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The not-so-distant future: Blockchain and the legal profession

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Introduction

Blockchain has been lauded as the most revolutionary technology since the advent of the internet in the 1990s, with the capacity to change fundamental practices across a variety of industries. According to the United Nations Global Compact partnered Global Opportunity Network's project report, 'Global Opportunity Report 2017':¹

'Blockchain technology and artificial intelligence are the backbones of two of the four top opportunities this year, illustrating that all industries, including water, education, IT, and energy, will not just be disrupted by technological innovations – they'll be entirely overtaken and reshaped. It's therefore critical that every industry, even those already based on technology, take their digitisation and tech innovations to the next level to capitalise on future market opportunities.'

In light of this, it is important that legal professionals are aware of the ways in which this technology may affect their practice. The American Bar Association's (ABA's) Model Rules of Professional Conduct, Rule 1.1 Comment 8 states that practitioners are obliged to 'keep abreast of changes in the law and its practice, including the benefits and risks associated with relevant technology'.² Regardless of whether these formal rules exist or not, legal practitioners have, by nature of their role, an ostensible obligation to act in the best interest of their clients and to deliver legal services competently.³ In order to adequately discharge of these duties, legal professionals should remain suitably informed of contemporary issues that will affect the legal profession, as well as surrounding industries and lives of potential clients.

1 'Global Opportunity Report 2017' *Global Opportunity Network* (2017) www.globalopportunitynetwork.org/report-2017/

2 'Comment on Rule 1.1 Client Lawyer Relationship', American Bar Association, *Model Rules of Professional Conduct*, www.americanbar.org/groups/professional_responsibility/publications/model_rules_of_professional_conduct/rule_1_1_competence/comment_on_rule_1_1.html.

3 See Rule 4.1.1 and 4.1.3 of *Australian Solicitors Conduct Rules* Queensland Law Society (2012) www.qls.com.au/files/2403d618-5c7c-445c-a191-a42200ad0cd4/doc20150317_QLS_Australian_Solicitors_Conduct_Rules_2012_FNL.pdf

At the forefront of digitisation, blockchain technology has already inspired some law firms, such as Taylor Vinters⁴ and Corrs Chambers Westgarth,⁵ to hire tech trained employees and undertake their own tech ventures,⁶ to respond to the changing times. Traditional business models and methods are quickly being eclipsed by newer and more efficient technologies such as blockchain.⁷

This report explores the ways in which blockchain may affect the legal industry and where law firms may potentially use blockchain technology to optimise legal processes. The International Bar Association's Legal Policy & Research Unit has also published a report exploring some of the uses of blockchain technology.⁸ Ultimately, legal professionals should keep abreast of the ways in which blockchain may potentially affect legal practice, from the rise of smart contracts to electronic discovery in litigation, and act accordingly to remain agile in a changing environment.

What is blockchain?

Blockchain is a decentralised, immutable public ledger operating on cryptographic technology. The blockchain public ledger is a 'dynamic registry for the exchange of assets and payments as well as for the verification of dynamic information.'⁹ Public (unpermissioned¹⁰) blockchains such as Bitcoin can be read and added to by any user without the approval of a central authority.¹¹ Private or 'permissioned' blockchains like Ripple¹², however, cannot be added to

4 Jane Croft, 'Artificial Intelligence disrupting the business of law' Taylor Vinters (2016) www.ft.com/content/5d96dd72-83eb-11e6-8897-2359a58ac7a5.

5 Katie Walsh, 'Law firms told to hire coders in innovation overhaul to survive' *Australian Financial Review* (17 September 2015) www.afr.com/business/legal/law-firms-told-to-hire-coders-in-innovation-overhaul-to-survive-20150916-gjofga.

6 Jodie Taylor, 'G+T teaches lawyers to code with US Smart contract expert Taylor Gerring' Gilbert & Tobin (2016) www.gtlaw.com.au/news/gt-teaches-lawyers-code-us-smart-contract-expert-taylor-gerring

7 See International Bar Association's Legal Policy & Research Unit, *Blockchain technology: Is it building a brighter future?* (2016) www.ibanet.org/Legal_Policy_Research_Unit.aspx.

8 *Ibid.*

9 Johannes-Tobias Lorenz and others, 'Blockchain in insurance - opportunity or threat?' *McKinsey & Company* (July 2016) www.mckinsey.com/~/media/McKinsey/Industries/Financial%20Services/Our%20Insights/Blockchain%20in%20insurance%20opportunity%20or%20threat/Blockchain-in-insurance-opportunity-or-threat.ashx.

10 Unpermissioned system implies open to all.

11 Antony Lewis, 'A gentle introduction to Blockchain technology' *Bit on blocks* (2016) www.bitonblocks.net/2015/09/09/a-gentle-introduction-to-blockchain-technology.

12 Ripple used by R3 Banks to send money across borders. See www.ripple.com.

by any user. Instead, access is granted by a consortium of users in the blockchain, whether that be comprised of a group of companies or individual users.¹³ Transaction information is divided up into encrypted blocks which are then dispersed among the servers of each blockchain user, such that each user does not contain the entirety of encrypted information.

Blockchain has the potential to benefit society at large by enabling radical efficiency and eliminating trust dependency. In theory, it could benefit any function that currently relies on a central authority to maintain and verify records or act as a trusted intermediary for transactions. It boasts the ability to decentralise control, provide a secure and immutable record, increase transparency and reduce financial exclusion. However, this nascent technology presents regulators with a host of obstacles, including its inflexibility to change, the looming threats to its security (for example, theft of private keys, known hacks and infiltration by quantum computers) and identity authentication issues.

Despite this, blockchain underpins Bitcoin and other cryptocurrencies, as well as facilitating trading within capital markets. IBM forecasts that 15 per cent of all banks internationally will be using blockchain technology by the end of 2017.¹⁴ It is also used to detect fraud and money laundering through the immutable record of transactions, while also being used to track shipping core operations. Furthermore, the technology has been used to monitor real estate records and manage personal identity in relation to civil services.¹⁵

13 Matt Chweirut, 'Asking permission: What's the difference between a public and private blockchain?' *Smith and Crown* (2016) www.smithandcrown.com/permission-blockchains/.

14 'Where is Blockchain going in 2017?' *Nasdaq* (9 January 2017) www.nasdaq.com/article/where-is-blockchain-going-in-2017-cm730953.

15 Mark Walpot UK Government Chief Scientific Adviser, 'Distributed Ledger Technology: beyond block chain' UK Government Office of Science (2016) www.gov.uk/government/uploads/system/uploads/attachment_data/file/492972/gs-16-1-distributed-ledger-technology.pdf.

Potential uses of blockchain in the legal industry

Smart contracts

Contracts are a fundamental part of legal practice and extend beyond contract law to corporate law, restitution, employment law, property law and planning law, to name a few. Blockchain visionaries have conceived of its use in constructing self-executing, cryptographically coded smart contracts, which rely on an intrinsic mechanism: if the rules or conditions of the contract are met, it will self-execute, but if the rules set in code are broken, an error is returned and no activity occurs, so compliance is ensured through the operation of the code itself.¹⁶ Nevertheless, the need for lawyers remains in order to draft and encode contractual terms.

Automation is useful to achieve the objectives of predictability and efficiency, while simultaneously presenting a challenge to adaptability and flexibility, the features of traditional contract law which allow it to deal with the contingencies of everyday life. Traditional law embeds safeguards for consumers that can invalidate the instrument and excuse performance, such as unconscionable conduct and undue influence. These and other remedies cannot be invoked in relation to a self-executing smart contract on the blockchain before performance is rendered and may be difficult to invoke *ex post* due to the uncertainties of blockchain dispute resolution.¹⁷ Self-executing smart contracts that are free from outside influences may be unsuited to deal with the innately human aspects of life, such as moral concessions and mitigating circumstances that may arise. Moreover, if a user does not understand the functioning of the code and is not equipped with suitable legal advice in relation to it, they may fall victim to the restrictive and immutable operation of code that may be difficult or impossible to unwind.

¹⁶ *Ibid* 41.

¹⁷ Aaron Wright and Primavera De Filippi, 'Decentralized Blockchain Technology and The Rise of Lex Cryptographica' *SSRN* (10 March 2015) http://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID2580664_code2373233.pdf?abstractid=2580664&mirid=

Due to the inflexible nature of blockchain technology, it is also uncertain how blockchain will accommodate developments in the law, and the mechanism by which the code, once programmed, can be changed to accommodate incremental legal developments.¹⁸ Once there has been some substantive law or regulation developed around smart contracts, they need to be technologically flexible enough to be able to respond to and interact with the demands of the state-based legal systems and the existing legal frameworks in which they operate.

One way to overcome the inflexibility of blockchain in smart contracts may be through a hybrid approach, whereby human decision-making would be permitted by code at certain identified critical junctures. Project DnA has been proposed to overcome this inflexibility by creating smart contracts that comprise of complementary digital and analogue terms.¹⁹ The digital portion of the contract contains some fully automated terms for the business as usual phase of a contract, but includes a pre-programmed ‘safety switch’ functionality that allows human intervention where necessary, and stops the contract from self-executing. For example, this could be used on the happening of an unusual event or where decisions involving abstract concepts like the application of good faith are involved.²⁰

Despite the rise of smart contracts and self-execution, Jason Weinsten, former Deputy Assistant Attorney General at the United States Department of Justice, remains optimistic about the continued role of lawyers and traditional law in applying to smart contracts, which will soon require lawyers to solve novel questions of law.²¹

18 Wolfgang Schulz and Kevin Dankert, ‘Governance by Things as a Challenge to Regulation by Law’ *Internet Policy Review* (30 June 2016) <http://policyreview.info/node/409/pdf>.

19 Scott Farrell, Claire Warren, Roslyn Hinchliffe and Johanan Ottensooser, ‘How to use humans to make ‘smart contracts’ truly smart’ *King and Wood Mallesons* (7 July 2016) www.kwm.com/en/knowledge/insights/smart-contracts-open-source-model-dna-digital-analogue-human-20160630.

20 *Ibid.*

21 Laura Shin, ‘As bitcoin technology makes inroads, one law firm launches multidisciplinary blockchain practice’ *Forbes* (9 August 2016) www.forbes.com/sites/laurashin/2016/08/09/as-bitcoin-technology-makes-inroads-one-law-firm-launches-multidisciplinary-blockchain-practice/#324ab3c411fb.

Effectuating service and confidential information sharing

Service of legal documents and sharing of confidential information between parties to litigation, among legal representatives and with courts and clients, remains one of the most basic and yet fundamental daily practices in law firms. In an increasingly technological world, the greatest opportunity cost is time. Traditional means, such as postal and personal service and delivery, are quickly becoming outdated, time-consuming and inefficient. More contemporary means of file sharing and information transfer, such as email, Dropbox and Google Drive, are being used, but are vulnerable to hacks and security compromise. The popular file sharing database Dropbox has been hacked in the past, with over 68 million users' passwords being leaked.²² Perhaps of greater concern, intermediary servers like these have unrestricted access to all uploaded information, meaning that information is never really limited to the uploader and the party granted with access.²³

The advent of the internet and the widespread use of social media has revolutionised communication. In the case of *MKM Capital Pty Ltd v Carbo & Poyser*,²⁴ the Australian Capital Territory Supreme Court judge permitted service of notice of default judgement via Facebook where it could be proven that personal identification information matched the Facebook profile.²⁵ However, substituted service by Facebook was not permitted by Ryrie J in *Citigroup Pty Ltd v Weerakoon*,²⁶ because Her Honour noted the 'uncertainty of Facebook pages' and the 'fact that anyone can create an identity that could mimic the true person's identity...does not show... with any real force that the person who created the Facebook page might indeed be the defendant'. Although social media bears the uncertainties of insecurity and uncertainty, the use of blockchain may be able to overcome these downfalls.

22 Samuel Gibbs, 'Dropbox hack leads to leaking of 68m user passwords on the internet' *The Guardian* (31 August 2016) www.theguardian.com/technology/2016/aug/31/dropbox-hack-passwords-68m-data-breach

23 See Dropbox Help page www.dropbox.com/en/help/8411.

24 Unreported Case, Australian Capital Territory Supreme Court, Master David Harper (12 December 2008)

25 Helen Tieu, 'Substituted Service of legal documents via Facebook: "like" or "unlike" by Australian Courts', (Colin Biggers & Paisley Lawyers, 2012) www.cbp.com.au/publications/2012/december/substituted-service-of-legal-documents-via-faceboo.

26 *Citigroup Pty Ltd v Weerakoon* [2008] QDC (Queensland District Court) 174.

Blockchain technology can provide a secure, speedy, immutable and time-stamped means of information sharing, which may potentially revolutionise service of documents and sharing of confidential information between users. Facebook and other social media intermediaries have unrestricted access to whatever is posted by users.²⁷ The decentralised and encrypted nature of blockchain technology ensures security without having to rely on an intermediary, such as Facebook or Dropbox, who has ultimate control and access to its users' data. Keybase is an application that facilitates encrypted file sharing using blockchain technology,²⁸ and Storj is another application which facilitates decentralised, encrypted end to end file storage.²⁹ Moreover, Bitnotar³⁰ and Proof of Existence³¹ uses blockchain technology to provide timestamping and document authentication, whereby a cryptographic hash of the original file is stored on the blockchain to detect any tampering or changes to the document.³² Blockchain Apparatus' pilot program is also used to notarise and timestamp documents.³³ These projects, which run on blockchain technology, may hold the potential to revolutionise confidential document sharing between parties in litigation, clients and lawyers, courts and representatives, and provide a secure and immutable record for the substituted service of legal documents.

Estates and trusts

Decentralised ledger technology and smart contracts have the potential to be used in trust creation and estate administration. The division of assets in an estate could potentially be cryptographically and securely coded into the blockchain, which upon the passing of the testator and the registration of the death certificate, the terms of the will or trust could self-execute to disburse

27 'Does Facebook really own your photos?' *Plagiarism Today* (13 May 2015) www.plagiarismtoday.com/2015/05/13/does-facebook-really-own-your-photos/.

28 Jamie Redman, 'Keybase: File Sharing with Bitcoin Blockchain Encryption,' *bitcoin* (February 2016) <https://news.bitcoin.com/keybase-file-sharing-bitcoin-blockchain-encryption/>.

29 See Storj Encrypted Cloud storage at <https://storj.io/>.

30 See Bitnotar at bitnotar.ott.criptomonedas.tel.

31 See Proof of Existence <https://proofofexistence.com/about>.

32 Jeremy Kirk, 'Could the bitcoin network be used as a ultra secure notary service?' *Computerworld* (2016) www.computerworld.com/article/2498077/desktop-apps/could-the-bitcoin-network-be-used-as-an-ultra-secure-notary-service-.html.

33 See Blockchain Apparatus <http://blockchainapparatus.com/timestamper/>.

the assets.³⁴ The piloted service Blockchain Apparatus advertises the potential to administer and execute will documents without human involvement, even allowing for revisions of the documents, which are stored in their own original state, to preserve the right to amend.³⁵ Although blockchain is unable to remove all the legal disputes around the creation of a will, such as issues regarding ambiguous terms and claims that the testator was under duress, it has the potential to streamline and expedite the estate administration process and ‘make it much easier for a genuine will to be upheld, for a bogus challenge to be dismissed, and for courts to come to factual findings much more quickly.’³⁶

Although the technical realities and application of this are yet to be deployed on projects of scale, it is likely to change the way that wills and estates attorneys perform their function. The need for wills and estate lawyers will likely endure, as they are required to draft and encode these legal documents. However, the digitisation of the industry and the increasing use of pre-drafted will templates may put pressure on these practitioners to become technologically literate in order to remain relevant and competitive.

Land title and cross-border asset transfer

Currently, transfers of title or ownership of property or land must be registered with the Office of State Revenue or Land Titles office in each jurisdiction, with lawyers drawing up the corresponding legal instruments for their exchange. Blockchain technology has the potential to eliminate the need for the middleman or titles registry facilities by keeping an immutable and secure record of all the transfers in ownership of the particular asset. This may be of particular utility when assets are being transferred across borders where financial institutions and frameworks differ. Title over the asset can be transferred between users through Coloured Coins,³⁷ which is an open source Bitcoin protocol where each colour token represents a different asset (for example, house, boat or car) that can be

34 Joe Dewey and Shawn Amual, ‘Blockchain Technology will transform the practice of law’ *Bloomberg Law* (25 June 2015) <https://bol.bna.com/blockchain-technology-will-transform-the-practice-of-law/>.

35 Scott Fargo, ‘Blockchain Apparatus launches a new Trusted Will system’ *Inside Bitcoins* (9 April 2015) <http://insidebitcoins.com/news/blockchain-apparatus-launches-a-new-trusted-will-system/31516>.

36 Victoria Lemieux, ‘Blockchain for Record Keeping: Help or Hype?’ *Research Gate* (October 2016) www.researchgate.net/profile/Victoria_Lemieux/publication/309414363_Blockchain_for_Record-keeping_Help_or_Hype/links/580f539408ae009606bb62f6.pdf.

37 See Coloured Coins www.coloredcoins.org/.

exchanged between users.³⁸ For the exchange of property or assets, title deeds can be hashed, whereby they are converted into mathematical codes, and securely stored on the blockchain.³⁹ The use of blockchain technology in this area will likely reduce the need for land title registry offices and increase the security and expediency of title transfer processes.

Evidence

Maintaining the integrity of evidence provided to a court is of fundamental importance to the rule of law and the administration of justice. Blockchain technology, through its immutable storage capability, has the potential to act as an authentication service. Blockai,⁴⁰ Monegraph,⁴¹ and Verisart,⁴² are new technologies which allow users to create permanent records of digital content such as photographs and text, which serve the function of copyright and storage of original, authentic materials.⁴³ The immutable, time-stamping features of blockchain powered applications may have the ability to prevent evidence from being tampered and could potentially be used to protect the integrity of evidence before a court.

Discovery

Document discovery is one of the most critical aspects of pre-trial litigation. The process of disclosure or ‘discovery’ is governed by rules of evidence and court rules. If an application for discovery is granted by a court, parties and legal representatives involved in litigation may be obligated to provide the other side with all documents which are relevant to a fact in issue.⁴⁴ Currently, this is a lengthy process involving the exchange of documents and each party

38 Tim Swanson, ‘Smart Property, Coloured Coins and MasterCoin’ *CoinDesk* (2014) www.coindesk.com/smart-property-colored-coins-mastercoin/.

39 Alexander Shelkovnikov, ‘Blockchain applications in the public sector’ *Deloitte* (2016) <https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/Innovation/deloitte-uk-blockchain-app-in-public-sector.pdf>.

40 See Blockai www.blockai.com/.

41 See Monegraph www.monegraph.com/.

42 See Verisart www.verisart.com/.

43 Lance Koonce ‘Seismic Shifts: blockchain technology and the law’ *Legal IT Today* (15 September 2016), 28

44 Colin Loveday and Nicholas Mavrakis, ‘Litigation and Enforcement in Australia: Overview’ *Clayton Utz* (2016) <http://uk.practicallaw.com/4-502-1038?source=relatedcontent>.

taking control of disclosed documents on their centralised systems. However, blockchain's decentralised ledger technology could be used to allow disclosure to be undertaken on a secure and shared platform, access to which is limited to the trusted parties. Furthermore, it would keep a permanent record of any interaction with the data.⁴⁵

Internal firm management

The full capabilities of blockchain technology in the legal sector are not yet known. However, proponents argue that the distributed ledger function has many potential uses for law firm management, including for billing, time keeping and financial transactions.⁴⁶ The use of the blockchain ledger could provide practitioners with a legitimate record of billable time and improve transparency by allowing clients to track and monitor the inflow and outflow of trust monies and disbursements made in their matter.

A trend that may pick up pace in the near future is the concept of alternative fee arrangements (AFAs), which is an alternative to the traditional billable hour scheme.⁴⁷ Small and medium-sized non-litigation law firms may have a preference in adopting this arrangement as it is more predictable and stable for billing purposes. It will be helpful for clients to anticipate future legal costs, and blockchain technology could assist in managing and transferring the value in this arrangement. Data can be pegged to the blockchain, that interconnects the lawyer and the client through its interoperability system, and fee payment is done via designated milestones once accomplished. The rise of blockchain technology and new disruptive business models will likely inspire law firms to move away from the billable hour scheme to implement a fee structure that encourages innovation and competitive flexibility.⁴⁸

45 See n 42, p.30.

46 Victor Li, 'Bitcoin's blockchain technology being used in business, finance and contracts' *American Bar Association Journal* (1 March 2016) www.abajournal.com/magazine/article/bitcoins_underlying_technology_blockchain_gains_use_in_business_finance_and.

47 Ilina Rejeva, 'Alternative Fee Arrangements: A comprehensive guide for Law Firms' *LegalTrek* (16 September 2015) <https://legaltrek.com/blog/2015/09/alternative-fee-arrangements-a-comprehensive-law-firm-guide/>.

48 Ralph Baxter, 'A Framework for Success: The 21st Century Law Firm Business Model' *Thomson Reuters* (24 November 2015) <http://legalexecutiveinstitute.com/a-framework-for-success-the-21st-century-law-firm-business-model/>.

Identity management

Secure identity management is critical for the professional legal services sector. There is a need to have a robust identity management system in place. The United Nations Commission on International Trade Law (UNCITRAL) Working Group IV (Electronic Commerce)⁴⁹ is investigating the legal issues related to identity management and trust services. It is scoping out the need for providing an enabling legal framework to facilitate cross-border recognition of identity credentials or identity assertions to promote confidence in the use of identity management systems and transactions.

Access control of blockchain applications requires, among other things, authentication of a user's identity and proof of their authority level for the required operation. Authentication requires identity management of all entities involved (usually people, organisations, devices and software) to a given, internationally defined level of assurance (LoA).⁵⁰ Authentication across communities of multiple authorities or organisations requires federated identity management (FIM), which can be developed to share identity information across online entities and trust domains.⁵¹ Blockchain technology has the potential to facilitate the secure storage and exchange of identity data such as fingerprints, facial patterns and voice through using public and private key encryption and data hashing stored on the blockchain.⁵² The decentralised nature of blockchain technology is such that information does not need to be shared with a trusted intermediary and does not require a centralised location to store sensitive information, and is therefore less susceptible to fraud.⁵³

49 United Nations Commission on International Trade Law (UNCITRAL) Working Group IV (Electronic Commerce) www.uncitral.org/uncitral/en/commission/working_groups/4Electronic_Commerce.html.

50 Level of Assurance (LoA) are used to describe the US Government's four identity authentication assurance levels which are used for e-government transactions. The four levels describe the degree of certainty regarding the degree of certainty that the individual provides in digital credentials. See www.identity.psu.edu/wp-content/uploads/sites/3053/2014/06/LoA-Final-Report.pdf.

51 'Federated Identity Management IT Glossary' *Gartner* www.gartner.com/it-glossary/federated-identity-management/.

52 'Identity Management on the Blockchain' *Shocard* (8 October 2016) https://shocard.com/cpt_news/identity-management-on-the-blockchain/.

53 *Ibid.*

Moreover, the ‘Global Opportunity Report 2017’ contemplates that blockchain has the potential to be used to disrupt inequality by allowing individuals to verify their identity to access essential banking and record keeping services.⁵⁴

Cyber security

Security of information is of particular importance to the legal profession as practitioners have an ostensible duty to their clients to uphold legal professional privilege and adhere to strict rules of non-disclosure.⁵⁵ Thus, in an increasingly technological world, legal practitioners need to find ways to improve the security of exchanged information and reduce the risk borne by legal practitioners.

One of the greatest threats to cyber security is human error, as 95 per cent of cyber security breaches involve an element of human error.⁵⁶ Blockchain may be able to minimise the risk of human error by keeping an immutable record of all actions and facilitating self-executing operations. Furthermore, blockchain technology operates on a decentralised system which utilises the capacities of all users instead of utilising one centralised host. The distributed technology removes the single point of failure that is often exploited by cyber attackers.⁵⁷

Although blockchain’s decentralised ledger technology in a public, permissionless ledger reduces vulnerability to theft of private information, as information is disseminated across all users, it is not without its risks. A permissionless ledger may increase the chance of widespread damage to the network if a cyber attack occurs, while a permissioned ledger may be more vulnerable to a cyber attack due to the fewer number of trusted nodes and, thus, greater concentration of information.⁵⁸ However, the immutable nature of the distributed ledger means that data cannot be manipulated without being detected and removes the threat of exploitation by

54 ‘Global Opportunity Report 2017’ *Global Opportunity Network* (2017) www.globalopportunitynetwork.org/report-2017/.

55 See for example Chapter 6 Legal Professional Privilege, *The Law Society of England and Wales* (22 October 2013) www.lawsociety.org.uk/support-services/advice/practice-notes/aml/legal-professional-privilege/#h6lpp>accessed.

56 ‘Global Opportunity Report 2017’ p.96 *Global Opportunity Network* (2017) www.globalopportunitynetwork.org/report-2017/.

57 Jean Pierre Buntinx, ‘Blockchain is the next line of defense for Cyber Security’ *Bitcoin.com* (19 June 2016), <https://news.bitcoin.com/blockchain-next-defense-cyber-security/>.

58 ‘Blockchain, Cybersecurity and Global Finance’ *Hunton and Williams* (2015) www.hunton.com/files/News/289469d8-826a-4f2b-ae48-df04b4c0acae/Presentation/NewsAttachment/3abe4d02-0d61-4276-9831-ea3ce3f225f9/blockchain-cybersecurity-and-global-finance.pdf.

a trusted intermediary.⁵⁹ Despite the fact that blockchain technology may have the potential to reduce cyber risk, utilised networks must be secured and users must bear in mind that the full risk and return capabilities of blockchain applications are yet to be realised.

The 'Global Opportunity Report 2017' contemplates that intelligent cyber security using artificial intelligence (AI) and adaptive algorithms may be able to respond to threats in real time to stop breaches before serious damage can be done.⁶⁰ There is ample potential for AI and blockchain to be used to minimise cyber risk vulnerabilities, as 85 per cent of all cyber attacks were predicted using AI technology.⁶¹ Moreover, the Defense Advanced Research Projects Agency (DARPA) is currently exploring the potential use of the blockchain decentralised ledger technology in preventing cyber attacks such as code injection.⁶²

The profession

With the rising importance of smart contracts and the potential for blockchain technology to be used in other facets of legal practice, the role of the legal practitioner will likely evolve to require lawyers to have at least basic coding knowledge and programing skills, in order to draft and then code the terms of a contract. At the very least, the blockchain revolution may result in law firms beginning to employ candidates from STEM⁶³ or with coding and programming backgrounds.⁶⁴ Some firms, including Holland & Knight,⁶⁵ even develop in-house technology for the legal sector in order to boost their competitive

59 Ben Dickson, 'How Blockchain can help fight cyberattacks' *TechCrunch* (5 December 2016) <https://techcrunch.com/2016/12/05/how-blockchain-can-help-fight-cyberattacks/> accessed 7 February 2017

60 'Global Opportunity Report 2017' p.13 *Global Opportunity Network* (2017) <http://www.globalopportunitynetwork.org/report-2017/>.

61 *Ibid* 93.

62 'DARPA Explores Blockchain for Cybersecurity and Other Defense Applications' *NewsBTC* (12 February 2017) <http://www.newsbtc.com/2017/02/12/darpa-blockchain-cybersecurity-defense/>.

63 STEM is Science Technology Engineering and Mathematics

64 Kristen Silverberg, Conan French and Dennis Ferenzy, 'Getting Smart: Contracts on the Blockchain' *Institute of International Finance* (11 May 2016) www.iif.com/publication/research-note/getting-smart-contracts-blockchain.

65 *Holland and Knight* <https://www.hklaw.com/>

advantage against other firms.⁶⁶ Similarly, Steptoe & Johnson,⁶⁷ has begun to explore the applications of blockchain to different business functions and have recently announced that they will accept Bitcoin as payment.⁶⁸

Blockchain's usage and application will continue to grow, as will the regulatory and legal frameworks surrounding it. Legal professionals can expect to be confronted by more clients with issues arising from the use of such technology. The creation of courts such as the Intellectual Property Enterprise Court and the Technology and Construction Court (UK) demonstrates the need for arbitrators with tailored and specialised knowledge to respond to the growing number of technology-related disputes.⁶⁹ As a result, law graduates may seek to expand their cross-disciplinary knowledge and gain coding skills in order to maintain a competitive advantage in an increasingly competitive and dynamic industry. Blockchain can provide legal institutions the opportunities to re-think the functioning of their processes and infrastructures in place. Bar councils, bar associations and law societies around the world should explore the unique interoperability feature of blockchain technology to develop a collaborative secure decentralised communications platform for information sharing between jurisdictions and facilitate international cooperation in fighting against cyber crime affecting the legal profession.⁷⁰ Legal professionals are urged to stay abreast of technological developments and to make conscious efforts to improve technological literacy in the profession, lest they face the risk of becoming the Luddites of the blockchain revolution which is currently under way.

66 Ron Friedmann, 'Will Blockchain affect your practice or firm?' *Bloomberg Law* (17 August 2016) <https://bol.bna.com/will-blockchain-affect-your-practice-or-firm-perspective/>.

67 *Steptoe and Johnson* www.stepsto.com.

68 Kevin Helms, 'International Law Firm Expands Blockchain Practice, Accepts Bitcoin,' *Bitcoin.com* (10 August 2016) <https://news.bitcoin.com/law-firm-blockchain-practice/>

69 'Intellectual Property Enterprise Court' *Gov.UK* www.gov.uk/courts-tribunals/intellectual-property-enterprise-court.

70 Bana, A. & Hertzberg, D. (2015) 'Data Security and the Legal Profession: Risks, Unique Challenges and Practical Considerations.' *Business Law International*, 16(3), pp. 247-264.



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