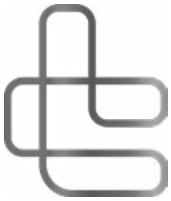
The LawTech Delivery Panel

Legal statement on cryptoassets and smart contracts

UK Jurisdiction Taskforce

November 2019



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The members of the UK Jurisdiction Taskforce (UKJT) are:
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A link to this Legal Statement can be found at: https://technation.io/about-us/lawtech-panel

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Foreword

by Sir Geoffrey Vos, Chancellor of the High Court

I am delighted to welcome the publication by the UK Jurisdiction Taskforce ("UKJT") of a Legal Statement on the Status of Cryptoassets and Smart Contracts (the "Legal Statement").

In legal terms, cryptoassets and smart contracts undoubtedly represent the future.

I hope that the Legal Statement will go a long way towards providing much needed market confidence, legal certainty and predictability in areas that are of great importance to the technological and legal communities and to the global financial services industry.

There is no doubt that some of the matters covered by the Legal Statement will, in the future, be the subject of judicial decision. But my hope is that, in the meantime, the Legal Statement will provide a foundation for the responsible future utilisation of cryptoassets and smart contracts.

The Legal Statement has been prepared by Lawrence Akka QC, David Quest QC, Matthew Lavy and Sam Goodman, all of whom are experts in this field. It is not my role as a judge, nor that of the UKJT or its parent, the UK's LawTech Delivery Panel, to endorse the contents of the Legal Statement. Instead, the UKJT has promoted several rounds of public and private consultation so as to ensure that the drafting team were considering the right legal questions, and had the benefit of the most respected expert, technical, legal, judicial and academic opinion.

The objective of the Legal Statement is to provide the best possible answers to the critical legal questions under English law. I am sure that it will demonstrate the ability of the common law in general, and English law in particular, to respond consistently and flexibly to new commercial mechanisms.

I want to thank all those who have given freely of their time to make the Legal Statement possible.

Introduction

1. In May 2019, the UK Jurisdiction Taskforce issued its Consultation Paper (at Appendix 1) on the status of cryptoassets, distributed ledger technology and smart contracts in English[1] private law. The paper noted that the well-developed common law system of England and Wales was able to adapt to deal with such fast-changing technologies and was well positioned to provide a sound legal foundation for their development.

2. In his foreword, the Chancellor of the High Court, Sir Geoffrey Vos, commented that perceived legal uncertainty was the reason for some lack of confidence amongst market participants and investors. Accordingly, we have been asked by the Taskforce to consider a number of legal questions concerning those areas of perceived uncertainty, and to provide our conclusions in this Legal Statement.

3. The great advantage of the English common law system is its inherent flexibility. Rather than depending on the often cumbersome, time-consuming and inflexible process of legislative intervention, judges are able to apply and adapt by analogy existing principles to new situations as they arise. In commerce, the law is there to support and fulfil reasonable expectations.[2] It is "endlessly creative … a living law, built on what has gone before, but open to constant renewal".[3] Time and again over the years the common law has accommodated technological and business innovations, including many which, although now commonplace, were at the time no less novel and disruptive than those with which we are now concerned. In no circumstances therefore are there simply no legal rules which apply.

4. This Legal Statement is not a treatise or an academic paper; we have not set out to give a detailed explanation of the law of property or contract. Its purpose is to answer the questions we were asked and to state briefly our reasons in a form accessible to non-lawyers as well as lawyers. We focus on those aspects of cryptoassets and smart contracts that are potentially novel and distinctive and discuss the extent to which we consider that general legal principles apply.

5. We are conscious that there is already a very large, and expanding, body of writing on those topics, by lawyers, academics and industry participants. It has been supplemented by the many detailed responses to the present consultation. It would not be practical to summarise or digest that material in this document, and we have not attempted to do so, although we hope that we have taken appropriate account of the views expressed.

6. Finally, it is not our intention to say how the law should develop in future, though we hope that any proposals for law reform can build on this foundation.

The public consultation

7. The aim of the Consultation Paper was to ensure that so far as possible the questions which we have been asked to address are the right ones: those with which key stakeholders are most concerned. The Taskforce received over 140 written responses—a list of those responding is in Appendix 2—from a broad range of interests: academics and technologists, businesses and individuals, lawyers and non-lawyers. Many others shared their views at the well-attended public consultation meeting held in London on 4 June 2019.

8. A very great majority of respondents thought that the questions posed were correct, though some differences of nuance and wording were suggested. A number of other questions were proposed. A few people provided their views on the answers to the questions. We are grateful to all of them alike, and we have found it very valuable to consider the input from a wide range of different sources. We are also grateful to the group of particularly well-qualified individuals who have taken the time to review and provide feedback on the draft of this Statement, who are listed in Appendix 2.

9. Although the questions we have addressed are largely unchanged from those posed by the Consultation Paper, in providing our answers we have taken account of a number of issues which have been raised to the extent that we have thought it appropriate to do so, in the light of the scope and aims of this project.

Scope

10. As stated in the Consultation Paper, there are a number of areas of law which have intentionally been deemed out-of-scope. In particular we do not address the regulation of dealings in cryptoassets, because it seems more appropriate for regulation to follow the logically prior issues of common law characterisation. Similarly, the remedies which the law will provide in any particular circumstances follow on from an analysis of the relevant legal rights, and can be developed as necessary over time in appropriate cases.[4]

11. The Taskforce considers that matters of taxation, criminal law, partnership law, data protection, intellectual property, consumer protection, settlement finality, regulatory capital, anti-money laundering and counter-terrorist financing are best dealt with by other bodies or organisations. We have not trespassed into issues relating to monetary policy or the nature of cryptoassets as money.

12. Finally, we should note that the law can be highly fact-sensitive. We are unable in a document such as this to deal with areas where too many potential factual scenarios would need to be considered in order for us to provide any helpful answers. This Statement is not intended to be legal advice, for which readers should consult a lawyer, and nothing in it should be relied upon as being relevant to any particular circumstances.

Structure of this Statement

13. The questions we have answered and our conclusions are set out below, following a short summary. We have provided a number of references in the endnotes for those who would like more detail.

14. We have provided some examples where we have thought it might be helpful, and Alice and Bob,[5] who are well known to cryptographers, make an appearance.

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Summary

Property

15. Whether English law would treat a particular cryptoasset as property ultimately depends on the nature of the asset, the rules of the system in which it exists, and the purpose for which the question is asked. In general, however:

    (a) cryptoassets have all of the indicia of property;

    (b) the novel or distinctive features possessed by some cryptoassets—intangibility, cryptographic authentication, use of a distributed transaction ledger, decentralisation, rule by consensus—do not disqualify them from being property;

    (c) nor are cryptoassets disqualified from being property as pure information, or because they might not be classifiable either as things in possession or as things in action;

    (d) cryptoassets are therefore to be treated in principle as property.

16. This is likely to have important consequences for the application of a number of legal rules, including those relating to succession on death, the vesting of property in personal bankruptcy, and the rights of liquidators in corporate insolvency, as well as in cases of fraud, theft or breach of trust.

17. Cryptoassets cannot be physically possessed: they are purely "virtual". Accordingly, as a matter of law they cannot be the object of a bailment, and only some types of security can be granted over them, though we see no obstacle to the granting of other types of security. They are not documents of title, documentary intangibles or negotiable instruments (though some form of negotiability may arise in future as a result of market custom), nor are they instruments under the Bills of Exchange Act.

Smart Contracts

18. 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.

19. 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.

20. 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).

21. 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).

22. As we explain in detail below, English law is well able to deal with technological developments and it has an impressive track record of doing so.

Legal Statement

Cryptoassets as property

23. The first group of questions we have been asked concerns the legal status of cryptoassets and, in particular, whether the law treats them as property. We approach those questions following a brief discussion of the general nature of cryptoassets and of property.

What is a cryptoasset?

24. In October 2008, the pseudonymous Satoshi Nakamoto published his now-famous paper, *Bitcoin: A Peer-to-Peer Electronic Cash System*.[10] Observing that commerce on the Internet relied almost exclusively on financial institutions serving as trusted third parties, Nakamoto proposed a new electronic payment system "based on cryptographic proof instead of trust", with digital tokens—*bitcoins*—taking the place of traditional currency. The first bitcoin came into existence in January 2009, not coincidentally at the height of the global banking crisis.[11]

25. Many other systems have been developed since then to implement commercial applications using cryptographic techniques. The market continues to expand as new applications and new techniques are explored.

26. Most applications involve dealings in assets of some kind, which therefore have to be represented digitally within the system. We use the term *cryptoasset* to refer generally to such a representation. However, that should not be understood as a term of art. Because of the great variety of systems in use and kinds of assets represented (ranging from purely notional payment tokens such as bitcoins to real-world tangible objects) it is difficult to formulate a precise definition of a cryptoasset[12] and, given the rapid development of the technology, that would not be a useful exercise. Indeed, there is no consistency even in the nomenclature, with *virtual* and *digital* also widely used to describe the kinds of things with which we are concerned.

27. Instead, we have set out to identify and describe, in general terms, the features of cryptoassets that may be regarded as genuinely novel or distinctive, as compared with conventional assets, so that we can then consider whether and how those features might be relevant to issues of legal and proprietary status.

28. A cryptoasset is ultimately defined by reference to the rules of the system in which it exists. Functionally, it is typically represented by a pair of data parameters, one public (in that it is disclosed to all participants in the system or to the world at large) and one private. The public parameter contains or references encoded information about the asset, such as its ownership, value and transaction history. The private parameter—the *private key*—permits transfers or other dealings in the cryptoasset to be cryptographically authenticated by digital signature. Knowledge of the private key confers practical control over the asset; it should therefore be kept secret by the holder. More complex cryptoassets may operate with multiple private keys (*multisig*), with control of the asset shared or divided between the holders.

29. Dealings in a cryptoasset are broadcast to a network of participants and, once confirmed as valid, added to a digital ledger. The main function of the ledger is to keep a reliable history of transactions and so prevent *double-spending*, i.e. inconsistent transfers of the same cryptoasset to different recipients. The ledger may be *distributed* and *decentralised*, that is, shared over the network with no one person having a responsibility for maintaining it, or any right to do so. A common type of distributed ledger uses a *blockchain*, which comprises blocks of transactions linked together sequentially, but other models are also in use.

30. An important feature of some systems is that the rules governing dealings are established by the informal consensus of participants, rather than by contract or in some other legally binding way. Consensus rules (employing methods such as *proof-of-work* or *proof-of-stake*) may also determine which version of the distributed ledger is definitive. The rules are self-enforcing in practice, even if not enforceable in law, because only transactions made in compliance with them and duly entered in the ledger will be accepted by participants as valid.

31. Although not all systems possess all of them, we can therefore identify the principal novel and characteristic features of cryptoassets as being:

    (a) **intangibility**;

    (b) **cryptographic authentication**;

    (c) use of a **distributed transaction ledger**;

    (d) **decentralisation**; and

    (e) rule by **consensus**.

32. It is those features that have given rise to much of the debate about legal and proprietary status and on which we therefore focus our analysis.

33. Some cryptoassets are intended to represent or are linked to conventional assets external to the system, for example money or debt obligations, tangible goods or land, a share or unit in a company or fund, or a contractual right of some kind; those assets are sometimes referred to as *tethered*, *exogenous* or *off-chain*. Such an external asset is certainly property but what, if any, rights in it are conferred on the holder of the corresponding cryptoasset will depend on the contractual structure or legal rules of the system. For the present, we are concerned only with whether the cryptoasset itself (the *native* or *on-chain* asset) is property, as distinct from any other asset it might represent, although we return to the relationship between on-chain and off-chain assets below when we discuss whether cryptoassets can operate as instruments of title.

34. Many dealings in cryptoassets involve intermediaries such as brokers or custodians; that is the case even in systems, such as Bitcoin, that are designed to avoid the need for intermediation. What personal and proprietary rights the principal may have against an intermediary will depend on established rules of contract, tort and agency. That is outside the scope of the present discussion.

What is property, and why does it matter?

35. Strictly, the term *property* does not describe a thing itself but a legal relationship with a thing: it is a way of describing a power recognised in law as permissibly exercised over the thing.[13] The fundamental proprietary relationship is *ownership*: the owner of a thing is, broadly, entitled to control and enjoy it to the exclusion of anyone else. However, ownership is just one kind of property right: property is a comprehensive term and can be used to describe many different kinds of relationship between a person and a thing.[14]

36. Why does it matter if a cryptoasset is capable of being property? It matters because in principle proprietary rights are recognised against the whole world, whereas other—personal—rights are recognised only against someone who has assumed a relevant legal duty. Proprietary rights are of particular importance in an insolvency, where they generally have priority over claims by creditors, and when someone seeks to recover something that has been lost, stolen or unlawfully taken. They are also relevant to the questions of whether there can be a security interest in a cryptoasset and whether a cryptoasset can be held on trust.

37. The term *property* is also part of the lexicon of the law: it is widely used in statutes and cases. It is important to understand whether the many statutory and common law rules applicable to property apply also to cryptoassets, and, if so, how. Of particular significance are the rules concerning succession on death, the vesting of property in personal bankruptcy, the rights of liquidators in corporate insolvency, and tracing in cases of fraud, theft or breach of trust. It would, to say the least, be highly unsatisfactory if rules of that kind had no application to cryptoassets.

38. In some cases, what matters is not or not only whether a thing is property but whether it is a specific type of property. For example, certain proprietary remedies, such as conversion or lien, are available only in respect of *things in possession* (tangible property that can be the subject of physical possession and so physical control).[15] More generally, whether a thing is property, or a type of property, depends on the context and the reason why the question is being asked.[16] A thing may be property for one legal purpose but not for another; and some statutes expressly broaden or narrow the scope of what they treat as property.

39. There is no general or comprehensive definition of property in statute or case law. Judges tend to approach the issue on a case-by-case basis, considering whether particular things are property for particular purposes. However, an important and authoritative description of the necessary characteristics of property can be found in *National Provincial Bank v Ainsworth*,[17] where Lord Wilberforce said that, before a right or an interest could be admitted into the category of property, it must be *definable, identifiable by third parties*, capable in its nature of assumption by third parties, and have some degree of *permanence or stability. Certainty, exclusivity, control* and *assignability* have also been identified in case law as characteristic of property rights.[18]

40. Although possession of those characteristics may not always be sufficient, and they are not themselves capable of precise definition, a number of cases have treated them as important indicia of property.[19] In considering cryptoassets, our approach is therefore first to consider whether they possess those characteristics. If so, then, in our view, the law will treat them as property unless there is some special legal reason to disqualify them. We are confident that that is the right approach in circumstances where there is ample evidence that there is a large and active market in which cryptoassets are acquired and traded as things of value.

41. Some take the view that the design of cryptoassets means that there is no need for traditional legal rules or processes. Law is irrelevant, it is sometimes said, because dealings are effected by non-legally-binding consensus between users, because cryptographic authentication and validation using strong encryption methods makes dealings irreversible, and because decentralisation and disintermediation means that there is no responsible party who can be compelled to act at the direction of a court. We do not agree. The design of cryptoassets may create some practical obstacles to legal intervention but that does not mean that cryptoassets are outside the law.

Ownership and transfer

42. It is necessary at this point to say something about how, if cryptoassets are to be considered property, the concept of ownership might apply to them: a cryptoasset cannot meaningfully be treated as property unless it is possible in principle to determine who owns it, and how ownership is transferred.

43. The starting point, in our view, is that a person who has acquired knowledge and control of a private key by some lawful means would generally be treated as the owner of the associated cryptoasset, in much the same way that a person lawfully in possession of a tangible asset is presumed to be the owner. However, ownership also depends on the circumstances and on the rules of the relevant system. For example:

    (a) a person may hold the key on behalf of another, e.g. an employer or client, or as a custodian or intermediary, in which case ownership would be determined by established rules of agency or trust;

    (b) a cryptoasset may have multiple keys, in which case ownership may be shared or separated between the holders, perhaps by reference to different functions of the asset;

    (c) a person who has obtained a private key unlawfully, e.g. through hacking, could not be treated as the lawful owner;

    (d) how a cryptoasset is originally created depends on the rules of the system; for example, bitcoins are created as part of the *mining* process by which the ledger is constructed and validated;

    (e) there may be practical difficulties in identifying the owner in systems, such as Bitcoin, where transactions take place by reference only to anonymous address identifiers rather than named legal persons;

    (f) in non-anonymous systems where cryptoasset owners are identified in the transaction ledger, the status of the record (e.g. whether it treated as definitive or merely evidential) is likely to depend on what the participants have agreed as to its effect.

44. How is ownership transferred? That question requires consideration of what actually happens on a transfer. We have said above that a cryptoasset is functionally represented by a pair of data parameters, with the public parameter containing encoded information about the asset. In order to make a transfer within the cryptoasset system, the transferor typically modifies the public parameter, or generates a new one, so as to create a record of the transfer (including details of the transferee). The transferor then authenticates the record by digitally signing it with the private key. At that point, the cryptoasset becomes linked to the private key of the transferee and is

therefore under the transferee's exclusive control. Once the transaction is recorded in the ledger, any attempts by the transferor to transfer the cryptoasset again should not be accepted by the consensus.

45. A transaction of that kind is sometimes described as *on-chain* because it is reflected in the ledger or blockchain. Although one can describe and conceptualise the process as a transfer (and that is the word we have used in this Statement), it is not really analogous to the delivery of a tangible object or the assignment of a legal right, where the same thing passes, unchanged, from one person to another. Instead, the transferor typically brings into existence a new cryptoasset, with a new pair of data parameters: a new or modified public parameter and a new private key. The data representing the "old" cryptoasset persists in the network, but it ceases to have any value or function because the cryptoasset is treated by the consensus as spent or cancelled so that any further dealings in it would be rejected.[20] The "new" cryptoasset is represented by new data and controlled by a new key. There is a closer analogy with a bank payment where no property in the payer's funds passes to the payee; instead new property is created by the credit to the payee's account.

46. A transfer is completed, and a new cryptoasset is created, once the transferor authenticates and broadcasts it. It may take some time for a transaction to be entered onto the ledger and accepted by the consensus but in principle that should not prevent or delay the transferee's assumption of ownership of the cryptoasset. As we explain below, the ledger should not be regarded as a definitive record of title. However, until the transaction is on the ledger, there is a risk that the transferor will make a second transfer (i.e. double-spending the cryptoasset) and that that will be accepted on the ledger in priority to the first. The (first) transferee's cryptoasset would then not be recognised as validly transferred and so would in practice be worthless.

47. Analysing a transfer in this way has a significant legal consequence. It is a general principle of the law[21] that someone who does not own a thing cannot validly confer ownership in it on someone else; so if Chuck steals a painting from Alice and sells it to Bob then Alice is still the owner and can require it to be returned to her, even if Bob acted in good faith and without knowledge of the theft. However, we do not think that that principle applies in the case of cryptoassets. That is because, adapting the previous example, the cryptoasset received by Bob is not the same thing as the cryptoasset held by Alice but is a newly created thing owned by Bob. And Alice's problem is not so much that she has been deprived of ownership or control of her cryptoasset but rather that, as result of Chuck's misconduct, the cryptoasset is now regarded by the consensus as spent or cancelled.[22]

48. It is also possible, in principle, to make an *off-chain* transfer, where parties enter into an agreement to transfer a cryptoasset but where the transfer is not recorded in the transaction ledger and no new data parameters are created. We see no reason why such an agreement, if drafted appropriately, would not be recognised and enforced,

and it may sometimes be a convenient way of creating security over a portfolio of cryptoassets. However, an off-chain transfer creates practical difficulties: the transferor knows the private key (since no new key is generated) and so retains control of the cryptoasset and the ability to transfer it again, creating the risk for the original transferee that we have discussed above.

The characteristics of property

49. We return to the characteristics of property referred to in the cases. We see no difficulty with *definability* or *certainty*. The public parameter of a cryptoasset, as explained in paragraph 28 above, interpreted in accordance with the rules of the relevant system, is sufficient in principle both to define the asset and to identify it to any person with access to the system network.[23]

50. The requirement for *control* and *exclusivity* is satisfied by the cryptographic authentication process, which permits the holder of the private key, and only that holder, to deal in the cryptoasset, and therefore to control it to the exclusion of others (subject to the powers of other keyholders where there are multiple private keys).

51. We have discussed above some of the issues that arise in connection with ownership and transfers of cryptoassets. The precise legal consequences of different kinds of transfers and other dealings in cryptoassets will have to be worked out on a case-by-case basis. We recognise that the analysis of off-chain transfers may be more complicated because they may give rise to a situation where more than one person knows the private key and so can exercise practical control over a cryptoasset. However, we see no reason to doubt that cryptoassets are in their nature capable of *assumption by third parties* and are, in that sense, *assignable,* even if some of the methods of assumption and assignment may be novel and even if identifying the legal owner in particular cases may not always be straightforward. They are clearly designed with the aim of being transferable between system participants.

52. As for *permanence*, cryptoassets appear to be as permanent as other conventional financial assets, which may exist only until they are, for example, cancelled, redeemed, repaid or exercised.

53. The consensus mechanism raises two issues relating to *stability*.

54. First, it may take some time for a consensus to form as to the state of the ledger and the validity and sequence of the transactions. In Bitcoin, for example, the top six blocks in the blockchain (containing, on average, an hour of transactions) are considered at risk of revision, in that any provisional consensus may change. Even older ledger records are theoretically vulnerable, although the probability of change becomes vanishingly small over time.

55. Second, a change in the consensus rules may be proposed but not unanimously adopted, leading to a *fork* in the system where different groups of participants follow different rules, often recognising different transactions and keeping different ledgers. In effect, the cryptosystem divides into two systems, each with their own, separate cryptoassets and respective ledgers.

56. Establishing absolute finality and immutability in relation to transactions may be legally or commercially important in some areas. However, even without resolving those issues, cryptoassets are in our view sufficiently permanent or stable to be treated as property, at least for a commercial cryptoasset system with a significant number of participants, an established history of transactions, and a generally stable set of rules. Even conventional assets are at risk of deterioration, corruption or loss.[24]

57. We conclude that cryptoassets possess all the characteristics of property set out in the authorities.

58. As far as we are aware, the proprietary status of cryptoassets specifically has not yet been the subject of any authoritative decision in any common law jurisdiction. We find some support, however, for our conclusion in a recent case in Singapore, *B2C2 v Quoine*.[25] The judge accepted (there being no argument to the contrary) that bitcoins could be the subject of a trust, and hence were property. He observed that "cryptocurrencies have the fundamental characteristic of intangible property as being an identifiable thing of value" and that they met all of the requirements in *National Provincial Bank*.

Information

59. We next consider whether cryptoassets possess any features that might disqualify them as property. One potential obstacle is that the courts have historically been reluctant to treat information in itself (as opposed to the medium in which it is recorded) as property.[26]

60. A cryptoasset is represented by public and private data. As we have said, however, that data should be seen not as constituting the cryptoasset but rather as being, respectively, the record of it and the key to dealing in it. Thus, the commercial value of a cryptoasset is not in the recorded data itself but in the fact that the person possessing that data is able to effect and authenticate dealings in the cryptoasset in accordance with the rules of the system. Putting it another way, it is not what the data tells you but what it allows you to do. For example, a private key in the Bitcoin system is a 256-bit number generated randomly. The number is of no interest in itself; what is significant is the mathematical relationship between the number and the corresponding Bitcoin public address, which allows transactions from the address to be cryptographically signed and therefore authenticated.

61. Cryptoassets can in that respect be contrasted with other digital assets, such as databases or digital photographs or computer programmes, the value of which is in the very information that they contain or comprise. Cryptoassets can also be contrasted with trade secrets, business ideas, private communications or personal information, where, again, it is the information itself, and what it conveys, that is of interest and value. A cryptoasset does not convey anything, it is instead merely a token to be used within the system.

62. One of the principal difficulties in recognising information in general as property is that it is not in its nature exclusive. It can be easily duplicated, with the duplicate indistinguishable from the original and, usually, of equivalent commercial value. Once disseminated, information can be used simultaneously by different people. Unlike property, it cannot be alienated: if Alice gives a coin to Bob then she no longer has it; but if she gives information to him then they both know it. It has been said that information cannot therefore be transferred but only transmitted.[27] All of that makes it difficult to exercise practical control over information or to determine, in a meaningful way, who is the owner at any time.

63. Cryptoassets do not raise those difficulties. The data associated with a cryptoasset can be duplicated, but the transaction ledger and consensus mechanisms prevent the holder of the private key double-spending and so ensure that the asset cannot be under the simultaneous control of different persons. Even if the private key is copied and disseminated, for example where there is an off-chain transfer, the problem of control by multiple persons is likely to be temporary: exclusive control will be re-established as soon as the asset is transferred on-chain, whereupon it will come under the control of a different private key.[28] For the reasons given above, cryptoassets have the characteristics of certainty, exclusivity, control, assignability and permanence that information generally lacks. Moreover, the policy considerations around freedom of speech and expression that create further difficulties with recognising ownership of information have no application to cryptoassets.

64. We do not therefore consider that cryptoassets are disqualified from being property on the ground that they constitute information.

65. Our reasoning above applies to the cryptoasset viewed as a conglomeration of public data, private key and system rules. It does not apply to the private key viewed in isolation. That is no more than an item of pure information and, like a password or a telephone number, it cannot in itself be treated as property, although the legal rules concerning confidentiality might provide remedies to prevent wrongful disclosure or misuse.

Possession and action

66. The law has traditionally recognised two distinct types of personal property:[29] *things in possession* and *things in action*.[30]

67. A cryptoasset is not a thing in possession because it not tangible and so cannot be possessed.[31] It is not enough that the private key gives practical control. Possession "is concerned with the physical control of tangible objects; practical control is a broader concept, capable of extending to intangible assets and to things which the law would not regard as property at all."[32]

68. Whether a cryptoasset is a thing in action is more debatable. The term is generally used to mean a right of property that can be enforced by court litigation, or action, such as a debt or contractual right.[33] A cryptoasset would not normally be a thing in action on that definition. We have discussed above that a cryptoasset may be linked to legal rights external to the system, and that there may be rights against intermediaries, but in many systems the cryptoasset does not itself embody any right capable of being enforced by action.[34] In a fully decentralised system with consensus rules, such as Bitcoin, participants do not undertake any legal obligations to each other.

69. However, the term *thing in action* has also been used more broadly as a kind of "catch-all" to refer to any property that is not a thing in possession.[35] Indeed, a precise and comprehensive definition of the term is elusive:

> *"The expression is found in the history of English law with so many meanings attached to it, and has been and still is employed to denote so many and such various classes of things, that it is impossible to give an accurate and complete definition of what it means and may include at the present day. The various kinds of property included under the term have little in common beyond the characteristic fact of their not being subjects of actual physical possession."*[36]

70. The question matters, potentially, because it has been said that the law recognises as property only things in action and things in possession but not anything else. In the 19th century case of *Colonial Bank v Whinney*,[37] Fry LJ said: "All personal things are either in possession or in action. The law knows no tertium quid [third thing] between the two." It might be argued, therefore, that if a cryptoasset is neither a thing in possession nor a thing in action then it cannot be property at all. In our view, however, such an argument requires reading far more into Fry LJ's statement than he could have intended. One must also be cautious in seeking to apply a 19th century decision to a kind of asset that could not then have been imagined.

71. The *Colonial Bank* case concerned a dispute about shares deposited as security for a loan. The borrower was declared bankrupt and there was a contest for the shares between the plaintiff bank and the trustee in bankruptcy. The case was not about the

scope of property generally: there was no dispute that the shares were property.[38] The relevant question was rather whether they were things in action within the meaning of the Bankruptcy Act 1883, an issue of statutory interpretation. If so, then they were excluded from the bankrupt estate by section 44 of that Act.

72. Lindley LJ and Cotton LJ held that the shares were not things in action. They relied principally on previous case law[39] where the court had come to a similar conclusion in relation to the predecessor statute, the Bankruptcy Act 1869. They also drew some support from sections 50(3) and 50(5) of the 1883 Act, which appeared to make a distinction between shares and things in action.

73. Fry LJ reached the opposite conclusion, reasoning principally from what he considered to be the essential nature of a share. A share constituted "the right to receive certain benefits from a corporation, and to do certain acts as a member of that corporation"[40] and was therefore, in his view, closely akin to a debt. He supported his conclusion by a comparison of shares to other, established, things in action, such as partnership interests and interests in funds.

74. Fry LJ's statement that "personal things" are either in possession or in action, and that there is no third category, may carry the logical implication that an intangible thing is not property if it is not a thing in action. It is not clear, however, whether Fry LJ intended that corollary and it should not in any case be regarded as part of the reasoning leading to his decision (and so binding in other cases). The question before him was whether the shares were things in action for the purpose of the Bankruptcy Act, not whether they were property, still less the scope of property generally.

75. Moreover, in making the statement Fry LJ attributed a very broad meaning to things in action. He approved a passage from *Personal Property* by Joshua Williams, which described things in action as a kind of residual category of property: "In modern times [sc. by the 19th century] ... several species of property have sprung up which were unknown to the common law ... For want of a better classification, these subjects of personal property are now usually spoken of as ... [things] in *action*. They are, in fact, personal property of an incorporeal nature...".

76. On appeal, the House of Lords also framed the question as one about statutory interpretation. They reversed the Court of Appeal's decision, approving the judgment and reasoning of Fry LJ. They did not explicitly address the issue of exhaustive classification between things in action and things in possession and said nothing about the definition of property. Lord Blackburn did say, however, that "in modern times lawyers have accurately or inaccurately used the phrase '[things] in action' as including all personal chattels that are not in possession".[41] Thus, to the extent that the House of Lords agreed with Fry LJ on the classification issue, that seems to have been on the basis that the class of things in action could be *extended* to all intangible property (i.e. it was a residual class of all things not in possession) rather than on the

basis that the class of intangible property should be *restricted* to rights that could be claimed or enforced by action.

77. Our view is that *Colonial Bank* is not therefore to be treated as limiting the scope of what kinds of things can be property in law. If anything, it shows the ability of the common law to stretch traditional definitions and concepts to adapt to new business practices (in that case the development of shares in companies).

78. *Colonial Bank* was referred to in *Allgemeine Versicherungs-Gesellschaft Helvetia v Administrator of German Property*[42] by Slesser LJ as showing "how the two conditions of [thing] in action and [thing] in possession are antithetical and how there is no middle term". Again, however, the case was not about the scope of property generally but about whether something that was undoubtedly property should be classified as a thing in possession or a thing in action.[43]

79. Most recently, *Colonial Bank* was cited in 2014 in *Your Response v Datateam*.[44] In that case, the claimant sought to assert a lien over a database in digital form but faced the obstacle of the previous decision of the House of Lords in *OBG Ltd v Allan*[45] that there could be no claim in conversion for wrongful interference with a thing in action because it could not be possessed. In an attempt to distinguish the case from *OBG*, the claimant argued that, even if the database could not be regarded as a physical object, it was a form of intangible property different from a thing in action and so was capable of being possessed.

80. The Court of Appeal rejected the argument. Moore-Bick LJ said that *Colonial Bank* made it "very difficult to accept that the common law recognises the existence of intangible property other than [things] in action (apart from patents, which are subject to statutory classification), but even if it does, the decision in *OBG Ltd v Allan* [2008] AC 1 prevents us from holding that property of that kind is susceptible of possession so that wrongful interference can constitute the tort of conversion."[46] He said that there was "a powerful case[47] for reconsidering the dichotomy between [things] in possession and [things] in action and recognising a third category of intangible property, which may also be susceptible of possession and therefore amenable to the tort of conversion" but the Court of Appeal could not do that because it was bound to follow the decision in *OBG*. The other members of the court agreed.

81. The Court of Appeal did not, and did not need to, go so far as to hold that intangible things other than things in action could never be property at all, only that they could not be the subject of certain remedies. The intangible thing with which they were concerned was a database, which (as Floyd LJ said) would not be regarded as property anyway because it was pure information. They did not have to consider intangible assets with the special characteristics possessed by cryptoassets.

82. In other cases, the courts have found no difficulty in treating novel kinds of intangible assets as property. Although some of those cases are concerned with the meaning of property in particular statutory contexts, there are at least two concerning property in general. In *Dairy Swift v Dairywise Farms Ltd*,[48] the court held that a milk quota could be the subject of a trust; and in *Armstrong v Winnington*,[49] the court held that an EU carbon emissions allowance could be the subject of a tracing claim as a form of "other intangible property", even though it was neither a thing in possession[50] nor a thing in action.

83. A number of important 20th century statutes define property in terms that assume that intangible property is not limited to things in action. The Theft Act 1968, the Proceeds of Crime Act 2002, and the Fraud Act 2006 all define property as including things in action "and other intangible property". It might be said that those statutes are extending the definition of property for their own, special purposes, but they at least demonstrate that there is no conceptual difficulty in treating intangible things as property even if they may not be things in action. Moreover, the Patents Act 1977 goes further in providing, at s30, that a patent or application for a patent "is personal property (without being a thing in action)". That necessarily recognises that personal property can include things other than things in possession (which a patent clearly is not) and things in action.

84. We conclude that the fact that a cryptoasset might not be a thing in action on the narrower definition of that term does not in itself mean that it cannot be treated as property.

Conclusions on the principal questions

1.1 Under what circumstances, if any, would the following be characterised as personal property:

1.1.1 a cryptoasset; and

1.1.2 a private key?

85. Whether English law would treat a particular cryptoasset as property ultimately depends on the nature of the asset, the rules of the system in which it exists, and purpose for which the question is asked. However:

(a) cryptoassets have all of the indicia of property;

(b) the novel or distinctive features possessed by some cryptoassets—intangibility, cryptographic authentication, use of a distributed transaction ledger, decentralisation, rule by consensus—do not disqualify them from being property;

(c) nor are cryptoassets disqualified from being property as pure information, or because they might not be classifiable either as things in possession or things in action;

(d) cryptoassets are therefore to be treated in principle as property;

(e) but a private key is not in itself to be treated as property because it is information.

The ancillary questions

1.2.1 If a cryptoasset is capable of being property:

(i) is that as a thing in possession, a thing in action or another form of personal property?

(ii) how is title to that property capable of being transferred?

86. We have discussed these questions above. In summary:

(a) A cryptoasset is not a thing in possession. Whether it is a thing in action depends on how that term is used, i.e. whether it means a right that can be claimed by action or simply any thing that is not in possession. Our view is that if a cryptoasset does not embody a legally-enforceable right or obligation then it is neither necessary nor useful to classify it as a thing in action. If it is necessary to classify it at all, then a cryptoasset is best treated as being another, third, kind of property, as the court was prepared to do with the EU carbon emission allowances in *Armstrong v Winnington*.

(b) We would expect that the person with knowledge of a private key would generally be considered the owner of the cryptoasset (or the right in the asset) that the key controls, but that may depend on the circumstances and the rules of the system.

(c) As with other intangible assets, title can be vested or transferred by assignment or agreement of the owner. An on-chain transaction is best analysed as creating a new cryptoasset owned by the transferee. It is also possible to transfer a cryptoasset off-chain, although that may expose the transferee to the risk of double-spending by the transferor.

1.2.2 Is a cryptoasset capable of being the object of a bailment?

87. Bailment is a temporary transfer of possession, but not ownership, of an object by one person to another, usually for a specific purpose.[51] An example is depositing goods in a warehouse, or leaving a coat in a cloakroom.

88. Because bailment, by its nature, requires the transfer of possession,[52] only a thing in possession can be the object of a bailment. It follows that the answer to Q1.2.2 is No.[53]

1.2.3 What factors would be relevant in determining whether English law governs the proprietary aspects of dealings in cryptoassets?

89. The Business and Property Courts in England and Wales very often deal with commercial disputes which have a foreign element. For example, one or even all of the parties may not be based here, a relevant contract may expressly say that it is to be governed by another country's law, or a transaction may involve property which is situated abroad.

90. The common law has developed rules for deciding when particular aspects of those disputes should be decided in accordance with another country's law. Also, particularly in relation to contractual and non-contractual liability, many rules are contained in statutes and European legislation.[54] This area of law, called the "conflict of laws", or private international law, is necessarily complex. What we say below is, therefore, high-level.

91. Generally speaking, the law allows parties to agree which country's law should govern certain aspects of their business relationships and transactions.[55] People or companies who want English law to be used as far as possible, are well-advised to make sure that there is a clear agreement in place to that effect. For example, permissioned DLT implementations might say in their participation rules that English law applies.[56]

92. Transactions involving property have an effect on people other than the direct parties. When it comes to assessing which country's laws should be used to determine their effect, the law considers the transacting party's choice to be of little relevance. Instead, to answer questions such as how property is to be classified, whether a proprietary security or other interest exists, and how and when a transfer of property affects third parties, judges have traditionally applied the law of the country where the property is situated at a relevant time.[57]

93. That is largely for two reasons. First, at least when dealing with tangible property—things in possession—the country in which the asset is located is easily identified and third parties might reasonably suppose that the law of the country determines property issues. Secondly, that country has physical control over assets within its borders, and a court judgment which is in conflict with its laws will often be ineffective.[58]

94. Intangible property cannot of course be seen or touched, so what is meant by its 'location' is not so obvious. Nevertheless the same rule is usually applied, even though the reason to do so is not as convincing. The law allocates an artificial location to certain types of intangible property, which is often the place in which some sort of control over the property might be exercised. Many things in action are therefore considered to be situated in the country where they are properly recoverable by action or can be enforced.[59] But the rules and how they apply are often difficult to state with any certainty.[60]

95. Some permissioned cryptoassets have some sort of central control in a particular country. So the proprietary aspects of dealings in them might sensibly be said to be governed by the laws of that country. And that will very likely be the case where, for example, a distributed ledger is merely a record of ownership of property in conventional 'real world' assets which can be said to have a particular location.

96. But for a truly decentralised system such as Bitcoin which does not involve things in action, it does not make much sense to say that there is any one country where the asset is recoverable or enforceable.

97. In the circumstances, we think that there is a good argument for saying that the normal rules should not apply. There is very little reason to try to allocate a location to an asset which is specifically designed to have none because it is wholly decentralised. We bear in mind that the purpose of the various rules is ultimately to identify the most appropriate law to govern a particular issue:

> *"A mechanistic application, without regard to the consequences, would conflict with the purpose for which they were conceived. They may require redefinition or modification, or new categories may have to be recognised accompanied by new rules ..., if this is necessary to achieve the overall aim of identifying the most appropriate law".*[61]

98. It is very difficult to say which rules would be used instead. When a tangible asset is in transit at the relevant time so that its location is really a matter of chance or is unknown, there is a suggestion that the law which governs the transaction between the parties might also be used to determine certain proprietary issues.[62] That sort of rule has some attraction to it in this context also. But various other solutions have also been suggested.[63]

99. Ultimately, we believe that these complex issues will best be resolved by legislation, most likely following international cooperation.[64] In the meantime, we tentatively suggest that the following factors might be particularly relevant in determining whether English and Welsh law governs the proprietary aspects of dealings in cryptoassets (in no particular order):

    (a) Whether any relevant off-chain asset is located in England and Wales;

    (b) Whether there is any centralised control in England and Wales;

    (c) Whether a particular cryptoasset is controlled by particular participant in England and Wales (because, for example, a private key is stored here);

    (d) Whether the law applicable to the relevant transfer (perhaps by reason of the parties' choice) is English law.

Security

1.2.4 Can security validly be granted over a cryptoasset and, if so, how?

1.2.5 If so, what forms of security may validly be granted over a cryptoasset?

100. If Bob lends money to Alice, he may be concerned about her ability to repay the loan. Bob might therefore ask Alice to provide security, in the form of rights over property belonging to her.[65] If Alice does not repay the loan, Bob can then enforce his rights against the property. That will often involve selling it to discharge the debt. Because Bob is a secured creditor, generally speaking his claims will have priority over the claims of any of Alice's unsecured creditors if Alice becomes insolvent. Bob may therefore be more likely to get all his money back.

101. Security is usually granted voluntarily by a creditor, but can sometimes be created automatically by operation of law. In this Legal Statement, we are not concerned with non-consensual security.

102. English law only recognises four kinds of consensual security: pledge, contractual lien, equitable charge and mortgage.[66] Pledges and liens can only be created if it is possible to transfer possession of an asset. Since cryptoassets cannot be possessed, they cannot be the object of a pledge or lien.

103. If a particular cryptoasset is property, a mortgage or equitable charge can be created over it. This can be done in the same way that a mortgage or equitable charge can be created over other intangible property, and subject to the same requirements.[67]

104. For example, if Alice transfers ownership of a cryptoasset to Bob, subject to Bob's agreement to retransfer it back to her when she has repaid the loan, this may create a mortgage.

105. There are many ways in which technical means, such as smart contracts and multisig wallets, may be used to provide a creditor like Bob with factual control and other rights over a cryptoasset until and only until a debt is paid. But it does not follow that the law will recognise that security has been created just because these technical means may simulate the practical effect of a mortgage or charge.[68] Such 'simulated' security is sometimes called functional or quasi-security. Its holder may not have the same legal rights as a holder of true security. For true security to be created there must at least be a grant of some sort of proprietary interest.

106. Distinguishing between true and quasi-security can be difficult, and depends on the particular circumstances. What matters is not so much whether the parties intended to create true security, but whether the particular rights and obligations which they have given each other mean that this is indeed what they have done.[69]

Insolvency

1.2.6 Can a cryptoasset be characterised as "property" for the purposes of the Insolvency Act 1986?

107. The Insolvency Act 1986 contains its own definition of property. Section 436(1) says:

> *"property" includes money, goods, things in action, land and every description of property wherever situated and also obligations and every description of interest, whether present or future or vested or contingent, arising out of, or incidental to, property;*

108. That definition is very wide indeed. It has been said that "it is hard to think of a wider definition".[70] Many things which the common law would not classify as property may therefore be property for the particular purposes of the Insolvency Act. That is deliberate—when a person or a company becomes insolvent, it is usually advantageous to the creditors that as many valuable assets as possible be classified as property so that they can be gathered in, and if necessary sold, to pay off the debts.

109. Since cryptoassets can be property at common law, we have no doubt that they can be property for the purposes of the Insolvency Act. If a particular cryptoasset is not property at common law, depending on circumstances it could still be property for the purposes of the Insolvency Act if it is, for example, within the words "obligations and every description of interest, whether present or future or vested or contingent, arising out of, or incidental to, property".

Transferability and negotiability[71]

110. We discussed above how ownership in a cryptoasset is transferred on-chain. However, where a cryptoasset is considered by participants to represent something else such as an external, off-chain "real world" asset, questions arise as to what is the effect of a transfer of the cryptoasset on title to the external asset or vice-versa. Within the system, this may well be dealt with by contractual terms binding on the participants, but disputes might still arise where a claim to the external asset is made by someone who is not a participant in the system or a party to a relevant agreement.

111. Traditional paper-based commerce uses *documents of title* (or *documentary intangibles* —the distinction does not matter for the purpose of the present discussion) to facilitate dealings in certain kinds of assets. The key feature of a document of title is that it confers ownership rights on the holder that pass with physical transfer of the document: a transfer of the document therefore effects a transfer of the asset.

112. Cryptoassets are not documents which can be physically transferred and so, as explained below, do not fit easily into the existing law on documents of title. There is a functional analogy when they are used as tradeable tokens which represent off-chain assets, and it might be said that the token should be treated by the law in the same way that it would treat a document of title, so that a transfer of the token is effective to transfer the off-chain asset. However, documents of title are only recognised as such under statute or where there is an established mercantile usage,[72] neither of which (at least presently) applies in the case of cryptoassets.

Could a cryptoasset be characterised as:

1.2.7 a documentary intangible?

113. Documentary intangibles are a particular type of intangible property.[73] They are commonly understood to be

> *"instruments or documents that are so much identified with the obligation embodied in them that the appropriate way to perform or transfer the obligation is through the medium of the document. The abstract intangible right acquires such a degree of concretized expression that it takes on some of the characteristics of a chattel. The document recording the right it itself a tangible thing and thus a chattel, and the right is thoroughly fused with the document".*[74]

114. They have three fundamental characteristics. First, there must be identified with an underlying right to something. Second, there must be a tangible document which can be physically possessed.[75] Third, the tangible document must be treated in mercantile usage as representing the underlying right itself, with the result that the right can be transferred by transferring the document.[76]

115. It is clear that a cryptoasset cannot be characterised as a documentary intangible. Aside from the fact that some cryptoassets do not embody a legal right to anything,[77] the very essence of cryptoassets is that they are purely digital stores of value, such that there is no need for a physical document. Whilst it may be conceivably be possible to design a new token so that it has the three characteristics set out above, we doubt in any event that the resulting asset could properly be called a cryptoasset as we have described them.

116. The functions of a documentary intangible could be replicated in electronic form.[78] However, since that electronic document could not be physically possessed, it could not be described as a documentary intangible (at least as that term is presently understood). We suspect that, given the proliferation of electronic documents, the current category of documentary intangibles will either decline or require fundamental redefinition. Indeed, there is already a term—dematerialisation—which refers to the process of replacing paper-based documentary intangibles with electronic functional equivalents.[79]

1.2.8 a document of title?

117. Documents of title are documents which confer certain property ownership rights on the holder of the document. Crucially, those rights of ownership pass with the possession of the document. All documents of title are therefore documentary intangibles.[80] A document may become a document of title as a result of statute or established mercantile usage.[81]

118. Given our conclusion that a cryptoasset cannot (at least today) be characterised as a documentary intangible, it follows that we do not think a cryptoasset could presently be characterised as a document of title.

119. As with documentary intangibles, the proliferation of electronic documents may mean that the law will come to recognise electronic documents as documents of title. However, as the law currently stands, only physical documents may be documents of title. We note that, in order to get around this barrier, many parties provide in their contracts that certain electronic documents shall be treated (as between the parties) as documents of title. This is the approach taken to electronic bills of lading.[82]

1.2.8 negotiable?

120. If particular property is *negotiable*, a good faith purchaser for value can acquire good title to it irrespective of any defect in the transferor's title.[83]

121. Property can only become negotiable in one of two ways: by statute or by mercantile usage.[84] No relevant statute applies to cryptoassets. Any mercantile usage would need to be proved by factual evidence[85] unless it is particularly obvious.[86]

122. As we have already said, English law can and will adapt to meet the usages of commerce. Judges are alive to the fact that, in modern times, mercantile usages can develop relatively quickly.[87] We are not, however, aware of any mercantile usage which treats cryptoassets as negotiable.

123. Indeed, as far as we are aware, there are no examples of any intangible property at all having been sufficiently treated as negotiable to give rise to mercantile usage. Whilst this may suggest that only tangible property can become negotiable, we cannot see any reason as a matter of principle why intangible property could not become negotiable. So long as it is possible to transfer title to the property, it ought to be possible for either a statute or the custom of merchants to treat that property as negotiable. But as the law stands, we do not think that cryptoassets are negotiable in the sense in which the term is generally used.

124. We do not think, however, that that is likely to be important in practice. The significance of negotiability is that it represents an exception to the general rule, discussed in paragraph 47 above, that no-one can transfer to another more rights

in something than he or she has. As we have explained, that general rule does not anyway apply to a cryptoasset because each on-chain transfer creates new property with a new title.

1.2.10 an "instrument" under the Bills of Exchange Act 1882?

125. The Bills of Exchange Act 1882, amongst other things, codifies the law relating to bills of exchange, cheques and promissory notes.

126. Our view is that a cryptoasset could not be characterised as an "instrument" under the Bills of Exchange Act 1882.[88] That is because the Act is premised on the concept of physical possession. For example, pursuant to section 2 of the Act (which contains a number of key definitions):

(a) "'delivery' means transfer of possession, actual or constructive, from one person to another".

(b) "'holder' means the payee or indorsee of a bill or note who is in possession of it, or the bearer thereof".

(c) "'bearer' means the person in possession of a bill or note which is payable to the bearer".

127. Whilst as a matter of principle a statute ought to be read so as to accommodate technological change,[89]the principle that intangible property cannot be possessed is so well-established that we do not think it could be displaced by interpretation alone. That conclusion is reinforced by the international usage of bills of exchange, which necessitates a uniform approach to developments in the law.[90] It therefore seems to us that intangible property falls outside the scope of the Act.

Goods

1.2.11 Can cryptoassets be characterised as "goods" under the Sale of Goods Act 1979?

128. Section 61(1) of the Sale of Goods Act 1979 defines "goods" as follows:

> *"goods" includes all personal chattels other than things in action and money, and in Scotland all corporeal moveables except money; and in particular "goods" includes emblements, industrial growing crops, and things attached to or forming part of the land which are agreed to be severed before sale or under the contract of sale; and includes an undivided share in goods;*[91]

129. On one view, cryptoassets which are property in a "third category"[92] are not things in action, and are therefore "goods" within that definition.[93]

130. We do not consider that to be the correct interpretation. There are numerous references to the "possession" of goods in the Act. It clearly assumes that all goods are capable of being possessed. In context therefore, we believe that the phrase "things in action" in section 61(1) means "every personal chattel which is not a thing in possession". In other words, it is used in the same sense of a residual category in which we have concluded Fry LJ and Lord Blackburn used it in *Colonial Bank v Whinney*.[94] For the particular purposes of the Sale of Goods Act, cryptoassets are "things in action", and are not to be characterised as "goods".

Register

1.2.12 In what circumstances is a distributed ledger capable of amounting to a register for the purposes of evidencing, constituting and transferring title to assets?

131. A distributed ledger acts as a reliable record in practice of which person, or which address-identifier, has control of a cryptoasset, because only dealings in a cryptoasset that are both consistent with the transaction history recorded in the ledger and signed with the relevant private key will be accepted as valid. It is not possible in practice to authenticate a transaction without the private key and very difficult[95] to manipulate the existing ledger.

132. The ledger cannot however be treated as a definitive record of *legal* rights unless statute has given it binding legal effect (as is the case with the Land Register). There is at present no such statute applicable to cryptoasset ledgers. This means that if a court is required to consider who owns a particular cryptoasset then it will not be bound by the position in the ledger.

133. It is possible, therefore, to establish a proprietary right in a cryptoasset outside the ledger, for example an interest under a trust or security arrangement, an interest acquired by tracing, or a title acquired "off-chain" by contract or by succession. The absence of a record of the interest may, however, affect its enforceability against someone who has acquired the cryptoasset in good faith.

134. It is also possible for participants in a particular system to agree that the ledger will be treated as the definitive record of *legal* rights or title as between the participants in that system.[96] However, such an agreement would not bind third parties who had not agreed to the rules of the system.

Smart Contracts

135. 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.[97] 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.

2.1 In what circumstances is a smart contract capable of giving rise to binding legal obligations, enforceable in accordance with its terms?

136. Should smart contracts be treated as contracts for legal purposes? Contract law is concerned with the enforcement of promises. It might be argued that the automaticity of smart contracts, and the mechanistic way in which computer code operates, means that there is strictly no need for a party either to promise performance or to resort to the law to enforce a promise by their counterparty: the code will simply do what it has been programmed to do. Even if that is right, however, we do not think it is a good reason for treating smart contracts as being different in principle from conventional contracts. The scope for legal intervention in smart contracts may be much reduced, to the extent that they may prevent intentional non-performance by a party and avoid or limit factual disputes and disputes about interpretation of terms. However, there will always be a risk that performance is affected by an event external to the code, for example a system failure, or that the code operates in an unexpected or unintended way, and in such cases any dispute must be capable of adjudication. It is open to parties to agree expressly that a smart contract is not legally binding, as they could with a conventional agreement, but we think that would be very unusual (and unwise) in a commercial context. In principle, therefore, and subject to the points made below, the ordinary rules of contract law apply to smart contracts.

137. English law does not normally require contracts to be in any particular form.[98] It will enforce any promise (or at least award damages for breach) provided that the common law requirements for formation of a contract are met, and provided that there are no vitiating factors (such as duress, misrepresentation or illegality). The requirements for formation of a contract are three-fold: first, that agreement has, objectively, been reached between the parties as to terms that are sufficiently certain; secondly, that the parties intended (again, objectively) that they would be legally bound by their agreement; thirdly that, unless the contract is made by deed, each party to it must give something of benefit, which is referred to as "consideration"—a gratuitous promise in return for nothing is not generally enforceable.[99]

138. There will be 'agreement'—the first requirement—if Alice offers terms to Bob, and Bob accepts those terms by words or conduct. In a commercial context, agreement is generally found in, or at least evidenced by, a written document bearing signatures of the parties—but neither writing nor signature is a necessary precondition for a contract to be identified or for it to have force.

139. The second requirement—an intention to be legally bound—will be presumed unless someone proves that there was no such intention. That will be difficult to do;[100] in the commercial world at least, parties are entitled to expect that their counterparts intended to be bound by their promises, and very unusual circumstances would be needed to give rise to a conclusion that there was no such intention.

140. A contract may be bilateral or multilateral, in which case the parties makes promises to each other, or it may be unilateral, in which case one party makes an offer that can be enforced by anyone that complies with its terms. Whilst the majority of commercial contracts are bilateral or multilateral, unilateral contracts may be of some relevance to smart contracting, as we discuss below.

141. As we have said, there is no reason why the normal rules should not apply just because a potential contract is a smart contract. It follows that the question of whether, and under what circumstances, a smart contract is capable of giving rise to binding legal obligations turns on the question of whether, and under what circumstances, parties engaged in smart contracting are capable of reaching objective agreement as to terms, of intending to create a legally binding relationship, and of satisfying the requirement of consideration. Given that the term 'smart contracts' covers a multitude of different technologies and applications, not all of which can be individually considered in this Statement, we consider this question by reference to the automaticity characteristic discussed above.

142. The precise role played by the software in a smart contract can vary: Alice and Bob may contract on the basis that their obligations are defined by the code and that they abide by the behaviour of the code whatever it does; or they may contract on the basis that code will be used to implement their agreement but not to define it; or they may contract on some hybrid basis, where some obligations are defined by code, others merely implemented by code and perhaps others not involving code at all. There is a spectrum. However, in each case, the key question is what Alice and Bob actually intended and, specifically, whether intended to be bound by the behaviour of the code. This is an entirely conventional matter of analysing Alice's and Bob's words and conduct and determining in light of the admissible evidence what they (objectively) agreed. There is nothing novel in this: it is precisely what judges do on a regular basis when determining the basis on which parties have contracted.

143. A common smart contract scenario involves Alice and Bob contracting in natural language but calling for performance, or certain aspects of performance, to be

executed using code, typically (but not necessarily) on a distributed ledger. Perhaps the archetypal example of this contracting model is a Master Agreement pursuant to which transactions representing the purchase of financial instruments are executed on a blockchain. Whilst this sort of contract may involve "smarts" (i.e. code), the contract itself is entirely conventional and no novel questions of enforceability arise. The ramifications of a failure of the code to execute as intended (or at all) are matters for the natural language contract: either its terms have been complied with or they have not, something to be ascertained according to ordinary and well-established principles. This Statement is, in any event, not concerned with matters of enforceability as such.

144. Alice and Bob may instead contract on the basis of a contract that consists primarily of natural language but includes some terms (typically performance obligations) that are defined not in natural language but in code. The code will likely be both embedded in the contractual documentation and also deployed onto an execution platform. This also gives rise to no real difficulty: the question of whether an agreement has been reached, whether legal relations were intended and whether there is consideration can be assessed by reference to ordinary contractual principles. A question may arise as to whether Alice and Bob actually intended to be bound by the code in addition to their natural language terms, but that is unlikely to be a matter of doubt in practice as the position can be expected to be readily ascertainable by reference to what the natural language says. As noted above, the factual and legal analysis required to ascertain the position is in any event entirely conventional.

145. It is where Alice and Bob do not have a natural language contract at all, so that the supposed agreement exists solely in code that the contractual position moves furthest from familiar territory. Here, there should be no difficulty in identifying terms (they will comprise the source code). There should also be no difficulty in identifying consideration—it will often be readily identifiable from examination of the code or even merely of the code's behaviour. Where the code itself will not assist is with the question of whether an agreement has been reached at all (as the mere existence of code capable of executing contractual promises reveals nothing about whether Alice and Bob actually agreed to contract on the basis of such code) and whether they intended to create legal relations. Those questions will need to be answered by reference to evidence extrinsic to the code itself.

146. In a case where Alice has proffered the code and Bob has conducted himself in a way that amounts in a conventional sense to (objective) acceptance of the terms of that code, the analysis will be straightforward. Examples will include Bob indicating agreement in writing that he is willing to be bound by a particular code release, or accepting an offer to be bound by digitally signing the code. As the "contracting" diverges further from traditional contractual models, less conventional conduct will need to be considered, but the analysis that is in principle required will remain the same.

147. By way of example, suppose that Alice deploys some code to a distributed ledger platform that, in exchange for a cryptoasset, performs algorithmic investment. Bob, who is not known to Alice, stumbles across the code and transacts with it. This situation can be analysed as the formation of a unilateral contract: Alice has offered terms to the world (or, at least, to users of the distributed ledger platform); Bob, by choosing to transact, has accepted those terms and a contract has come into being. The question of whether Alice intended to be legally bound (the second requirement for an enforceable contract) is inevitably highly fact-specific. If the platform on to which she deployed her code was a development or test environment, or was a private platform to which Bob only gained access because it was insufficiently locked down, Alice will likely have little difficulty establishing that she did not intend (objectively) to be legally bound, and there will be no legally binding contract. If, on the other hand, Alice deployed her code on a public platform and advertised its presence, she will struggle to displace the presumption that she did indeed intend to be bound—the contract will be enforceable.

148. A further example is that of a Decentralized Autonomous Organisation (DAO), whereby the party that deploys the code to set up the DAO may have no intention to participate in it or to enter into any legally binding agreements with anyone—that party is simply deploying a platform, on which others interact in accordance with the "terms" of the smart contract running the DAO. The question is whether those transacting on the DAO, who may have no bilateral communication at all, can by the fact of their participation be said to have entered into a legally binding contract and, if so, with whom. Again, while the specific situation is novel, the underlying contractual predicament is not: it maps well on to the well-established concept of an unincorporated association, whereby the association itself has no legal status, but all of the members, because of their membership, are bound by the rules. Each member of the association contracts with the membership as a whole, agreement (objectively) being reached and intention to be bound being evidenced by the member's decision to join the association with awareness of the rules.[101] This is so, even if the members do not know the identities of the others.[102] There is no reason why precisely this analysis cannot be used for a DAO: a party who transacts with a DAO can be taken to have agreed to abide by and be legally bound by its terms.

Ancillary questions

2.2.1 How would an English court apply general principles of contractual interpretation to a smart contract written wholly or in part in computer code?

149. When interpreting a contract, a judge strives to identify the intention of the parties by reference to what a reasonable person having all the background knowledge which would have been available to the parties would have understood them to be using the language in the contract to mean.[103] Notwithstanding that such an exercise

necessarily involves taking context into account, the modern approach to interpretation of commercial contracts is very much focused on the language: *"The exercise of interpreting a provision involves identifying what the parties meant through the eyes of a reasonable reader, and, save perhaps in a very unusual case, that meaning is most obviously to be gleaned from the language of the provision."*[104] Unless the contractual language is unclear or unambiguous, a court will generally conclude that it means what it says: *"the clearer the natural meaning the more difficult it is to justify departing from it"*.[105] Where courts do depart from the language of the contract in ascertaining its meaning, that is generally because the language is ambiguous, unclear or contradictory.

150. At first blush, a smart contract that exists purely in code is not susceptible to the exercise of contractual interpretation at all, in part because interpretation is about ascribing meaning to natural language, and in part because code is generally clear, unambiguous and self-consistent (albeit that is not always the case, as discussed below). However, it is unnecessary to declare smart contracts as a special category of contracts to which the normal rules of interpretation are dis-applied. Rather, a smart contract consisting solely of code with no natural language element can in most circumstances be seen as an extreme example of a contract whose language is clear, with the result that there is no justification to depart from it. The practical result, however, is the same: we do not believe there are many circumstances in which an English court would hold that the "meaning" of a smart contract consisting solely of code was something other than that expressed in the code. That is not because there is anything special about such a smart contract. Rather, it reflects the entirely conventional position that where language is clear and unambiguous (which code generally is), it would require very unusual circumstances for a judge to conclude that the objective meaning was other than what the words (code) said.

151. Although the code for a smart contract can *generally* be expected to be clear and unambiguous, this will not always be so. For example, a program might use a construction that is ill-defined in the programming language being used, with the result that it does not have a single ascertainable 'meaning'; or different compilers might treat a particular programmatic construction in a different way, leading to a question as to which behaviour was actually intended; or the running order of different parts of the code may affect its behaviour and thus, potentially, its 'meaning'.[106] In some cases, such ambiguities might be resolved by reference to other parts of the code that make the intended behaviour clear; however, there will likely also be cases where examination of the code alone will not be sufficient to ascertain contractual intention and, just as with natural language contracts, a judge will need to look beyond the four corners of the code to interpret it.

152. A judge's task when interpreting a smart contract, then, is to determine, looking at the contract as a whole, and the admissible evidence, what the parties objectively intended their obligation to be. Where there is code involved, part of that exercise

will be a determination of whether the code (or part of it) was intended to *define* the obligations or whether it was intended merely to implement them. In the former case, an investigation of what the code actually does (possibly with the assistance of expert evidence) may be needed as part of the exercise of interpretation. Where a smart contract subsists solely in code, and where that code is unambiguous, the judge may well need to do no more than decide that the parties intend to be bound by the code—whatever it does. Where the code contains ambiguities, or where a contract consists both of code and natural language (where the court may need to understand how the two fit together) extrinsic evidence is likely to be needed. Where code merely *implements* an agreement, the question of what the code actually does will be irrelevant to interpretation; but investigation of the code may still be necessary if a dispute has arisen as to whether the code correctly implements the agreement.

2.2.2 Under what circumstances would an English court look beyond the mere outcome of the running of a computer code that is or is part of a smart contract in determining the agreement between the parties?

153. A judge will always be able to look beyond the mere outcome of a running computer programme to determine the agreement between the parties, because in order to ascertain the true intention of the parties it will be necessary to do so. The fact of the running code cannot, of itself, answer the question of whether the parties intended the code to define their obligations (or part of their obligations).

154. It is difficult to envisage in practice an agreement defined purely by reference to a running computer programme, without any reference either to natural language or the source code. That is because, in such circumstances, at least one of the parties would be contracting blind to the terms to which they were agreeing. Instead, an agreement by the parties to be bound by the behaviour of the running code would be much more likely to be found in their interactions and communications outside the code itself. That is where a judge would look to ascertain the contract's meaning. And in any event a judge will want to look behind the code itself in other circumstances. First, for example, it may be argued that the code needs to be rectified, i.e. changed because it does not properly reflect what the parties agreed. That can happen if both parties were mistaken as to what they thought the code would do, or even (in some cases) if only one party made a mistake.[107]

155. Secondly, just as with any other contract, a court will intervene in cases of duress, fraud, misrepresentation, and so on. As with interpretation, just because a contract is a smart contract does not mean that the normal and well-established rules do not apply.

2.2.3 Is a smart contract between anonymous or pseudo-anonymous parties capable of giving rise to binding legal obligations?

156. We have no doubt that a smart legal contract between anonymous or pseudonymous parties is capable of giving rise to binding legal obligations. That is because there is no requirement under English law for parties to a contract to know each other's real identity. Indeed, many contracts are formed in circumstances in which (at least) one party does not know the real identity of the other party, for example, sales at auctions to the highest bidder or unilateral contracts, or where an agent contracts on behalf of a principal whose identity has not been made known.[108]

157. Despite that, it is obvious that there are inherent risks in contracting with a party whose identity is likely to remain undiscoverable, not least in terms of identifying who can be sued if the contract is breached.[109]

2.2.4 Could a statutory signature requirement be met by using a private key?

158. The answer to this question will of course depend on the particular statute, but our view is that a statutory signature requirement is highly likely to be capable of being met by means of a private key. That is because an electronic signature which is intended to authenticate a document will generally satisfy a statutory signature requirement,[110] and a digital signature produced using public-key cryptography is just a particular type of electronic signature.

159. There are numerous cases which make clear that an electronic signature can satisfy a statutory signature requirement, including in relation to a statute that is now almost 400 years old.[111] In light of this, it is hard to envisage any statutory signature requirement which could not be met by using a private key.[112]

160. Where a private key is used to sign a document, it may be the case that the signature itself is comprised solely of a signed message using signature authentication software confirming the validity of the signature. We understand this has led to some concern that the use of a private key may not fulfil a statutory signature requirement. In our view, this does not present a problem. The key question is not what the signature looks like, but whether or not it is clear that the party intended to authenticate the full terms of the document.[113]

2.2.5 Could a statutory "in writing" requirement be met in the case of a smart contract composed partly or wholly of computer code?

161. Requirements that a contract be "in writing" or "evidenced in writing" are very rare in English law.[114] A contract can be made "in writing" only if all of it is in writing, though of course it can be "evidenced in writing" if only part of is.

162. The starting point is that it is clear that the mere fact that a document is in electronic form does not mean that it cannot meet a statutory "in writing" requirement; again, even in relation to a statute that is almost 400 years old.[115] The only question is whether there is something about computer code, as opposed to natural language, which would result in a different conclusion.

163. It is instructive to consider the Interpretation Act 1978, a piece of UK legislation which defines a number of words that are commonly used in statutes.[116] Schedule 1 defines "writing" as follows:

> *"Writing" includes typing, printing, lithography, photography and other modes of representing or reproducing words in a visible form, and expressions referring to writing are construed accordingly.*

164. Whether that part of a smart contract which consists of computer code can be said to be "in writing" will depend on the particular statute and circumstances. Our view is that, to the extent the relevant code can (1) be said to be representing or reproducing words; and (2) be made visible on a screen or printout, it is likely to fulfil a statutory "in writing" requirement.[117] The fact that the code might not be comprehensible to an uninitiated English speaker without an expert translator is irrelevant—many foreign human languages cannot generally be understood by an English speaker without an expert translator.

165. It seems to us that the requirements will be met in the case of source code and, to the extent it is in readable format, object code. We believe however that in very many cases the terms of the relevant contract will not be contained in the code itself; instead, the correct analysis will be that the parties have agreed to be bound by the effect of whatever the code does, rather than by what it says.

166. The Law Commission of England and Wales concluded around 18 years ago that messages sent by Electronic Data Interchange (in context, the exchange of digital information such as that sent by automatic retail stock re-ordering systems, designed to be acted upon by the software of the recipient system without the need for human intervention) would not fulfil a statutory "in writing" requirement. That was because "it is not intended that the EDI message itself should be read by any person. The EDI message is not therefore in a form (or intended to be in a form) in which it can be read".[118] Very recently, the Law Commission has noted that "This reasoning has implications for smart contracts if used for contracts which are required to be 'in writing'. We think that this would only affect cases where the smart legal contract is not in a form which can be read and where there is a requirement that the contract must be in 'writing'".[119]

167. This reasoning is slightly different from ours, but we agree with the conclusion that a smart contract which is in a form that cannot be read is not a "contract in writing".

Notes

[1] As in the Consultation Paper, references to "English law" are to be read as references to "English and Welsh law".

[2] "Of great significance is the Common Law's attitude to the expectations of those it serves. Common law does not defeat the reasonable expectations of honest men." Johan Steyn, 'Contract Law: fulfilling the reasonable expectations of honest men' (1997) 113 LQR 433.

[3] Sir John Laws, *The Common Law Constitution, Hamlyn Lectures* (Cambridge University Press 2014) 9–10.

[4] It is a long-standing principle of law that where there is a right, there must be a remedy. *Ashby v White* [1703] 2 Ld Raym 938, 92 ER 126, at 953, 136 (Lord Holt CJ): "if the plaintiff has a right, he must of necessity have a means to vindicate and maintain it, and a remedy if he is injured in the exercise or enjoyment of it; and indeed it is a vain thing to imagine a right without a remedy; for want of right and want of remedy are reciprocal."

[5] <https://en.wikipedia.org/wiki/Alice_and_Bob> accessed 14 August 2019.

[6] <https://twentyessex.com/people/lawrence-akka/>

[7] <https://www.3vb.com/our-people/qc/david-quest-qc>

[8] <https://4pumpcourt.com/our-barristers.html#matthewlavy>

[9] <https://twentyessex.com/people/sam-goodman/>

[10] <https://bitcoin.org/bitcoin.pdf> accessed 4 September 2019.

[11] Encoded within the Bitcoin "genesis" record is the title of the front-page article in *The Times* on 3 January 2009: "Chancellor on brink of second bailout for banks".

[12] For some possible definitions, see the following:

- Financial Conduct Authority, 'CP19/3: Guidance on Cryptoassets' (January 2019): "Cryptoassets are cryptographically secured digital representations of value or contractual rights that use some type of distributed ledger technology (DLT) and can be transferred, stored or traded electronically." However, they "vary significantly in the rights they grant their owners, as well as their actual and potential uses".
- 'Cryptoassets' (Wikipedia, 2019) <https://en.wikipedia.org/wiki/Cryptocurrency> accessed 29 October 2019: "A cryptocurrency (or crypto currency) is a digital asset designed to work as a medium of exchange that uses strong cryptography to secure financial transactions, control the creation of additional units, and verify the transfer of assets."
- European Banking Authority, 'Report with Advice for the European Commission on Cryptoassets' (January 2019): "*Crypto-assets are a type of private asset that depend primarily on cryptography and distributed ledger technology as part of their perceived or inherent value.* A wide range of crypto-assets exist, including payment/exchange-type tokens (for example, the so-called virtual currencies (VCs)), investment-type tokens, and tokens applied to access a good or service (so-called 'utility' tokens)."

- See also the discussion in Apolline Blandin, Ann Sofie Cloots and ors, 'Global Cryptoasset Regulatory Landscape Study' (Cambridge Centre for Alternative Finance) 14–19 available at <https://www.jbs.cam.ac.uk/faculty-research/centres/alternative-finance/publications/cryptoasset-regulation/> accessed 15 October 2019.

[13] *Yanner v Eaton* [1999] HCA 53 [17]

[14] *Yanner v Eaton* (n 13).

[15] *OBG Ltd v Allan* [2008] AC 1; *Your Response v Datateam Business Media* [2014] EWCA Civ 281, [2015] QB 41.

[16] "A decision whether something is capable of being owned cannot be reached in a vacuum. It must be reached in context…": *Yearworth v North Bristol NHS Trust* [2009] EWCA Civ 37 [28] (the context there being an action in tort for loss of stored sperm consequent upon breach of a duty to take reasonable care of it). "[T]he question 'can I own X', read as 'will the law characterise my relationship to X as "ownership"?', might well attract a different answer according to the reason why the question is asked": Tatiana Cutts, <https://twitter.com/TatianaCutts/status/1067009153753862144> accessed 4 September 2019.

[17] *National Provincial Bank v Ainsworth* [1965] AC 1175.

[18] *Fairstar Heavy Transport NV v Adkins* [2013] EWCA Civ 886.

[19] *R v Toohey*; *Ex parte Meneling Station Pty Ltd* [1982] HCA 69, (1982) 158 CLR 327 at 342–343; *Re Celtic Extraction; Commonwealth of Australia v WMC Resources Ltd* (1998) 194 CLR 1; *B2C2 Ltd v Quoine Pte Ltd* [2019] SGHC(I) 03.

[20] The consequences of this are dealt with below.

[21] Sometimes expressed using the Latin maxim, *nemo dat quod non habet* (no-one may give what they do not have).

[22] That does not mean that the victim of a cryptoasset fraud or theft is without a remedy. However, any remedy would likely be in trust or restitution, and so unavailable against a good faith purchaser or where it would be inequitable to require the cryptoasset to be returned. Remedial issues are outside the scope of this Legal Statement.

[23] See for example the definition of a bitcoin in *Bitcoin* (n 10): "We define an electronic coin as a chain of digital signatures. Each owner transfers the coin to the next by digitally signing a hash of the previous transaction and the public key of the next owner and adding these to the end of the coin. A payee can verify the signatures to verify the chain of ownership."

[24] David Fox, 'Cryptocurrencies in the Common Law of Property' in David Fox, Sarah Green (eds), *Cryptocurrencies in Public and Private Law* (Oxford 2019) para 6.40.

[25] *B2C2 Ltd v Quoine Pte Ltd* (n 19) (Simon Thorley IJ). We note also that in *R v Teresko (Sergejs)* [2018] Crim LR 81, HHJ Lodder QC made an order under s 41(7) of the Proceeds of Crime Act 2002 permitting the police to sell bitcoins, which had previously been seized from the defendant pursuant to section 47C of the Act; he was presumably satisfied that bitcoins were within the definition of property in the Act, which includes "money; all forms of real or personal property; and things in action and other intangible or incorporeal property". See also *R v West (Grant)* (Southwark Crown Court, 23 August 2019) available at <http://news.met.police.uk/news/379015> accessed 29 October 2019.

[26] *Your Response v Datateam Business Media* (n 15) [42].

[27] Michael Bridge, Louise Gullifer and ors, *The Law of Personal Property* (Sweet & Maxwell 2017) para 9-031.

[28] If the private key is stolen then it may be the thief that takes control of the asset.

[29] By personal property here, we actually mean personal chattels, but this technicality is not important for present purposes.

[30] referred to in some cases by the older terms *choses in possession* and *choses in action*. We have replaced such usage with the more modern wording.

[31] Of course, the keys to a cryptoasset can be stored on a physical medium, which can be possessed, such as a USB drive or even a piece of paper. But that does not mean that the cryptoasset itself can be possessed.

[32] *Your Response* (n 26) [23].

[33] In *Torkington v Magee* [1902] 2 KB 427, Channell J described things in action as "all personal rights of property which can only be claimed or enforced by action and not by taking physical possession."

[34] The existence of a remedy is an essential condition for the existence of a thing in action: *Investors Compensation Scheme Ltd v West Bromwich Building Society* [1998] 1 WLR 898, 915.

[35] In *Colonial Bank v Whinney* (1886) 11 App Cas 426 (HL), 440 Lord Blackburn said that "in modern times lawyers have accurately or inaccurately used the phrase '[things] in action' as including all personal chattels that are not in possession".

[36] Halsbury's Laws of England, vol 13 (2017), para 1 fn (2).

[37] *Colonial Bank v Whinney* (1885) 30 Ch D 261 (CA), 285.

[38] as Fry LJ noted, they were deemed to be property by the Companies Clauses Consolidation Act.

[39] *Ex parte Union Bank of Manchester* Law Rep 12 Eq 354.

[40] *Colonial Bank* (n 37) 286.

[41] n 35 above.

[42] [1931] 1 KB 672, 704.

[43] It involved a dispute about the proceeds of sale of diamonds that had been seized by the British authorities as prize during World War I and later assigned by the German owner to his insurer. If the right in the diamonds that had been assigned was a thing in action within the meaning of section 6(1) of the Trading with the Enemy Act 1914 then under the Act the insurer could not enforce it.

[44] n 26.

[45] *OBG Ltd v Allan* (n 15).

[46] n 26 [42].

[47] As made by Sarah Green and John Randall QC in *The Tort of Conversion* (Hart 2009).

[48] *Dairy Swift v Dairywise Farms Ltd* [2000] 1 WLR 1177.

[49] *Armstrong v Winnington* [2012] EWHC 10, [2013] Ch 156.

[50] at least, in the narrow sense of something which can be claimed or enforced by action (*Armstrong v Winnington* at [61]).

[51] *Yearworth v North Bristol NHS Trust* [2009] EWCA Civ 37, [2010] QB 1 [48] (Lord Judge): "A bailment arises when, albeit on a limited or temporary basis, the bailee acquires exclusive possession of the chattel or a right thereto."

[52] *Ashby v Tolhurst* [1937] 2 KB 242, 255, (Romer LJ): "in order that there shall be a bailment there must a delivery by the bailor, that is to say, he must part with his possession of the chattel in question."

[53] Norman Palmer (ed), Palmer on Bailment (3rd edn, Sweet & Maxwell 2009) 1.27 discusses how property which cannot, strictly, constitute the subject matter of bailment may nonetheless *"become the subject of relationships and disputes akin to those arising under bailments"*.

[54] Principally, Regulation (EC) No 593/2008 of the European Parliament and of the Council of 17 June 2008 on the law applicable to contractual obligations (the "Rome I Regulation") and Regulation (EC) No 864/2007 of the European Parliament and of the Council of 11 July 2007 on the law applicable to non-contractual obligations (the "Rome II Regulation"). Given their titles, one might assume that between them the two Regulations cover all types of obligation. This is not the case. A number of matters are expressly excluded from their scope, and certain obligations (including, notably for the purposes of this Legal Statement, those relating to property) are considered by the law to be neither contractual nor non-contractual.

[55] Rome I Article 3, Rome II Article 14.

[56] For a more detailed analysis, including in relation to choice of law in public unpermissioned systems, see Andrew Dickinson, 'Cryptocurrencies and the Conflict of Laws' in *Cryptocurrencies in Public and Private Law* (n 24).

[57] That country's law is known as the *lex situs*.

[58] Lord Collins of Mapesbury and others (eds), *Dicey, Morris and Collins on the Conflict of Laws*, (15th Edn, Sweet & Maxwell 2012) para 22–025.

[59] *New York Life Insurance Co v Public Trustee* [1924] 2 Ch 101, 109 (CA). A debt, for example, is deemed to be situated in the country of the debtor's residence, because that is ultimately likely to be the place where the debt will be enforced against the debtor's assets.

[60] Dicey (n 58) para 24-051: "The choice of law rules which govern the assignment or transfer of intangible property are not easy to state with certainty. ... the choice of law rules for the assignment of intangible property have to cover an unusually wide range of legal situations, with the result that caution is required when stating and applying a rule to a factual context to which it has not previously been held to extend, or in applying a rule which is contractual in nature to a context which is not. It may even be argued that the category of ''intangible things'', the choice of law rules for the assignment of which were developed and refined by Dr Morris in order to state the common law rules of the conflict of laws, is no longer sufficiently coherent for it to be given a uniform rule for choice of law."

[61] *Raiffeisen Zentralbank Österreich AG v Five Star Trading LLC* [[2001] EWCA CIV 68, [2001] QB 825 [27] (Mance LJ).

[62] *Winkworth v Christie, Manson & Woods Ltd* [1980] Ch 496 at 512 (Slade J); Dicey (n 58) para 24E-016.

[63] See, for example, the *UNCITRAL Legislative Guide on Secured Transactions* (2010), Chapter X para 20, discussing the applicable law rules for the creation, third-party effectiveness and priority of security rights: "as intangible assets are not capable of physical possession, adopting the lex situs as the applicable conflict-of-laws rule would require the development of special rules and legal fictions for the determination of the actual location of various types of intangible asset. For this reason, the Guide does not consider the location of the asset as being the appropriate connecting factor for intangible assets and favours an approach generally based on the law of the location of the grantor".

[64] For a detailed discussion of the issues discussed in this section, including proposals for law reform, see the Financial Markets Law Committee, *Distributed Ledger Technology and Governing Law: Issues of*

Legal Uncertainty (2018), available at <http://fmlc.org/report-finance-and-technology-27-march-2018/> accessed 5 September 2019.

[65] It is also possible for a person to provide security for someone else's debt, or to a person other than the creditor, or for an obligation other than a debt. The word 'security' in this section does not refer to shares or bonds, which are often also called 'securities' (for example in The Financial Services and Markets Act 2000 (Regulated Activities) Order 2001). Nor does it refer to what are commonly called 'security tokens'. Whether certain cryptoassets are or should be regulated in the same way as traded shares is outside the scope of this Legal Statement.

[66] *Re Cosslett (Contractors) Ltd* [1998] Ch 495, 508 CA (Millett LJ).

[67] For example, in some circumstances, a requirement that the security be formally registered.

[68] cf *Your Response* (n 26) [23], [27].

[69] *Agnew v Commissioner of Inland Revenue* [2001] UKPC 28, [2001] 2 AC 710 [32].

[70] *Bristol Airport plc v Powdrill* [1990] Ch 744, 759 (Browne-Wilkinson VC); *In re GP Aviation Group International Ltd (in liquidation)* [2013] EWHC 1447 (Ch), [2014] 1 WLR 166 [25] "the definition … is cast in the widest terms".

[71] Different considerations may arise if cryptoassets might be characterised as money—an issue which is outside the scope of this Statement.

[72] See Bridge (n 74) para 5-010. In *Dixon v Bovill* (1856) 3 Macq HL 1, 16 Lord Cranworth LC said: *"Independently of the law merchant and of positive statute the law does not enable any man by a written engagement to give a floating right of action at the suit of any one into whose hands the writing may come, and who may thus acquire a right of action better than the right of him under whom he derives title."*

[73] The term was coined by Professor Sir Roy Goode during the preparation of the 1971 Crowther Report on Consumer Credit (Cmnd. 4596, 1971).

[74] See Michael Bridge, *Personal Property Law* (4th edn, Clarendon Law Series 2015) 19.

[75] It is in the very nature of documentary intangibles, at least as the law currently stands, that the document can be physically possessed. See Smith and Leslie, *The Law of Assignment* (3rd edn, Oxford 2018) para 2.79: *"Thus, in the case of documentary intangibles, the document is essential to the right, and it is the transfer of the document that is critical to the transfer of the right."* This is why documentary intangibles have many of the attributes of things in possession.

[76] See Bridge (n 74) 19. See also Ewan McKendrick (ed), *Goode on Commercial Law* (5th edn, Butterworths 2015) para 2.56.

[77] The obvious exception to this is security tokens.

[78] Smith (n 75) para 9.43.

[79] Smith (n 75) para 32.49. One example of dematerialisation is the CREST system for shares used in the United Kingdom and Republic of Ireland.

[80] See the helpful discussion in Bridge, Gullifer (n 27) ch 5.

[81] Michael Bridge, Louise Gullifer and ors, *The Law of Personal Property* (Sweet & Maxwell 2017) para 5-029.

[82] See Aikens, Bools, Lord, *Bills of Lading* (2nd edn, Informa 2015) para 2.119.

[83] Smith (n 75) para 9.05.

[84] See Bridge (n 74) para 5-010. In *Dixon v Bovill* (1856) 3 Macq HL 1, 16 Lord Cranworth LC said: *"Independently of the law merchant and of positive statute the law does not enable any man by a written engagement to give a floating right of action at the suit of any one into whose hands the writing may come, and who may thus acquire a right of action better than the right of him under whom he derives title."*

[85] Thus, in *Bechaunaland Exploration Co v London Trading Bank Ltd* [1891] 2 QB 658 (QBD), 666-7, Kennedy J heard evidence from various experienced bankers.

[86] such that a judge could to take judicial notice of it, as occurred in *Edelstein v Schuler & Co* [1902] 2 KB 144 (KBD), 155-6 (Bigham J).

[87] See *Edelstein v Schuler & Co* [1902] 2 KB 144 (KBD), 154 (Bigham J): *"It is no doubt true that negotiability can only be attached to a contract by the law merchant or by a statute; and it is also true that, in determining whether a usage has become so well established as to be binding on the Courts of law, the length of time during which the usage has existed is an important circumstance to take into consideration; but it is to be remembered that in these days usage is established much more quickly than it was in days gone by; more depends on the number of the transactions which help to create it than on the time over which the transactions are spread; and it is probably no exaggeration to say that nowadays there are more business transactions in an hour than there were in a week a century ago. Therefore the comparatively recent origin of this class of securities in my view creates no difficulty in the way of holding that they are negotiable by virtue of the law merchant.....It is also to be remembered that the law merchant is not fixed and stereotyped...it is...capable of being expanded and enlarged so as to meet the wants and requirements of trade in the varying circumstances of commerce, the effect of which is that it approves and adopts from time to time those usages of merchants which are found necessary for the convenience of trade; our common law, of which the law merchant is but a branch, has in the hands of the judges the same facility for adapting itself to the changing needs of the general public; principles do not alter, but old rules of applying them change, and new rules spring into existence..."*

[88] We note that this was also the view of the Law Commission and their correspondents in 2001: see the Law Commission, *Electronic Commerce – Formal Requirements in Commercial Transactions: Advice* (2001) paras 9.5– 9.7.

[89] Diggory Bailey, Luke Norbury, *Bennion on Statutory Interpretation* (7th Edn, LexisNexis 2019) para 14.1; *Lockheed-Arabia v Owen* [1993] QB 806, 814.

[90] Law Commission, *Electronic Commerce* (n 88) para 9.7.

[91] Other, statutes define "goods" in different terms, e.g. Insolvency Act 1986 ss 183(4), 184(6): "'goods' includes all chattels personal"; Consumer Rights Act 2015 s 2(8): "'Goods' means any tangible moveable items, but that includes water, gas and electricity if and only if they are put up for supply in a limited volume or set quantity."

[92] Paragraph 86 above.

[93] Smith (n 75) para 2.67: *"This causes difficulty, since it is unclear whether intangible property existing outside the scope of the definition of a chose in action falls within the term 'personal chattels' or as an unarticulated exclusion from the scope of the Sale of Goods Act. For the sake of consistency, one would expect to treat all intangible property that is not a chose in action equivalently with choses in action: but the position is unclear."*

[94] Paragraph 76 above. The Sale of Goods Act definition is taken largely unchanged from the earlier Sale of Goods Act 1893, passed only a few years after Fry LJ's judgment.

[95] Although not impossible—the difficulty depends on the design of the system.

[96] Note that private contractual arrangements cannot override certain mandatory rules on ownership and legal title that apply in insolvency.

[97] See the distinction between positive and negative automation in Tatiana Cutts, 'Smart Contracts and Consumers' LSE Legal Studies Working Paper No. 1/2019, 3, available at <https://ssrn.com/abstract=3354272> accessed 15 October 2019.

[98] Except in specific cases such as contracts concerning equitable dispositions of land, guarantees and assignments of intellectual property rights. We deal below with statutory requirements that certain contracts must be made in writing.

[99] See e.g. *Re Hudson* (1885) 54 LJ Ch 811.

[100] *Edwards v Skyways Ltd* [1964] 1 WLR 349, 355.

[101] Section 82 of the Law of Property Act 1925 deals with the conceptual difficulty that a member of an association would (amongst others) be contracting with themselves as well as others, and provides that such agreements are enforceable *'in like manner as if the covenant or agreement had been entered into with the other person or persons alone'*.

[102] In *The Satanita* [1895] P 248; affirmed sub nom *Clarke v Dunraven* [1897] AC 59, it was held that a competitor in a regatta entered into contract with all other members, and that an owner of a damaged yacht was entitled to sue another competitor whose breach of the regatta rules had caused the damage, even though the parties were not known to each other.

[103] *Chartbrook Ltd v Persimmon Homes Ltd* [2009] UKHL 38.

[104] *Arnold v Britton* [2015] UKSC 36 [17] (Lord Neuberger).

[105] *Chartbrook* (n 103) [18].

[106] We believe that such issues are likely to be rare where smart contracts are developed using well-established, mature platforms and programming languages.

[107] It may not, of course, be possible for code recorded on a blockchain to be changed. In any event, the bar for rectification is a high one: *'before a written contract may be rectified on the basis of a common mistake, it is necessary to show either (1) that the document fails to give effect to a prior concluded contract or (2) that, when they executed the document, the parties had a common intention in respect of a particular matter which, by mistake, the document did not accurately record.': FSHC Group Holdings Ltd v Glas Trust Corporation Ltd* [2019] EWCA Civ 1361 [176] (Leggatt LJ). The other basis on which a contract may be rectified is where a party has taken advantage other the other party's unilateral mistake: *'where the party opposing the claim for rectification appreciated that the document departed from what had previously been negotiated between the parties, and that the other party was under a misapprehension, and the first party, though aware of this, forbore from drawing his attention to the error.': Holaw (470) Ltd v Stockton Estates Ltd* (2001) 81 P&CR 29 [41] (Neuberger J). In both cases, extrinsic evidence will inevitably be required.

[108] *Siu Yin Kwan v Eastern Insurance Co Ltd* [1994] 2 AC 199, 207 (Lord Lloyd): *"An undisclosed principal may sue and be sued on a contract made by an agent on his behalf within the scope of his actual authority"*.

[109] One answer to this issue may be the jurisdiction to commence proceedings and obtain judgment against *"Persons Unknown"* (see e.g. *CMOC Sales & Marketing Limited v Persons Unknown* [2018] EWHC 2230 (Comm)).

[110] We note that this has been the conclusion of the Law Commission on the two occasions on which it has examined this point. See Law Commission, *Electronic Commerce: Formal Requirements in*

Commercial Transactions: Advice (2001) and Law Commission, *"Electronic execution of documents"* (Law Com No 386, 2019).

[111] See *Golden Ocean Group Limited v Salgaocar Mining Industries Pvt Ltd & Or* [2011] EWCA Civ 265 [32] in relation to the Statute of Frauds 1677. See also *J Pereira Fernandes SA v Mehta* [2006] EWHC 813 (Ch) and *WS Tankship II BV v Kwangju Bank Ltd* [2011] EWHC 3103 (Comm) on the same point.

[112] See text to n 89 above. In that regard, it is clear that the use of electronic signatures has proliferated over recent years, as evidenced by EU and domestic legislation directly on the topic (see Directive on a Community framework for electronic signatures 1999/93/EC, Official Journal L 013 of 19/01/2000 p 12, EU Regulation 910/2014 of 23 July 2014 on electronic identification and the Electronic Communications Act 2000).

[113] *Newell v Tarrant* [2004] EWHC 772.

[114] Electronic Commerce (n 110) para 3.48.

[115] *Golden Ocean Group* (n 111).

[116] Interpretation Act 1978, s 5. This says that, in any Act, unless the contrary intention appears, the words and expressions in the Schedule to the Interpretation Act are to be construed in accordance with that Schedule.

[117] Any doubt could perhaps be resolved pursuant to s 8 of the Electronic Communications Act 2000, which provides Ministers with the power in certain circumstances to make subordinate legislation allowing for electronic communications to be used for the purpose of anything which is "required to be or may be done or evidenced in writing…".

[118] Electronic Commerce (n 110) para 3.19.

[119] Electronic execution of documents (n 110) fn 58.

Appendices

Appendix 1 - UKJT Consultation paper *The status of cryptoassets, DLT and smart contracts under English private law*, May 2019

This Appendix includes the body of the consultation paper that was issued in May 2019. The paper itself included substantial technical Annexes, namely:

Annex 1 – Questions to be addressed in the Legal Statement

Annex 2 – Overview and key features of DLT

Annex 3 – Cryptoassets

Annex 4 – Smart contracts

The full text of the consultation paper, including those Annexes, can be found at: www.lawsociety.org.uk/news/stories/cryptoassets-dlt-and-smart-contracts-ukjt-consultation/

Consultation on the status of cryptoassets, distributed ledger technology and smart contracts under English private law[1]

1 Background to this consultation

The development of distributed ledger technology ("**DLT**"), cryptoassets, smart contracts and associated technologies has far-reaching implications for financial markets, both domestically and internationally.

Nevertheless, the experience of market participants at present suggests that a lack of certainty regarding the legal status of cryptoassets, DLT and smart contracts could be hampering this development.[2]

This uncertainty does not solely arise in the context of English law and the jurisdiction of England and Wales.[3] However, creating a measure of confidence in these issues would increase confidence in the use of cryptoassets, DLT and smart contracts and bolster the use of English law and the jurisdiction of England and Wales in transactions concerning cryptoassets, as well as in smart contracts more generally.

English law, as a well-developed flexible common law system, has the ability to provide the certainty and predictability that the commercial community demands, and is well able to adapt to deal with fast-changing technologies. Consequently, English law and the jurisdiction of England and Wales are well-positioned to provide the legal foundation for the development of these technologies.

2 Scope of this consultation

The LawTech Delivery Panel ("**LTDP**") was established by the UK Government, the Judiciary and the Law Society of England and Wales and has as its overarching objective the promotion of the use of technology in the UK's legal sector.[4] The UKJT is one of six taskforces established by the LTDP for the purposes of achieving this objective.[5]

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1 In this consultation paper, references to "English law" should be read as references to the law of England and Wales.

2 For example, respondents to the Financial Conduct Authority's April 2017 "Discussion Paper on distributed ledger technology" were particularly interested in the use of DLT in the capital markets sector, in particular, underpinning market trading infrastructure, including the use of smart contracts. However, respondents said that, before they would consider using those solutions at scale, they would have to be clearer on issues such as the legal status of cryptoassets and the enforceability of smart contracts. The Discussion Paper is accessible here: https://www.fca.org.uk/publication/discussion/dp17-03.pdf (Accessed May 2019). See also paragraph 1.16 of the FCA's Feedback Statement published in December 2017, accessible here: https://www.fca.org.uk/publication/feedback/fs17-04.pdf (Accessed May 2019).

3 For example, we note that the European Union Blockchain Observatory Forum (in a report entitled "Scalability, Interoperability and Sustainability of Blockchains", published 6 March 2019) sets out in a list of recommendations the need to resolve the tensions between "GDPR and blockchain, the legal fiscal and accounting status of crypto assets, and the legal status of smart contracts, among others". The report is accessible here: https://www.eublockchainforum.eu/sites/default/files/reports/report_scalaibility_06_03_2019.pdf (Accessed May 2019).

4 For further background on the LTDP, please see: https://www.lawsociety.org.uk/policy-campaigns/articles/lawtech-delivery-panel/ (Accessed May 2019).

5 LTDP taskforces have been established in the following areas: Ethics, Commercial Dispute Resolution, Investment, Education, Regulation, and UK Jurisdiction (i.e. the UKJT).

The objective of the UKJT is to demonstrate that English law and the jurisdiction of England and Wales together provide a state-of-the-art foundation for the development and use of DLT, smart contracts and associated technologies.

In pursuit of this objective, the UKJT is co-ordinating the preparation of an authoritative legal statement ("**Legal Statement**") on the status of cryptoassets and smart contracts under English private law. The intention is that the Legal Statement will either demonstrate that English private law already provides sufficiently certain foundations in relation to the relevant issues, or will highlight particular areas of uncertainty that may be ripe for further clarificatory steps to be taken.

The purpose of this consultation is to seek input from stakeholders as to the principal issues of perceived legal uncertainty regarding the status of cryptoassets and smart contracts under English private law to inform what should be addressed in the Legal Statement.

In Annex 1 (*Questions to be addressed in the Legal Statement*), we have set out what the UKJT considers to be the principal issues. However, ultimately, for the Legal Statement to serve its purpose, it must address those issues that market participants themselves are most concerned with. This is why we hope that key industry stakeholders will find time to participate in this consultation.

In Annex 2 (*Overview and key features of DLT*), we outline the key features of DLT. This informs the UKJT's understanding of the key legal issues arising in this context and, ultimately, those that will be addressed in the Legal Statement.

In Annexes 3 (*Cryptoassets*) and 4 (*Smart contracts*), we provide further detail on the technical aspects of cryptoassets and smart contracts, again, each with the intention of informing an understanding of the issues to be addressed in the Legal Statement.

3 Overview of the key issues of legal uncertainty included in this consultation

As this consultation and the Legal Statement are focused on private law, the questions identified in Annex 1 (*Questions to be addressed in the Legal Statement*) are accordingly limited in scope.

Quite intentionally, they do not cover certain other areas of law insofar as they relate to cryptoassets or smart contracts, including (among others) their regulatory characterisation and treatment, matters of taxation, criminal law, partnership law, data protection, consumer protection, settlement finality,[6] regulatory capital, anti-money laundering or counter-terrorist financing. We recognise that these are important areas, and ones in which market participants may feel there exists a degree of legal uncertainty in some instances. However, the UKJT feels that other bodies or organisations are better-placed to provide the necessary clarity on these issues, and so they do not form a part of this project.[7] The questions also do not address certain areas of perceived legal uncertainty where too many potential factual scenarios would need to be considered in order for any helpful answers to be provided.

[6] For example, under the Financial Markets and Insolvency (Settlement Finality) Regulations 1999, as amended.

[7] We note there are several projects underway which seek to address considerations in these areas. For example, the Basel Committee on Banking Supervision has published a "Statement on crypto-assets" (see: https://www.bis.org/publ/bcbs_nl21.htm (Accessed May 2019)), in which it has said that it will, in due course, clarify the prudential treatment of bank exposures to crypto-assets, and the Financial Conduct Authority has recently conducted a consultation on the regulatory characterisation and treatment of cryptoassets (see: https://www.fca.org.uk/publication/consultation/cp19-03.pdf (Accessed May 2019)).

We set out below some background on the questions which we have included in Annex 1 (*Questions to be addressed in the Legal Statement*).

3.1 Legal status of cryptoassets

Many aspects of the status of cryptoassets as a matter of English private law are considered by some to be unclear. In particular, notwithstanding that a significant amount of work has been undertaken in relation to a number of these issues by various academic, professional and public bodies, it is understood to be of general concern to the market that an authoritative response be given to the questions of whether, and, if so, the circumstances in which, a cryptoasset may be characterised under English law as property. The questions relevant to this are therefore set out in paragraphs 1.1 and 1.2 of Annex 1 (*Questions to be addressed in the Legal Statement*).

Property law matters both to users of a DLT system and to third parties dealing with those users. If a cryptoasset is not property, it cannot be owned. If it cannot be owned, it cannot be purchased, sold, otherwise transferred in law or rights to it asserted if it is stolen. Neither can a trust be declared, or security created, over it. The concept of a cryptoasset being recognised as property is therefore critical to the application of private law to transactions involving cryptoassets. If a cryptoasset is recognised as property, it is then necessary to understand the legal nature of that property. Traditionally, English law recognises physical things (*choses in possession*) and legal rights (*choses in action*) as property".[8] If a cryptoasset is recognised as property, does it fall into one of these categories or does it fall within some other category of property under English law? This is also critical to the application of private law to transactions involving cryptoassets because it is necessary to determine the location of property (its *situs*), under most legal systems, in order to determine the correct law governing transfers (alienation) of the property concerned.

Consequently, the response to the threshold question of whether a cryptoasset may be recognised under English law as property either dictates to a large degree or is materially relevant to the outcome of a series of ancillary questions, including whether certain types of security may validly be granted over it and its treatment for certain purposes as a matter of English insolvency law. These questions are set out in paragraphs 1.2.1 to 1.2.6 of Annex 1 (*Questions to be addressed in the Legal Statement*).

Equally, if a cryptoasset is capable of being recognised as property under English law, there is a series of additional questions as to other characterisations under English private law which may also be relevant. These questions include whether a cryptoasset may be characterised as a "documentary intangible" or as being "negotiable" (i.e. in the sense that a transferee may, by the mere transfer of a cryptoasset, acquire better title to that cryptoasset than that of its transferor), and whether cryptoassets may be recognised as "goods" for certain statutory purposes. These questions are set out in paragraphs 1.2.7 to 1.2.11 of Annex 1 (*Questions to be addressed in the Legal Statement*).

The UKJT also understands that there is uncertainty among market participants as to whether DLT records of cryptoassets are capable of amounting to a "register" for the purposes of evidencing, constituting and transferring title to certain types of securities under English law.

[8] We do note, however, that in certain circumstances the courts have been prepared to recognise that certain intangible things, such as carbon emission allowances, which also do not clearly fall into either category of personal property are, nevertheless, capable of being recognised as property under English law. See *Armstrong DLW GmbH v Winnington Networks Ltd* [2012] EWHC 10 (Ch), for example.

This question is set out in paragraph 1.2.12 of Annex 1 (*Questions to be addressed in the Legal Statement*).

In Annex 3 (*Cryptoassets*), we discuss the meaning of the term "cryptoasset", building on the general overview of DLT provided in Annex 2 (*Overview and key features of DLT*). In doing so, we explain certain key features of cryptoassets within some commonly used DLT models, with the aim of providing the authors of the Legal Statement with a description of certain key common features, given the multiplicity of potential models which exist.

3.2 Enforceability of smart contracts

As noted by the Law Commission of England and Wales, to ensure that the English courts and English law remain competitive choices for business, there is a compelling case for reviewing the current English legal framework to ensure that it facilitates the use of smart contracts.[9]

It is understood that market participants attempting to replicate contractual arrangements written in prose using smart contracts, are principally concerned that the circumstances in which smart contracts are capable of giving rise to binding legal obligations be clarified. This question is set out in paragraph 2.1 of Annex 1 (*Questions to be addressed in the Legal Statement*).

The UKJT is aware that some market participants may question the merits of this exercise, given that some among them may view one of the benefits of smart contracts as being that they are sometimes considered to remove the need for parties to rely on a legal framework to enforce their rights against each other. However, if smart contracts are capable of giving rise to binding legal obligations, it will be important for parties to be aware of the circumstances in which this will be the case (notably if the parties' intention is not to create legal relations). It will also be important for parties to know if and how their rights might be enforced in the event that technology does not work as expected.

Again, depending on the answer to that principal question, a series of ancillary questions arises. Notably, how the general principles of contractual interpretation would be applied by an English court in the context of a smart legal contract and the circumstances in which a statutory signature or "in writing" requirement may be met in the context of smart legal contracts. These questions are set out in paragraph 2.2 of Annex 1 (*Questions to be addressed in the Legal Statement*).

In Annex 4 (*Smart contracts*), we discuss how the market currently understands the term "smart contract", again building on the general overview of DLT provided in Annex 2 (*Overview and key features of DLT*). In doing so, we explain at a high level certain of the key features of smart contracts, and how they differ as between different implementations. As with Annex 3 (*Cryptoassets*), the aim of this section is to inform and help circumscribe the answers that will be provided in the Legal Statement.

3.3 Application of English law

Readers may note that, with the exception of the question posed in paragraph 1.2.3 of Annex 1 (*Questions to be addressed in the Legal Statement*), the question of the extent to which English law would be the applicable law in relation to dealings or other arrangements involving cryptoassets or smart contracts is not dealt with directly.

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[9] The Law Commission of England and Wales, Thirteenth Programme of Law Reform (Dec. 2017), paragraphs 2.38 to 2.39. See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/668113/13th-Programme-of-Law-Reform.pdf (Accessed May 2019).

The UKJT recognises that this is an area of much uncertainty for market participants. It is also of the view, however, that this is an issue which is highly fact-dependent, which limits the effectiveness of any attempt to provide a broad Legal Statement on the topic.

That said, the UKJT does consider that there would be value in setting out guidance within the Legal Statement as to the steps that may be taken by developers and participants to reduce uncertainty by ensuring, where desired, that English law will govern the relevant dealings or other arrangements, such as transactions within a DLT system or smart contracts to be deployed within such system.

4 Consultation questions

Your input is sought in relation to the following questions:

1. Do consultees agree that the questions in Annex 1 (*Questions to be addressed in the Legal Statement*) to this consultation paper cover the principal issues as to the legal status of cryptoassets and smart contracts under English private law?
2. If you disagree, what alternative questions or issues relating to the legal status of cryptoassets and smart contracts do you think need to be addressed?

5 Consultation process

This consultation will remain open for responses until 21 June 2019. Once this consultation has closed and the results have been considered, it is intended that the Legal Statement will be published in late summer of 2019. It will then be possible to see whether any further steps are necessary or appropriate.

Written responses to the consultation questions should be provided by:

(i) completing the form set out at the following link: https://www.lawsociety.org.uk/news/stories/cryptoassets-dlt-and-smart-contracts-ukjt-consultation; or

(ii) by email to UKJT@justice.gov.uk.

The UKJT will also be hosting a public event in order to receive feedback on the consultation questions in person. Further details on the public event, including details regarding registering for the event, can be found here: https://www.lawsociety.org.uk/news/stories/cryptoassets-dlt-and-smart-contracts-ukjt-consultation.

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James Zengierski

Dr Mimi Zou, Oxford University

Appendix 3 - List of specialist consultees

Sir Richard Aikens PC

Parma Bains, FCA

Gary Chu, UBS

Associate Professor Christopher Clack, UCL

Richard Cohen, Nivaura

Assistant Professor Tatiana Cutts, LSE

Oliver Dearie, Bank of England

Ian Dowglass, Euroclear

Ben Dyson, Bank of England

Dr Michèle Finck, Max Planck Institute for Innovation and Competition

Professor David Fox, University of Edinburgh

Professor Sir Roy Goode, University of Oxford

Tom Gover, HMT

Professor Sarah Green, University of Bristol

Professor Louise Gullifer, University of Cambridge

Andrew Hauser, Bank of England

Tom Hinton, London Stock Exchange

Will Johnson, Nivaura

Charles Kerrigan, CMS

Stephen Lewis, Law Commission

Dorothy Livingston, City of London Law Society

Ciaran McGonagle, ISDA

Siobhan McKeering, Law Commission

Declan McKeever, JP Morgan

Tolek Petch, Slaughter and May

Michel Rauchs, Cambridge Centre for Alternative Finance

Lakshmi Ravindran, Bank of England

Robert Sams, Clearmatics

Charlie Yeh, Apifiny

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Please direct any questions or comments on the Legal Statement to: UKJT@justice.gov.uk