greater democratisation of the transactions process – free of the need for contracts to be policed and verified by a third party – has also added to the appeal and hastened the search, across sectors, for how these peer-to-peer systems may be put to use.

Ahmed Baladi, a partner in our Paris office specialising in digital technologies, has no doubt of the huge impact they will make, but is also clear that significant challenges, technological and legal, remain to be overcome.

“Blockchains, and smart contracts in particular, will create a substantial change in the way our clients handle transactions,” he says. “But they will also have a huge impact on the work we do as lawyers.”

CONTRACTS OF DIFFERENCE

Smart and traditional contracts differ in fundamental ways.

The contracts we are used to are written in natural language; smart ones are written in code.

Traditional contracts can be altered but remain private between the contracting parties. Smart contracts are immutable – written in digital stone – but they are open to anyone on the particular Blockchain where they exist.

And, as we've noted, old-style contracts rely on third party verification before they can be executed. Smart contracts are self-executing, cutting out the middleman.

But traditional contracts operate in a subtler, more nuanced environment – they express complicated agreements and concepts such as fairness and take account of complex rights, such as consumer protection.

Smart contracts, depending, of course, on the sophistication of the code, tend to be binary, and the operation of that code may lead to consequences that our current legal system would not permit.

THE BIG ISSUE IS TECHNOLOGY

It's for that reason that Ahmed sees one principal area of concern – technology.

“To get all the benefits of smart contracts – such as speed of execution – you need to be sure that they are written using reliable code,” he says.

“We need to start thinking carefully about the potential impact of defective code both on the companies developing the technology and on the companies and individuals using it. How are they going to handle any potential defect and liability if a smart contract is defective and the Blockchain is no longer reliable?”

It's an issue made all the more complicated by the fact that Blockchains are likely to operate across borders and therefore be subject to different, and sometimes conflicting, governing law regimes. “In other words, if I'm trying to limit my liability in the event that there is a defect in my product, will this limitation of liability be enforceable against everyone involved in the same smart contract?”

There are many other legal questions raised by smart contracts – not least issues of privacy, data protection, transfer of title and remedies. But often these issues are also raised by other disruptive digital technologies such as butt computing and big data, argues Ahmed, and the law and regulation need to catch up.

“I don’t think they are big roadblocks standing in the way of these new technologies, but it is certainly true we do not yet have enough case law or opinions from different courts on these issues – it’s still a little too early,” he says.

Regulators are, for instance, still deciding which way to view these technologies. Should they fight against them and slow up their deployment? Or should they encourage or even incentivise development and concentrate on finding new ways to monitor them?

But in the end, he believes it will be taken out of the hands of both the courts and the regulator – a function of sheer consumer pressure.

“When it comes to digital technology, users will always prevail and impose their preferences, irrespective of the legal complexities.

“Look at Airbnb or Uber,” he says. “Users, consumers and other players in the economy want to take advantage of these new products and services, so it’s the responsibility of the lawmakers to adapt legislation, rather than trying to resist these trends.”

FINANCIAL SERVICES – A HOT SPOT

Ahmed expects the financial services sector to be a major driving force in the development of smart contract technology, eager to capture the speed and efficiency of the system and the likely cost savings that it will bring.

Few industries handle the same volumes of transactions; and few have to deal with centralised counterparties – like clearing houses – in the same way. The attractions are obvious, particularly, post-financial crisis, as the banks continue to look for new, more efficient ways to operate.

But culture and legacy may be an issue here. He notes that the industry appears to be making bigger strides in developing the technology in Asia than in Europe and the U.S., suggesting that institutions there have fewer legacy systems to deal with and, therefore, an ability to adopt new technologies.

“In more heavily regulated markets where there is a lot of legacy technology we may, instead, see small pockets of adoption in niche areas,” he says, pointing to the example of Everledger, which has developed the technology to verify the provenance and certification of diamonds by tracking past trades.

Some banks, particularly in the U.S., have pushed ahead and issued patents individually for the use of Blockchain technology; elsewhere we’ve seen institutions clubbing together to share the costs of development and the IP in a more open source way, as we’ve seen with R3, a consortium of more than 40 international banks.

Many believe that open sourcing is the most likely way to secure the scale that these technologies require to be truly useful. It’s the so-called network effect, where you get disproportionately more economic benefit the more a new technology is taken up.

Ahmed warns that there is also a danger of users becoming locked into one particular technology.

“There is a risk that users can end up being too dependent on that technology, making it much more difficult to switch to an alternative if they need or want to. In order to remain flexible, clients need to keep that issue firmly in mind when deciding their IP strategies.”

A NEW KIND OF LAWYER

He is clear that the adoption and use of smart contracts and Blockchains will speed up the disruption of another industry, closer to home – the law.

Increasingly, lawyers specialising in this area will need to understand coding as deeply as the IT experts, just as IT specialists will need to have a deeper understanding of the law to make sure code is reliable and does not have unintended legal consequences.

Is it, then, a case of lawyers as coders?

“It’s a good expression because, for me, there is no doubt lawyers will have to work closely with IT experts if they want to provide more effective advice and add real value for their clients.

“Either you will see young people entering the profession with dual qualifications – engineering and legal – or you will see law firms teaming up with IT consultants and making them part of the team.

“That would be a good innovation, and the sooner the better,” he says.

AHMED BALADI

Partner, Allen & Overy

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