Beyond the Bubble

Will the much-hyped institutions built with blockchain have a lasting impact on international arbitration? Gary L Benton FCIArb investigates

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As a Silicon Valley lawyer, and an intimate observer of the 2002 dot.com crash and 2008 technology-led global recession, recent headlines regarding the violent rise and fall of cryptocurrency seem painfully familiar. No doubt some of the people developing or investing in cryptocurrencies will make fortunes; others will lose it all. But beyond the drama and speculation of a cryptocurrency bubble, there is a bigger story – one that will likely have a far more lasting impact on the ADR community.

Cryptocurrency trading, of course, is just a small part of the blockchain revolution that is changing the Internet, the way we do business and, theoretically, offers a whole new way of doing dispute resolution without ADR institutions and arbitrators, at least not ADR institutions and arbitrators as we know them.

BLOCKCHAIN BASICS

To start with the basics, blockchains are essentially linked boxes of data stored on the Internet. Consider, for example, a set of data containing all the terms of a contract, including the parties, consideration, timing and other performance terms. The contract is created when the parties agree to the terms and concluded when the parties perform. Blockchains allow such 'smart contracts' to be created and implemented entirely online, and the consideration for the contract is deposited and distributed through the smart contract. Payment is made securely online by one party and automatically released to the other party following acceptance of performance.

Arbitrators have come to recognise online dispute resolution (ODR) as a system for large companies to resolve small transactions online. Blockchain offers Colin Rule's eBay ODR system on steroids, extending ODR to larger commercial cases. Smart contracts could include dispute resolution provisions where the arbitrator is automatically appointed, decides the dispute, issues an award and is paid, all online.

Every transaction on the blockchain platform is recorded in a ledger format. Users are identified across the network by a system utilising public and private keys, algorithmically generated numbers, stored in an online wallet. The ledger is automatically distributed so that it is publicly available across the network. Linking each block and distributing the ledger are considered to provide security and eliminate the need for third-party oversight.

Blockchain technology implements decentralised processing. No intermediary bank, credit bureau, online vendor or other provider processes the transaction data. Rather, the transaction is automated, verified by record-keepers across the network and recorded. The record in the ledger reflects the consensus of the network. Blockchain developers refer to this software architecture as a network of distributed trust or decentralised consensus.

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Where does cryptocurrency fit in? Bitcoin cryptocurrency was the first product offered on a blockchain, arriving in 2009 and undergoing a tumultuous adolescence since. After selling for less than US$100 for many years, the value of a bitcoin catapulted to more than US$19,000 by December 2017, before tumbling to less than half that by February 2018. Other cryptocurrencies, including Ether, Litecoin and Ripple, have also experienced significant volatility. These currencies have an important role to play in finance and in supporting blockchain transactions, and the bitcoin network has inspired dozens of other blockchain platforms, one of the best-known being Ethereum.

According to Gartner Research, by 2022 smart contracts will be used by more than 25% of global organisations. Much of the innovation in contract-related applications is focused on the Ethereum blockchain. The applications being built on this platform are diverse and nearly all are at a very early stage, but include everything from trading currency, to crowdfunding, digital identity, online shopping, micropayments, commercial contracts, insurance coverage, title insurance, mortgage lending, supply chain and IP protection.

There are also government projects applying blockchain technology: Big Data processing in China, government identity and city planning projects in Singapore, public benefits projects in England, data management projects in Dubai and blockchain border security projects in the US are a few examples.

IMPACT ON ARBITRATION

How will blockchain affect arbitration? Given the current focus on cryptocurrency, a cursory answer would be that blockchain could potentially spawn a slew of securities fraud cases. No doubt there will be cases involving account disputes, broker disputes, trading losses, exchange discrepancies and platform errors. But the better answer is that the worldwide infusion of blockchain technology will create challenges and opportunities in nearly every commercial sector. As online transactions rely on blockchain architecture, the legal community will be increasingly confronted by contracts that raise a host of legal conundrums.

Blockchain transactions will provide challenges to jurisdiction, party identity, identifying the place of contracting and performance, and choice of law. Contracts written in computer code and without signature approvals will be tested to determine whether they are legally binding. Performance will need to be determined by deciphering the computer code, presenting myriad evidentiary issues. Blockchain transactions will give rise to a range of due-process problems and novel enforcement issues.

Blockchain also has the capacity to create new legal conundrums. For example, it can be used to create

virtual companies. The Ethereum network allows for the creation of online companies – decentralised autonomous organisations (DAOs) – which exist solely online and are governed by pre-agreed coded rules enforced through blockchain. A DAO may be coded to allow members to make and vote on a blockchain transaction proposal. The transaction is automatically executed if the proposal is approved by the requisite number of votes within a time limit provided. DAOs have limited, if any, territorial connections and capacity for nation-state oversight of DAOs is largely untested. Their status as legal entities and the legal validity of their actions is yet to be fully addressed in legal tribunals.

Additional legal issues arise merely from the fact that blockchain transactions are computer-coded. Reliance on code as law provides certainty, but it also creates risk. Although blockchains may offer significant trust protection, their implementation can be defective. The smart contract is only as good as its coding. Just as a lawyer can draft a poor contract, a smart contract can be burdened by coding flaws. The Ethereum DAO project, a US$162 million crowdfunding project, for example, suffered the consequences when a user found a flaw in the code and withdrew US$50 million, requiring that the entire project be unwound.

Therein lies one of the greatest risks with smart contracts: the coding cannot provide the flexibility offered by a judge or an arbitrator who can assess an unexpected scenario and apply legal principles to effect a fair and reasonable solution.

SCOPE OF CHANGE

The question becomes whether courts and arbitrators will be called in to provide fair resolutions or whether the technology will solve the problem itself.

Technology entrepreneurs building blockchain services are busily working on schemes to replace courts, judges, arbitral institutions and arbitrators under the mantra of 'code as law'. Many of these efforts are directed at smart contracts where the contract contains self-enforcing dispute resolution mechanisms. Most initiatives recognise that some level of human intervention is required to address unexpected scenarios. Smart contract arbitration initiatives have yet to adopt artificial intelligence as a model. However, these services are not turning to the courts or traditional arbitral providers for solutions – and the solutions proposed by many of these fledgling companies as they attempt to interpret international arbitration standards are best described as astounding for their creativity, focus and, often, naïvité.

Consider, for example, the comments of Vitalik Buterin, the creator of Ethereum, who proposed that blockchain be used to create a decentralised court system for blockchain disputes: "a mechanism by which a user could ask a question ... and have a decentralised mechanism ... determine the answer, and then send a callback and a log to the user who asked the question." "To achieve scalability," he adds, "a multi-stage scheme where only a few randomly selected judges look at each question by default, and are incentivised by the threat of a larger 'supreme court' contradicting them is probably optimal."

ARBITRATION UPSTARTS – BLOCKCHAIN INITIATIVES

BITRATED Offers reputation and consumer protection for bitcoin management. Its bitrated.com payment system allows the parties to pre-appoint a trusted agent who can intervene in a dispute. The trusted agents are other users who are rated by Bitrated for trustworthiness.

CONFIDEAL Provides smart contract creation and management templates that avoid using intermediaries. Confideal allows parties to select qualified 'arbiters' who resolve disputes without knowing the identity of the parties. Arbiters are publicly rated and ranked by Confideal and all users hold coins on the platform. Arbiters are given up to 10% of the value of the smart contract under their purview.

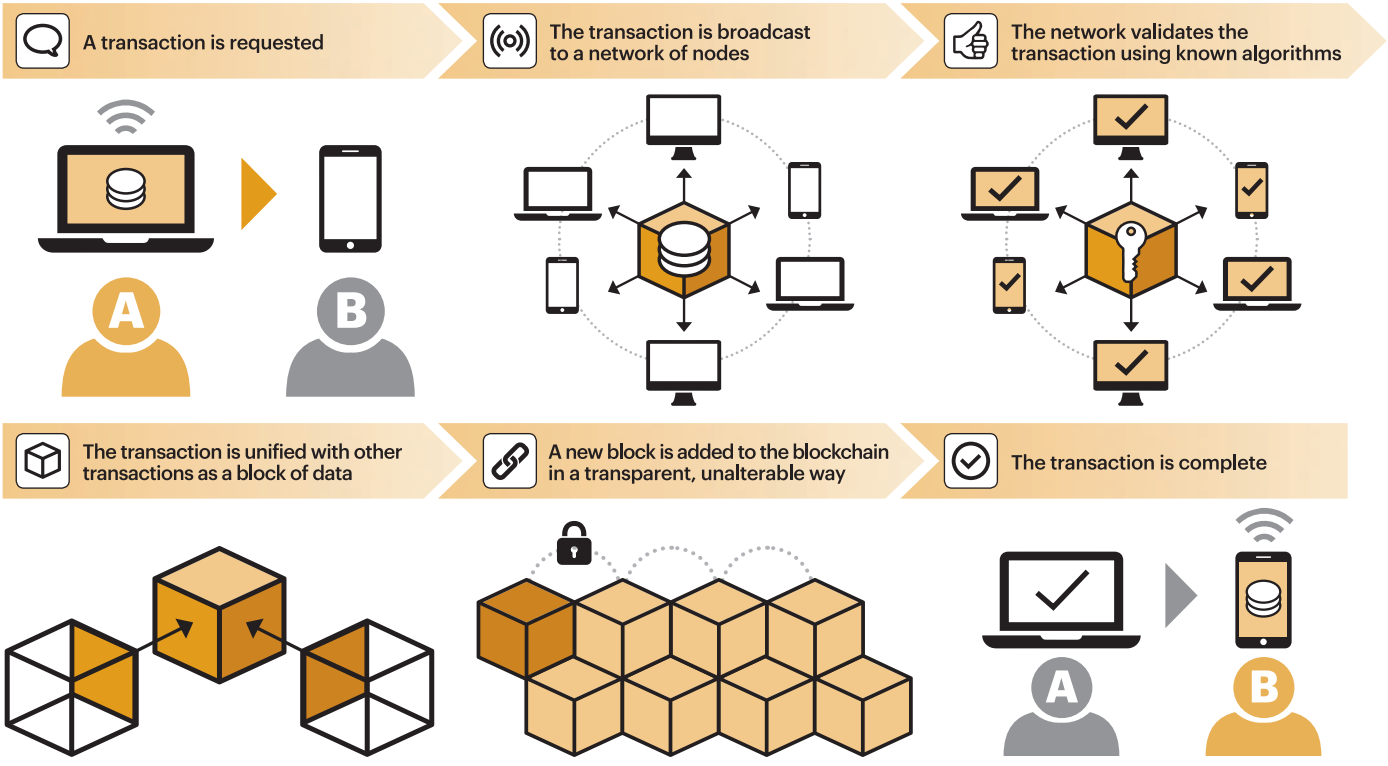
CRYPTONOMICA A project synthesising international laws, distributed ledgers, online services and cryptography. Cryptonomica acts in association with The International Arbitration and Cryptography Centre in London. Its website features a fully online arbitration under LCIA rules using digitally signed documents.

DAMN The proposed Decentralized Arbitration & Mediation Network "would be built on top of the New York Convention legal structure" and "provide users with layers of choices regarding whether a dispute will be resolved by a person, an algorithm, pools of random jurors, pools of experts, through collaboration of the parties involved or a DAO," according to reporting on coindesk.com, and parties will choose whether decisions will be made public. The creators do not plan to administer the system, rather they anticipate "hundreds of dispute resolution systems of different levels of complexity catering to anyone who wants to run them".

DATARELLA Offers industrial blockchain solutions. Its CodeLegit project for smart contracts allows for arbitration under the Blockchain Arbitration Rules where CodeLegit acts as the administrator and proposes potential arbitrators.

JINCOR Provides smart contract solutions. Its arbitration system allows users to choose among three arbitration levels and keeps the identity of parties secret. Arbitrators are chosen with the use of mathematical algorithms that analyse digital reputation, competence and practical experience in the given jurisdiction and business sector.

How does a **BLOCKCHAIN** transaction work?



A number of ongoing projects are being built on Buterin's Ethereum platform and other blockchain platforms that plan for application-based arbitration, some of which are included in the panel on the facing page. While these companies cite international conventions and model rules, many have rather nascent views of how international arbitration works.

With limited exception, these companies are working to replace rather than cooperate with existing international arbitral institutions. Many proposals allow for the administration by companies with no arbitral experience. The disputes may well be with the very company administering the case. It is possible the resolution will be handled by self-proclaimed arbitrators who are untrained in the law, principles of due process and other arbitral fundamentals.

It is easy to dismiss these arbitration initiatives as likely to fail. But if blockchain succeeds in its promise to change the way we do business, it is quite possible that some or at least variations of them will evolve and be adopted into the mainstream.

With time, well-trained lawyers will take in-house positions at blockchain companies. Ideally, budding blockchain companies and existing arbitral institutions will find ways to collaborate on innovative dispute resolution solutions that meet the requirements of the blockchain sector but are fair and effective. International organisations such as CIArb may also assist in setting appropriate guidelines.

If this collaboration does not occur, we may see growing numbers of online transactions that are resolved outside existing arbitral norms. And, even if collaboration does occur, the arbitral institutions, arbitrators and legal counsel servicing these disputes will find themselves practising in an entirely new, fully online, automated environment.

FORWARD-LOOKING THINKING

Ultimately, while the cryptocurrency markets may eventually go bust, blockchain is likely to affect international arbitration in fundamental ways and generate legal challenges and uncertainties. The mechanisms being developed for resolving blockchain contract disputes that forgo the use of traditional courts and arbitral institutions are unrefined and pose serious risks. Nonetheless, the potential for blockchain and blockchain dispute resolution should not be dismissed. We have seen that the passage of a relatively short period of time can bring major change in international arbitration.

Some 25 years ago, the focus of international arbitration was entirely on Europe. The concept of international arbitral centres in Asia was considered folly by many. Yet today arbitral institutions in Asia have risen. Perhaps, a quarter-century from now, blockchain arbitration will have similarly advanced. Perhaps that change will occur even more quickly.

It is possible we are witnessing the beginning of a new era for international commercial arbitration. Whatever the future brings, it is no doubt going to be a rocky ride.