

Smart Contracts: Addressing Risks and Practical Strategies

Authors: Lane Neave Partner [James Cochrane](#) and Senior Associate [Mat Martin](#)

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Introduction

1. In the world of blockchain technology, smart contracts have emerged as revolutionary tools with the potential to transform how agreements are made, executed, and enforced in various fields. At their core, smart contracts are self-executing contracts with the terms of the agreement directly written into code. Internationally, and increasingly in New Zealand, adoption and use of smart contracts is growing.
2. This paper intends to be practical in its focus. The aim is to highlight key matters relating to smart contracts, including:
 - a. An overview of smart contracts, what they are and what they involve;
 - b. The context in which smart contracts have arisen;
 - c. A legal framework for analysing smart contracts;
 - d. How lawyers will be involved with smart contracts and their application in the future.

What are smart contracts?

3. Smart contracts are digital protocols that facilitate, verify, or enforce the negotiation and performance of a contract, eliminating the need for intermediaries such as lawyers, banks, or notaries. They operate on a decentralised network, typically leveraging blockchain technology, where transactions are immutable and transparent.

4. Because they are ‘self-executing’, unlike traditional contracts, they do not require manual enforcement and execution, which is expensive and time-consuming. While both traditional legal contracts and smart contracts serve the purpose of facilitating agreements between parties, they differ significantly in their execution method, reliance on intermediaries, enforceability mechanisms, flexibility and legal recognition.
5. The term “smart contract” was introduced by the American cryptographer and computer scientist Nick Szabo in 1996. The classic example of a smart contract offered by Szabo is that of a vending machine. Once a purchaser has satisfied the conditions of the “contract” – that is, inserting money into the machine – the machine automatically honours the terms of the unwritten agreement and delivers the snack. There is no need for another human to execute the terms of the agreement after that point.
6. Overall, smart contracts offer increased efficiency, transparency, security, and cost savings compared to traditional contracts. Nevertheless, as we discuss later in this paper, there are a range of legal implications relating to them to consider.

Adoption in New Zealand

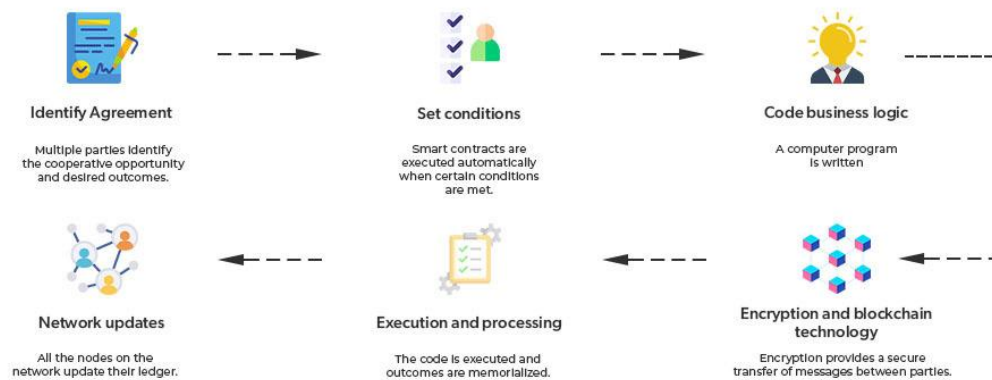
7. According to [one New Zealand website](#), cryptocurrency attains a 7% adoption rate in New Zealand, with an estimated 350,000 Kiwis owning crypto. Generally, as we move towards a more online society, with the growth of the ‘metaverse’ and ‘Web3’, lawyers will encounter increasing numbers of clients, including traditional businesses, digital assets businesses and consumers, seeking advice on digital assets across a range of practice areas.
8. In its [Long-term Insights Briefing on the future of business for Aotearoa New Zealand](#), the Ministry of Business, Innovation & Employment Hīkina Whakatutuki (**MBIE**) highlights the use of blockchain as an key trend for New Zealand businesses. MBIE anticipates, with the current patterns of investment and diversification of applications, that the use of blockchain is likely to continue to grow over the long term, rather than decline in use or development.
9. MBIE also observes that New Zealand companies are already adopting smart contract technologies. [Futureverse](#) (originally founded as Centrality in 2016), is a tech company which markets itself as adopting “revolutionary AI, and metaverse technologies that enable open, scalable, and interoperable apps, games and experiences”. [Futureverse’s work](#) is aimed at creating the foundation for a human-centric, immersive internet (the metaverse).
10. To access Futureverse, users create a [FuturePass](#) account. FuturePass “safeguards your identity and data, stores collectibles, tokens, and memberships, manages permissions and builds status and rewards”. As Futureverse points out in their [Risk Disclosure Statement](#), dealing with FutureVerse can mean “acquiring Digital Collectibles or Tokens and interacting with Smart Contracts (code written into a blockchain that executes the terms of an arrangement or agreement)”.
11. The [Rhythm and Vines](#) music festival has also made use of smart contracts. Smart contracts form the basis of non-fungible tokens (**NFTs**), particularly in respect of verifying

digital assets. RnV has used NFTs to support authenticated access to event experiences. Essentially the smart contract functionality of NFTs allows for verified ticketing and unique experiences. It can reduce friction and cost for the event promoter regarding ticket sales, and avoid fraud from counterfeiting of tickets. It also allows the festival goer to use their ticket, the NFT, for unique fan experiences or benefits at the event, and retain the NFT, as a unique digital asset or collectible for the event.

How do smart contracts work?

12. Smart contracts function based on the "if-then" principle. They automatically execute actions when predefined conditions are met. These conditions and actions are encoded into the contract, ensuring trust and eliminating the potential for manipulation or dispute.
13. For instance, imagine a simple rental agreement stored as a smart contract on a blockchain. The terms may specify that once the tenant transfers the monthly rent amount to the smart contract's address, the contract automatically releases a digital key to access the rented property. If the rent is not paid by a specified date, the contract might trigger penalties or initiate eviction procedures.
14. Another example is an insurance contract. UK start-up [InsurETH](#) is developing a flight insurance policy that utilises blockchain and smart contracts. When a verified flight data source signals that a flight has been delayed or cancelled, the smart contract pays out automatically. This removes the need for several parties within the insurance contract supply chain, improving efficiency and reducing cost.

How does a Smart Contract Work?



Source: <https://www.geeksforgeeks.org/smart-contracts-in-blockchain/>

15. As we explore further later in this paper, it is possible to see this application across a range of different industries and in different circumstances. Automation of the supply of goods and services is already in train, with the use and adoption of smart contracts making this process easier.

16. In some respects, the term “smart contracts” is something of a misnomer. Smart contracts are not necessarily always smart, nor are they “contracts” within the legal definition of one. However, they refer to the fact that their operation and execution is clear, transparent, and reliant on new technology which will continue to revolutionise the way we do business.
17. On the other hand, automation of systems is also nothing new. There are a number of technologies that already exist which have features analogous to smart contracts – in the government space, risk analysis tools used by government departments to analyse such things as crime and immigration matters have been in use for many years. However, it is the decentralised nature of the blockchain technology, which underpins the adoption and use of this technology, which is new.

Key features and advantages of smart contracts

18. There are a number of factors which make smart contracts advantageous in practice.
19. Smart contracts operate without the need for intermediaries, reducing the risk of manipulation or fraud and streamlining processes. By removing some of the need for additional party involvement in facilitating transactions, or allowing processes to move forward, this leads to greater autonomy for transacting parties.
20. Transactions facilitated by smart contracts are transparent and tamper-proof, enhancing trust among parties involved. The transparency and traceability of transactions recorded on the blockchain gives parties a greater degree of trust and accountability in the processes adopted.
21. Automation of contract execution minimises delays and reduces administrative overhead, saving time and resources. There are clear advantages to parties adopting smart contracts, in cases where administratively burdensome tasks can be undertaken by technology which is faster and less prone to error.
22. Utilising cryptographic techniques and decentralised networks, smart contracts offer robust security against unauthorised access or alteration. They can incorporate access control mechanisms to restrict access to sensitive functions or data only to authorised parties. By enforcing permissioned access, smart contracts minimise the risk of unauthorised manipulation or exploitation of contract functionalities
23. Finally, by eliminating intermediaries and automating processes, smart contracts lower transaction costs associated with traditional contract enforcement. The cost advantages in utilising smart contracts will likely be a key driver of their attractiveness and further adoption moving forward.

The crypto ecosystem

24. It would be remiss to discuss smart contracts without looking at the context in which they have arisen. By understanding the place of smart contracts in the context of the digital

assets ecosystem, it is easier to understand why the prevalence of smart contracts is only likely to increase in the future.

25. The tech ecosystem in which smart contracts operate is dynamic and multifaceted, encompassing various technologies, platforms, and stakeholders. It is characterised by innovation, collaboration, and ongoing evolution, driven by the collective efforts of developers, entrepreneurs, researchers, regulators, and other stakeholders committed to advancing blockchain technology and decentralised applications.
26. Some key components of the tech ecosystem surrounding smart contracts include:
 - a. **Blockchain technology:** Smart contracts primarily operate within blockchain networks. Blockchain technology provides the underlying infrastructure for executing and recording smart contract transactions in a decentralised and immutable manner. Ethereum, one of the most prominent blockchain protocols, is well-known for its support of smart contracts, but many other blockchain protocols also support smart contract functionality.
 - b. **Regulatory and legal considerations:** The tech ecosystem surrounding smart contracts is subject to regulatory and legal considerations. Legal frameworks governing smart contracts vary by jurisdiction and may impact their enforceability, tax treatment, and compliance requirements. Lawyers, policymakers, and regulatory bodies play important roles in shaping the legal landscape for smart contracts and blockchain technology. The United States is a key player in the regulation of new technology, with steps taken in the United States having an impact globally.
 - c. **Privacy versus transparency:**
 - i. One of the key features of blockchain technology is its transparency. All transactions are recorded on a public ledger that is accessible to anyone. This transparency ensures accountability and trust within the network. Each transaction on a blockchain can be traced back to its origin, allowing for a high level of auditability. This feature is particularly valuable in financial applications where transparency and accountability are critical. While blockchain transactions are transparent, the identities of the parties involved are often pseudonymous. Instead of real-world identities, users are identified by cryptographic addresses. This pseudonymity provides a degree of privacy but does not guarantee anonymity. Despite the pseudonymous nature of blockchain transactions, concerns about privacy persist.
 - ii. The tension between privacy and transparency arises from the conflicting needs of different stakeholders. Regulators often emphasise transparency to combat illicit activities such as money laundering, terrorist financing, and tax evasion. They may push for greater transparency and surveillance measures in the cryptocurrency space to enforce compliance with existing regulations. On the other hand, privacy advocates argue that individuals have a fundamental right to financial privacy. They highlight the importance

of preserving anonymity and protecting sensitive financial information from surveillance and censorship.

- d. **DApps:** Smart contracts often serve as the backbone for decentralised applications (**DApps**). DApps are applications that run on blockchain networks and leverage smart contracts to automate processes, facilitate transactions, and enforce business rules in a trustless and transparent manner.
- e. **Programming languages:** Smart contracts are typically written in specific programming languages that are compatible with blockchain platforms. For example, Ethereum smart contracts are commonly written in Solidity, a high-level programming language specifically designed for writing smart contracts. Other blockchain platforms may support different programming languages for smart contract development.
- f. **Developer tools:** Developers rely on a variety of tools and frameworks to build, test, and deploy smart contracts efficiently. These tools include integrated development environments (IDEs), testing frameworks, debuggers, and deployment platforms that streamline the smart contract development lifecycle and ensure code quality and security.
- g. **Security:** Given the immutable nature of blockchain transactions, security is paramount in the smart contract ecosystem. Security audits, code reviews, and best practices help identify and mitigate vulnerabilities in smart contract code to prevent potential exploits, hacks, or unintended behaviour that could result in financial losses or reputation damage.
- h. **Interoperability:** As the smart contract ecosystem evolves, interoperability and standardisation become increasingly important. Interoperability standards enable smart contracts to interact seamlessly across different blockchain platforms and networks, fostering greater adoption and integration of decentralised applications and services.

Smart contracts and their application

27. The potential applications of smart contracts span across various industries. To give a sense of some of these applications, a few examples of possible and actual applications of smart contracts in various industries follow:

Finance

28. **Facilitating peer-to-peer lending** – smart contracts can be used to create and manage loan agreements between borrowers and lenders. Borrowers can input their desired loan amount, interest rate, and repayment terms into the smart contract, which then generates a digital contract that is stored on the blockchain. Once a loan agreement is established, smart contracts can automatically disburse funds to the borrower's account. This eliminates the need for manual processing and reduces the risk of funds being misappropriated or delayed.

29. **Automating insurance claims processing** – policyholders can submit claims by inputting relevant information into a smart contract. This information can include details such as the nature of the loss, supporting documentation, and any other required information specified by the insurance policy. Smart contracts can then automatically assess the validity of the claim based on predefined criteria and conditions encoded within the contract. This assessment can include checks for fraudulent activity, policy coverage, and compliance with claim submission requirements. If the claim meets all criteria, the smart contract can approve the claim for processing.
30. **Executing complex financial derivatives** – in these circumstances, smart contracts can automatically execute transactions based on predefined conditions without the need for intermediaries. Smart contracts can integrate with external data sources or oracles to obtain real-time market data and price feeds for the underlying assets. This ensures that the value of the derivative contract is accurately determined based on current market conditions.

Supply Chain Management:

31. **Tracking goods** – each product can be assigned a unique digital identity recorded on a blockchain through a smart contract. This digital representation includes relevant information such as product specifications, manufacturing details, and ownership history. Smart contracts can record the movement of goods throughout the supply chain, creating an immutable audit trail of each product's journey from production to distribution. This enables stakeholders to trace the origin of goods, verify their authenticity, and ensure compliance with regulatory requirements.
32. **Automating payments** - smart contracts can facilitate conditional payments based on predefined criteria or milestones in the supply chain. For example, payment to suppliers can be automatically released upon delivery confirmation or successful inspection of goods, reducing the risk of delayed payments or disputes.
33. **Ensuring compliance across the supply chain** - smart contracts can enforce quality assurance standards and compliance requirements specified in supply chain contracts. They can trigger alerts or notifications when deviations from established standards occur, enabling stakeholders to take corrective actions promptly.

Real Estate

34. **Facilitating property transactions** – property owners can create smart contracts to list their properties on decentralised real estate platforms. These contracts can include details such as property specifications, pricing, and terms of sale, making them accessible to potential buyers.
35. **Managing residential tenancy agreements** – smart contracts can automate rent payments by scheduling recurring payments from the tenant's wallet to the landlord's wallet at predefined intervals. This eliminates the need for manual rent collection and

reduces the risk of late or missed payments. Tenants can submit maintenance requests through the smart contract, detailing the nature of the issue and the urgency of the request. Landlords can receive and prioritise maintenance requests, ensuring timely resolution and improving tenant satisfaction.

Legal Industry

36. **Automating contract drafting** – smart contracts can dynamically generate contracts based on user input and predefined templates. Users can provide relevant information through an interface, and the smart contract can automatically populate the template with the provided data, generating a complete contract document. They can enforce standardised language and clauses to ensure compliance with legal requirements and best practices. This reduces the risk of errors, inconsistencies, and omissions in contract drafting, improving the quality and reliability of legal documents. They also maintain a transparent and immutable record of all contract revisions and approvals on the blockchain. This creates a verifiable audit trail of contract changes, ensuring accountability and traceability throughout the drafting process.
37. **Enforcing intellectual property rights** – smart contracts can be used to create digital representations of IP assets, such as patents, trademarks, copyrights, and trade secrets, on a blockchain. These digital assets can be securely stored and managed, with ownership rights recorded on the blockchain in an immutable manner. They can incorporate IP protection mechanisms, such as digital rights management (DRM) and access control, to prevent unauthorised use or reproduction of copyrighted content. Contracts can enforce usage restrictions, such as limiting the number of times a digital asset can be accessed or distributed.
38. **Ensuring compliance with regulatory requirements** – smart contracts can incorporate predefined rules and logic to automate compliance checks in real-time. For example, contracts can enforce transaction limits, verify customer identities, and ensure adherence to regulatory requirements such as Know Your Customer (KYC) and Anti-Money Laundering (AML) regulations. They can monitor transactions and activities in real-time for potential compliance issues or anomalies. Contracts can trigger automated alerts and notifications when predefined thresholds or patterns indicative of non-compliance are detected, enabling timely intervention and corrective action.

Healthcare

39. **Managing patient data securely** – smart contracts can enforce access control policies to regulate who can access patient data and under what conditions. Access permissions can be encoded in smart contracts, ensuring that only authorised individuals, such as healthcare providers or patients themselves, can access specific parts of the data. They can facilitate data encryption and decryption using cryptographic techniques, ensuring that patient data remains confidential and protected from unauthorised access. Encrypted data can be securely stored on the blockchain, with decryption keys accessible only to authorised parties specified in the smart contract.

40. **Pharmaceutical traceability and authentication** – smart contracts can improve drug traceability and authentication by recording the entire supply chain history of pharmaceutical products on a blockchain. Contracts can track the movement of drugs from manufacturing facilities to patients, ensuring authenticity, preventing counterfeiting, and enhancing drug safety.
41. **Ensuring compliance with healthcare regulations** – smart contracts can enforce compliance with regulatory requirements and streamline reporting processes for healthcare organisations. Contracts can automate compliance checks, generate regulatory reports, and maintain transparent audit trails of compliance-related activities for regulatory authorities.

Challenges and other considerations

42. While smart contracts offer numerous benefits, they also present certain challenges and considerations.
43. Smart contracts, like any software code, can be susceptible to various vulnerabilities and security risks. Errors or vulnerabilities in smart contract code can lead to unintended consequences or security breaches. To mitigate these vulnerabilities and enhance the security of smart contracts, developers will need to follow best practices such as thorough code review, testing, formal verification, and adherence to established security standards and guidelines. Additionally, developers will need to stay informed about emerging threats and vulnerabilities in the blockchain ecosystem and incorporate appropriate security measures into their smart contract development process.
44. Legal frameworks surrounding smart contracts are still evolving, raising questions about jurisdiction and enforceability. Uncertainty around changing regulatory environments could have an impact on the adoption and development of these technologies. Examples like Tornado Cash also show the risks that entrepreneurs and developers may face when operating in a new technology environment.
45. As blockchain networks grow, scalability issues may arise, impacting transaction throughput and processing speed. Scalability concerns can contribute to network congestion and bottlenecks, where transaction processing times increase, and the backlog of pending transactions grows. This can lead to degraded performance, increased confirmation times, and higher likelihood of transaction failures or delays for smart contract interactions. Smart contracts may require access to external resources, such as data feeds, oracles, or off-chain services, to perform certain functions or computations. Scalability concerns can limit the availability or reliability of these external resources, affecting the functionality and reliability of smart contracts.
46. While blockchain transactions are transparent, ensuring data privacy remains a challenge, especially in sensitive industries like healthcare. Smart contracts may involve sensitive or confidential data, such as personal information, financial records, or proprietary business data. Privacy concerns arise when such data is stored on a public blockchain, as it can be

accessed and viewed by anyone with access to the blockchain, potentially exposing sensitive information to unauthorised parties. Privacy concerns in smart contracts are also influenced by data protection laws and regulations governing the collection, processing, and storage of personal data. Smart contracts must comply with these laws to protect users' privacy rights and avoid potential legal liabilities related to data breaches or unauthorised access to personal information.

47. The [Tornado Cash case](#) illustrates one of the principal tensions within the crypto ecosystem – the desire to enhance privacy and freedom from state intrusion into personal and commercial transactions, as against the need for transparency and accountability with regard to those same transactions. This case raises questions about where liability for smart contracts lays. Does it lay with the developer? Or should it lie with the parties that use the protocol for nefarious purposes?

Legal consideration of smart contracts

48. As a consequence of the increased use of smart contracts and ongoing development of blockchain technology, the law is having to adapt and evolve at pace to stay on top of these changes.
49. The [UK Jurisdiction Taskforce's \(UKJT\) Legal Statement on Cryptoassets and Smart Contracts \(Legal Statement\)](#)¹ was released in November 2019 and aimed to provide legal clarity on the status of cryptoassets and smart contracts under English private law.
50. Some key points covered in the Legal Statement include the following:
 - a. The report defines cryptoassets as tradeable digital representations of value or rights that use some form of cryptographic encryption and are typically recorded on a distributed ledger.
 - b. The UKJT concluded that cryptoassets are capable of being owned and have the legal status of property under English law.
 - c. The report recognises smart contracts as agreements whose execution is automated and enforced by a computer program. It highlights that smart contracts are capable of forming legally binding contracts under English law.
 - d. The UKJT stated that, subject to meeting the basic requirements of contract formation, smart contracts are capable of having legal recognition and enforceability under English law.
 - e. The report addresses jurisdictional issues related to cryptoassets and smart contracts and highlights the importance of parties' choice of law and jurisdiction clauses in contracts involving these technologies.

¹ UK Jurisdiction Taskforce *Legal Statement on cryptoassets and smart contracts*,

51. Overall, the Legal Statement provides valuable guidance for legal practitioners, businesses, and individuals operating in the cryptocurrency and blockchain space in the UK, helping to clarify the legal status and implications of these emerging technologies under English law.

52. The Legal Statement defines smart contracts in the following terms:²

There is a contract in English law when two or more parties have reached an agreement, intend to create a legal relationship by doing so, and have each given something of benefit. A smart contract is capable of satisfying those requirements just as well as a more traditional or natural language contract, and a smart contract is therefore capable of having contractual force. Whether the requirements are in fact met in any given case will depend on the parties' words and conduct, just as it does with any other contract.

The parties' contractual obligations may be defined by computer code (in which case there may be little room for "interpretation" in the traditional sense) or the code may merely implement an agreement whose meaning is to be found elsewhere (in which case the code is unimportant from the perspective of defining the agreement). Either way, however, in principle a smart contract can be identified, interpreted and enforced using ordinary and well-established legal principles.

English law does not struggle with the concept of anonymous or pseudonymous parties contracting; nor with the notion that a contract can be formed between individuals by virtue of them each having agreed to subscribe to a set of rules (as happens, for example, in a club). English law is fully equipped to deal not only with bilateral smart contracts but also those structured around Decentralised Autonomous Organisations (DAOs).

There are some legal rules which require certain documents to be "signed" or "in writing". In principle, a statutory "signature" requirement can be met by using a private key which is intended to authenticate a document, and a statutory "in writing" requirement can be met in the case of a smart contract whose code element is recorded in source code (although the analysis may be less straightforward where a smart contract is represented only in object code on a running system).

53. The particular characteristics of smart contracts in this context has been analysed in the following way:³

As with cryptoassets, it is difficult, and unlikely to be useful, to try to formulate a precise definition of smart contracts and so we have again sought instead to identify what it is about them that may be legally novel or distinctive. The characteristic feature, in our view, is automaticity: a smart contract is performed, at least in part, automatically and without the need for, and in some cases without the possibility of, human intervention. That requires the terms of the contract to be recorded in computer-readable form, i.e. in code. Many smart contracts are embedded in a networked system that executes and enforces performance using the same techniques (cryptographic authentication, distributed ledgers, decentralisation, consensus) that we have already discussed in connection with cryptoassets.

² *Legal Statement on Cryptoassets and Smart Contracts*, at [18] – [21].

³ *Legal Statement on Cryptoassets and Smart Contracts*, at [135]

Application to New Zealand law

54. The UKJT Legal Statement has been effectively endorsed by the courts in New Zealand. In *Ruscoe v Cryptopia Ltd (in liq)*,⁴ the Court relied heavily on the Legal Statement to carry out its analysis of the legal nature and status of digital assets and of potential equitable interests in them. In terms of an initial guidance on issues and the application of legal principles relating to smart contracts in New Zealand, the Legal Statement serves as a good first port of call.
55. On 17 August 2023, the New Zealand Parliament's Finance and Expenditure Select Committee published its report on its [Inquiry into the current and future nature, impact, and risks of cryptocurrencies](#). Among the observations of the Committee on the application of smart contracts in New Zealand, the Committee commented on the potential application of smart contracts in respect of central bank digital currencies (**CBDCs**).⁵

The opportunities for CBDCs are that unlike our current electronic money issued by retail banks, and fiat currency created by the RBNZ (bank notes and coins), a CBDC could be used in smart contracts. This will facilitate the more rapid use of smart contracts and their benefits in New Zealand. To be sure, as the RBNZ has identified, when creating a CBDC it needs to be mindful of not destabilising New Zealand's banking system. This may occur if the CBDC competes with deposits at both the household and wholesale level or there are runs on banks to the safer CBDC in times of financial uncertainty. On the other hand, not creating a New Zealand CBDC carries risks. Businesses and others will continue to use and increase their use of stablecoins in the absence of CBDCs because of the utility of stablecoins in smart contracts and other financial transactions.

56. The [New Zealand Government's response to the Finance and Expenditure Select Committee's report](#), presented to Parliament on 1 March 2024, is relatively light on detail. However, as others have observed, the reality is that government will have to continue to deal with the growth and development of blockchain technology (including smart contracts).

Why should New Zealand lawyers care about smart contracts?

57. What all of the above tells us is that:
- a. Smart contracts are here, and they are growing in prevalence;
 - b. The law recognises and is adapting to their adoption and use in a variety of contexts; and
 - c. This includes New Zealand, which is coming up to speed.
58. For these reasons, it is important that New Zealand lawyers come up to speed with smart contracts, their use and adoption, and potential uses and applications to legal practice.

⁴ *Ruscoe v Cryptopia Ltd (in liq)* [2020] NZHC 728

⁵ New Zealand Parliament, Finance and Expenditure Select Committee; *Inquiry into the current and future nature, impact, and risks of cryptocurrencies*, at [84]

59. Smart contracts are not limited to specific jurisdictions and have implications worldwide. As such, lawyers in New Zealand should be aware of developments in smart contract technology and their potential impact on local legal frameworks.
60. Clients, including businesses and individuals, may increasingly seek legal advice on smart contracts. Whether they are entering into agreements involving smart contracts or facing legal issues related to their use, lawyers need to be equipped to advise their clients effectively.
61. Understanding the legal implications of smart contracts is essential for ensuring compliance with existing laws and regulations in New Zealand. Lawyers need to assess how smart contracts fit within the country's legal framework and advise clients accordingly.
62. Embracing smart contracts reflects a commitment to innovation and technological advancement. Lawyers who understand smart contracts can better serve clients operating in sectors where blockchain technology and smart contracts are becoming increasingly relevant, such as finance, supply chain management, and intellectual property.
63. Smart contracts introduce unique legal considerations and potential risks. Lawyers play a crucial role in identifying and mitigating these risks for their clients, including issues related to security, privacy, enforceability, and dispute resolution.
64. Finally, lawyers who stay informed about smart contracts and emerging technologies can gain a competitive advantage in the legal market. They can offer specialised expertise and innovative solutions to meet the evolving needs of their clients.

How are lawyers going to be involved?

65. The need for lawyers to be involved in issues at both the front end and back end of smart contracts is considerable.

Implementation of smart contracts in transactions / commercial arrangements

66. In any situation involving smart contracts, as with any new technology, it will be necessary to properly formulate the terms on which parties contract with one another.
67. The Harvard Law School Forum on Corporate Governance outlined some of the best practice approaches for developing such coding.⁶ This includes:
 - a. Parties would be best served to use a hybrid approach that combines text and code. Until there is greater clarity on their validity and enforceability, code-only smart contracts should be used only for simpler transactions.
 - b. In using a hybrid contract, the text should clearly specify the smart contract code with which it is associated, and the parties should have full visibility into the variables that are being passed into the smart contract.

⁶ Harvard Law School Forum on Corporate Governance, *An Introduction to Smart Contracts and Their Potential and Inherent Limitations*, Stuart D. Levi and Alex B. Lipton, 26 May 2018.

- c. The parties should consider risk allocation in the event of a coding error.
 - d. The text should specify the governing law and venue, as well as the order of precedence between text and code in the event of a conflict.
 - e. The text agreement should include a confirmation by each party that they have reviewed the smart contract code, and that it reflects the terms found in the text agreement.
68. The terms and conditions for use of such technology will be critical. Lawyers will have to understand how the proposed use of smart contracts in any given situation will have an implication on the rights and obligations of the parties in these circumstances. This includes in relation to dispute resolution processes if things go wrong.
69. The automation of operations arising from the use of smart contracts means the parties will likely have to agree to the outcomes of their use. For example, if a smart contract operates by automatically facilitating payment to a supplier on receipt of goods to a warehouse of a purchaser, then what happens if there is a question about the quality of the goods receiver? Or what happens if the purchaser does not have funds available to make the automatic payment? In those circumstances, carefully drafted terms and conditions will need to account for the variety of scenarios that may be possible.
70. As regulation of the AI / blockchain technology develops, there will be an increasing need to stay on top of relevant legislation and its application to specific circumstances. As it stands, the Privacy Act 2020 and Anti-Money Laundering and Countering Financing of Terrorism Act 2009 already looms large in this sector, and will only continue to develop moving forward. Ongoing review of the regulatory context in which smart contracts operate will be vital.
71. Ongoing advice and assistance to parties using smart contracts will also be relevant. The development of internal and external protocols for their adoption and use will be required. Lawyers could conduct smart contract audits and assurance reviews to assess the security, legality, and functionality of smart contracts. They could evaluate smart contract code for vulnerabilities, compliance with legal requirements, and alignment with industry standards, providing recommendations for improvement and risk mitigation.

Dispute resolution

72. As with any new technology, potential problems can arise. As highlighted above, there are likely to be circumstances which lead to disputes. Referring to the example above of the sale and supply of goods, there may be questions about whether the conditions for application of a smart contract term were adequately triggered. In those circumstances, where payment may have been triggered through a smart contract, what rights of redress are there for affected parties?
73. The characteristics of smart contracts and blockchain technology mean that there can be uncertainty about the parties involved in a transaction. If things go wrong, and you do not know who the other party you are dealing with is, then this will be a practical barrier to any recovery option. While the courts already have to deal with unknown parties in the context of litigation, finding ways of mitigating against these issues before they arise will be critical.

74. Developers and IT firms who create and deal with smart contracts will need to be aware potential legal risks. Potential liability in the case of coding errors and bugs, or security breaches and hacks, are among the number of issues that developers may face. Lawyers will need to be adequately appraised of the issues that developers may be exposed to, so that risk mitigation tools are in place before issues arise.
75. Jurisdictional issues will also arise. In the case of technology which is developed in one country, but utilised in others, how these entities deal with potential claims – and the best means of chasing a recovery – will form a key part of dispute resolution responses.

Issues for future application

76. Smart contracts represent a paradigm shift in how agreements are made and executed in the digital age. By automating processes, enhancing security, and fostering trust, they have the potential to revolutionise various industries and streamline complex transactions. However, realising the full potential of smart contracts requires addressing technical, regulatory, and scalability challenges while ensuring robust security and privacy measures.
77. As blockchain technology continues to evolve, smart contracts are poised to become an integral part of the global digital economy, reshaping the landscape of commerce, governance, and beyond.
78. The Finance and Expenditure Select Committee observed that New Zealand has, to date, employed a “wait and see” approach to regulating digital assets. They observed that taking a more proactive approach to regulation and innovation would likely lead to significant opportunities for New Zealand to embrace. The same principal applies to lawyers wishing to service clients utilising this technology.

Disclaimer

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Resources

<https://www.laneneave.co.nz/our-services/business-law/web3-digital-assets/>
<https://blockchain.org.nz/>
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