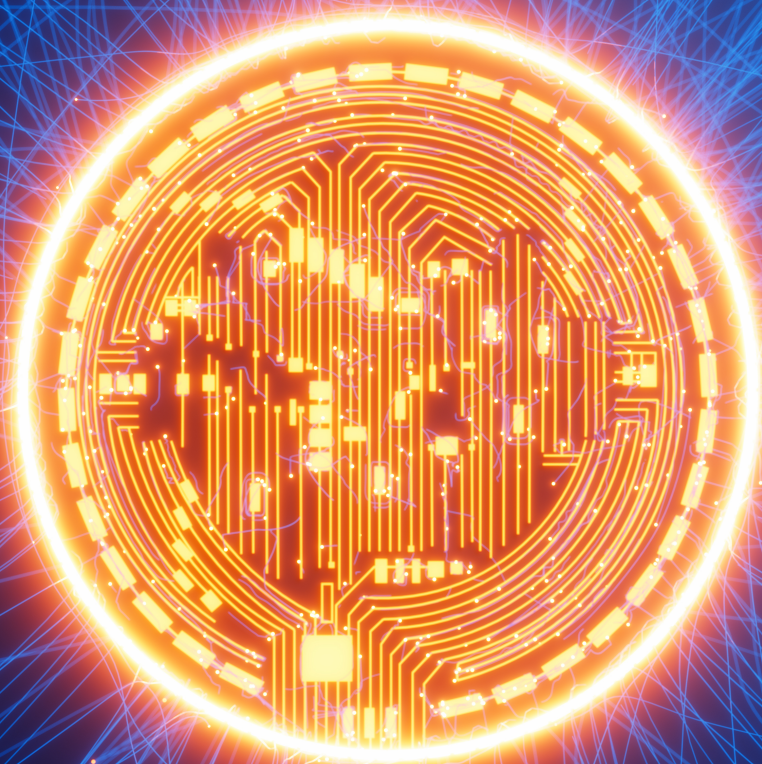


Digital assets

Summary of consultation paper



**Law
Commission**
Reforming the law

INTRODUCTION

- 1.1 Digital assets are increasingly important in modern society. They are used for an expanding variety of purposes — including as valuable things in themselves, as a means of payment, or to represent or be linked to other things or rights — and in growing volumes. Electronic signatures, cryptography, smart contracts, distributed ledgers and associated technology have broadened the ways in which digital assets can be created, accessed, used and transferred. Such technological development is set only to continue.
- 1.2 Our work considers principles of private law, and particularly private property law, in relation to digital assets. Property is vital to modern social, economic and legal systems. “Property” in this sense refers not to specific things themselves but to the social consensus between people as to how those things can and should be held, used, exchanged and protected.
- 1.3 Property rights are important for many reasons. The concept of property is widely used in statutes and cases and property rights feature in most commercial transactions relating to things of value. Property rights are important for the proper characterisation of numerous modern and complex legal relationships, including custody relationships, collateral arrangements and structures involving trusts. They are also important in cases of bankruptcy or insolvency, when objects of property rights are interfered with or unlawfully taken, and for the legal rules concerning succession on death. Property rights are useful because, in principle, they are recognised against the whole world, whereas other — personal — rights are recognised only against someone who has assumed a relevant legal duty.
- 1.4 We consider that the law of England and Wales has to some extent proven itself sufficiently resilient, flexible and iterative to accommodate digital assets as objects of property rights. But we also think that certain aspects of the law now need reform to ensure that digital assets benefit from consistent legal recognition and protection, in a way that acknowledges the nuanced features of those digital assets. In this way, the legal system, as part of a wider social framework, can reinforce the overall strength of digital asset environments (which also rely on social elements), provided that the legal system works in-sync with the technical and other social elements of those digital asset systems. We consider that the law of England and Wales is well placed to do this.
- 1.5 This approach will ensure that the private law of England and Wales remains a dynamic, highly competitive and flexible tool for market participants.

The consultation

- 1.6 This summary document accompanies our digital assets consultation paper, where we make and explain our provisional proposals for law reform.
- 1.7 **We request responses to the consultation by Friday 4 November 2022. Responses to the consultation may be submitted using an online form at: <https://consult.justice.gov.uk/law-commission/digital-assets-consultation>. Where possible, it would be helpful if this form were used. Alternatively, comments may be sent by email to digitalassets@lawcommission.gov.uk.**

- 1.8 Our consultation paper draws on the conclusions in the Lawtech Delivery Panel’s UK Jurisdiction Taskforce Legal Statement on cryptoassets and smart contracts (November 2019) (the “UKJT Statement”). In the international context, it also draws on the ongoing work on digital assets being undertaken by the International Institute for the Unification of Private Law (UNIDROIT) Digital Assets Working Group and the American Law Institute and Uniform Law Commission’s Uniform Commercial Code and Emerging Technologies Committee.

OUR LAW REFORM PROPOSALS AT A GLANCE

- 1.9 Much of our consultation paper contains explanations of the characteristics of certain categories of digital assets. It also sets out the reasoning and justification for the existing legal analysis in respect of those digital assets, and commentary on current market practice in relation to them. We make relatively few proposals for law reform because we consider that the common law of England and Wales is, in general, sufficiently flexible to accommodate digital assets. In this respect, we agree with the view of Sir Geoffrey Vos (speaking extra-judicially) that: “We should try to avoid the creation of a new legal and regulatory regime that will discourage the use of new technologies rather than provide the foundation for them to flourish.”
- 1.10 Nevertheless, the provisional law reform proposals that we do make are foundational. They seek to build on existing principles of private personal property law, which will enable the courts to continue to iterate and innovate.
- 1.11 At a glance, our key proposals and provisional conclusions and points for consultation are as follows. We discuss each in more detail in the rest of this summary paper.
- (1) We provisionally propose the explicit recognition of a “third” category of personal property distinct from things in possession and things in action, which would allow for a more nuanced consideration of new, emergent, and idiosyncratic objects of property rights. We label this category “data objects”. We describe two options for the development and implementation of this provisional law reform proposal — iterative, common law reform or (limited) statutory intervention. We outline the potential benefits and drawbacks for each, but do not conclude with a preferred option. Instead, we ask consultees for their views.
 - (2) We provisionally propose certain criteria that a thing must exhibit if it is to fall within our proposed third category of personal property.
 - (3) We provisionally conclude that the factual concept of control (as opposed to the concept of possession) best describes the relationship between data objects and persons.
 - (4) We provisionally conclude that crypto-tokens satisfy our proposed criteria of data objects and are appropriate objects of property rights. We analyse factual transfers of crypto-tokens (as a subset of data objects) and provisionally propose that the rules of derivative transfer of title can be applied to such transfers, including in the context of the unauthorised disposition of a crypto-token.

- (5) We provisionally propose an explicit clarification that the special defence of good faith purchaser for value without notice should apply to crypto-token transactions.
- (6) We provisionally propose statutory law reform clarifying the scope and application of section 53(1)(c) of the Law of Property Act 1925 in connection with certain dealings in specified forms of equitable crypto-token entitlements.
- (7) We provisionally conclude that law reform clarifying and simplifying the apportionment of shortfall losses arising out of commingled crypto-token holdings held on trust by an insolvent custodian would be beneficial.
- (8) We begin to consider whether it would be desirable to develop bespoke statutory provisions designed specifically for collateral arrangements in respect of crypto-tokens, but do not make law reform proposals at this stage.
- (9) We provisionally conclude that, in relation to the tort of conversion, there are arguments in favour of extending conversion (or a conversion-type cause of action) to data objects. However, we acknowledge that this would be a step change for the law, and one which would need further consideration, so do not make law reform proposals at this stage.
- (10) We provisionally conclude that there is an arguable case for law reform to provide courts with the discretion to award a remedy (where traditionally denominated in money) denominated in certain crypto-tokens in appropriate cases. However, we do not make law reform proposals at this stage.
- (11) We ask consultees for their views on the reasoning for our provisional proposals, on the proposals themselves and, in certain cases, on the most appropriate method for implementing such proposals.

We look at each below.

A DISTINCT THIRD CATEGORY OF PERSONAL PROPERTY

Why is there a need for a “third category”?

1.12 The law of England and Wales has traditionally recognised two categories of personal property:

- (1) Things in possession: broadly, any object which the law considers capable of possession. This category includes assets which are tangible, moveable and visible, such as a bag of gold.
- (2) Things in action: traditionally, any personal property that can only be claimed or enforced through legal action or proceedings. Common examples of things in action are debts, rights to sue for breach of contract, and shares in a company. The category of things in action is sometimes given a much broader meaning as a residual class of personal property — it is sometimes regarded as encompassing any personal property that is not a thing in possession.

- 1.13 Digital assets cannot be categorised properly in either of the traditionally recognised categories of things in possession or things in action (in the narrow sense). They are neither tangible things in the normal sense (although they do have a highly distributed tangible existence) and nor are they only claimable or enforceable by legal action or proceedings. Instead, they function more like objects in themselves.
- 1.14 We note that some data objects, such as crypto-tokens, might represent, record, or be linked to other things (including legal rights) which are external to that particular crypto-token and/or crypto-token system. Here, we focus on the crypto-token as an object of property rights in itself, rather than anything to which it may be (purportedly) linked.
- 1.15 In England and Wales and other jurisdictions, courts have become increasingly willing to conclude that certain things (often digital assets) can attract personal property rights, even where the thing in question does not neatly fit within either traditionally recognised category of personal property. The courts have done this, either expressly or impliedly, in respect of, for example, milk quotas, European Union carbon emission allowances, export quotas, waste management licences, and crypto-tokens. Despite these cases, there is no express clarity or confirmation as to whether a third category of personal property beyond things in possession and things in action exists and, if it does, how the parameters of that third category should be defined.
- 1.16 We suggest that explicitly recognising a third category of personal property would be a useful legal development because it would allow for a more nuanced consideration of new, emergent, and idiosyncratic things. It would allow the law to develop by analogy with things in possession or things in action where appropriate, while also recognising that certain things do not fall neatly within either category. A distinct, third category will better allow the law to focus on attributes or characteristics of the things in question, without being fettered by analysis or principles applicable to other objects of personal property rights.
- 1.17 This proposal also aligns with international law reform in this area, notably the work being carried out by the American Law Institute and Uniform Law Commission's Uniform Commercial Code and Emerging Technologies Committee in the United States, and by the International Institute for the Unification of Private Law (UNIDROIT) Digital Assets Working Group. For objects of property rights which are traded on global markets and which have fewer ties to individual jurisdictions, we consider it crucial ultimately to create a consistent global legal framework. We consider that our provisional proposal helps to achieve this.

What things should fall within the third category?

- 1.18 We provisionally propose three criteria that we think should determine which things fall within our proposed third category of personal property. We derive these criteria from an analysis of the legal concept of property, as well as from existing common law reasoning, and academic and market commentary.
- 1.19 In summary, to fall within our proposed third category of personal property, we propose that a thing must:

- (1) be composed of data represented in an electronic medium, including in the form of computer code, electronic, digital or analogue signals;
- (2) exist independently of persons and exist independently of the legal system; and
- (3) be rivalrous.

We also discuss divestibility as a separate common characteristic of data objects, but we do not propose that the characteristic of divestibility should be a gateway criterion.

1.20 We explain each criterion below.

Data represented in an electronic medium

- 1.21 To fall within our third category, the first criterion requires things to be composed of data represented in an electronic medium, for example, in the form of computer code, electronic, digital, or analogue signals.
- 1.22 First, we use this criterion to distinguish those things that can fall within our suggested third category of personal property from things in possession, which are constituted of a collection of physical particles or matter within a defined boundary of three-dimensional space. Such tangible objects are not composed of data represented in an electronic medium, including in the form of computer code, electronic, digital, or analogue signals.
- 1.23 Second, we use this criterion to acknowledge that an important constituent part of data objects is that they have an informational quality and are represented in an electronic medium which, in general, is optimised for processing by computers. The criterion allows us to recognise that the things that fall within our suggested third category are constituted of data that is uniquely instantiated within a particular network or system. We do not use the criterion of intangibility to describe that data because we explicitly recognise that the networks or systems themselves do have a tangible, albeit highly distributed, existence. We think that it is essential to emphasise that it is the unique instantiation of specific data within such systems that allows some digital assets to take on characteristics or attributes that make them function much more like objects than pure information, mere records or data.
- 1.24 This criterion only considers the first part of the issue — that the thing in question must be composed of data represented in an electronic medium, including in the form of computer code, electronic, digital, or analogue signals. This criterion on its own does not, therefore, distinguish data objects from information in a broader sense — that distinguishing role is instead performed by our criterion of rivalrousness.

Existence independent of persons and independent of the legal system

- 1.25 The first element of this criterion is to exclude from our third category things which are not independent of persons. Things which are appropriate objects of property rights are, in general, only those things which are separable from persons. In contrast, things that are inextricably associated with a person, such as (unsevered) body parts, friendships or thoughts are not generally considered to be appropriate objects of property rights.

- 1.26 The existence independent of persons criterion aims to ensure that such things do not fall within our proposed third category.
- 1.27 The second element of this criterion aims to exclude from our third category things in action, which exist — and can be extinguished — by the application of legal rules. By contrast, data objects exist independently of (and cannot be created nor extinguished by) legal rules. Nor are data objects only enforceable by legal action or proceedings. In this sense, they are more analogous to tangible objects, such as cars or coffee mugs, which have an existence independent of the legal system. This part of the criterion also excludes other types of property created by statute, such as intellectual property rights.

Rivalrousness

- 1.28 We consider that a resource is rivalrous if use of the resource by one person necessarily prejudices the ability of others to make equivalent use of it at the same time. For example, if Alice uses a Game Boy to play her Pokémon Red game, Bob cannot use the same Game Boy at the same time. Alice's use of the Game Boy necessarily prejudices Bob's ability to use it.
- 1.29 We argue that rivalrousness is an important feature of things that are appropriate objects of property rights. One of property law's principal functions is to allocate rivalrous objects between persons, and to protect their liberty to use those objects free from the interference of others. In a world without property law, a person's liberty to make use of a rivalrous resource would effectively depend in large part upon the extent to which they could physically keep others away from it. Few would be secure in their property rights, and security would likely come at the cost of use.
- 1.30 In the consultation paper we discuss in further detail how the concept of rivalrousness is related to the excludability of an object of property rights. We also consider how the concepts of rivalrousness and excludability could be thought about in the context of dynamic socio-technical systems, such as crypto-token systems.

Divestibility

- 1.31 Appropriate objects of property rights are, in general, divested on transfer. This means that, as a matter of fact, a transfer of the object must entail the transferor being deprived of it. In other words, when Alice transfers the thing to Bob, Alice must no longer have the thing. For physical objects, this is inherent in their material nature. For data objects, this normally will be a consequence of their technological design.
- 1.32 There are two related but distinct components of divestibility:
- (1) that the thing is capable of being removed from the transferor at all; and
 - (2) that the thing is fully removed from the transferor, because it has an intrinsic limit on its capacity to be used in the same way by more than one person at the same time.
- 1.33 We think that a thing's divestibility is a useful indicator of whether it will meet the other criteria and therefore whether it would be an appropriate object of property rights as a data object. However, our current view is that divestibility should not be a standalone

criterion. A principal reason for this is to preserve flexibility within the law. We consider that this will allow the law, where appropriate, to characterise certain digital assets (including crypto-tokens) as data objects, even if they have technical features which limit or remove their transferability and/or their divestibility. We discuss examples of these emergent types of crypto-token in more detail in the consultation paper.

Implementation of law reform relating to our criteria

- 1.34 We ask consultees whether the explicit recognition of the existence of a distinct third category of personal property and the criteria we propose would be best achieved by iterative common law reform or (limited) statutory reform. Regardless of the method of recognition of a third category, we consider that the detailed development and application of our proposed criteria should be left to the common law.

CRYPTO-TOKENS

What are “crypto-tokens”?

- 1.35 In short, crypto-tokens are constituted of data strings, or more accurately, data structures — sets of linked or associated data. However, that data structure only achieves functionality as a result of, and within, a particular actively operated crypto-token system. On its own, neither the data structure that constitutes the crypto-token nor the crypto-token system as an inert abstract entity can achieve this functionality. In other words, a data structure becomes a functional data structure by its “instantiation” within a particular active crypto-token system maintained and operated by a network of users.
- 1.36 Based on the above analysis, we suggest a tentative short-form description for the term crypto-token, along with accompanying commentary. This is set out in full at Appendix 4 to the consultation paper. We do not intend this description to be either exhaustive or determinative. Nevertheless, we use this description as a reference point to inform our use of the term crypto-token in the rest of the consultation paper. More widely, we intend the description to be a starting point for discussion with consultees and market participants, and we welcome and encourage their comments and input. For these purposes, the description has also been uploaded to GitHub at <https://github.com/LawCommissionofEnglandandWales/Crypto-token-definition> where consultees can comment on the description directly.

Crypto-tokens as data objects

- 1.37 We consider that the advancement of crypto-tokens, crypto-token systems and related technology have the potential to expand the process of fixing and deploying capital. Crypto-tokens and crypto-token systems potentially offer an alternative means by which persons can convert their resources and products into fungible, liquid forms that can be differentiated, combined, divided, and invested to produce surplus value. In turn, this could facilitate more distributed and equitable access to property rights and to the legal recognition and protection they provide. This would allow a more diverse range of people, groups, and companies to interact online and to benefit more widely from their own productivity. Crypto-tokens in particular enhance this process by enabling alternative options for communication of value via electronic means, which broadens the scope of, and access to, markets and increases the transferability, composability and liquidity of things of value.

- 1.38 We provisionally conclude that crypto-tokens are, in general, capable of satisfying our proposed criteria and so are data objects within our proposed third category of personal property. We also explain the defining features of crypto-tokens that distinguish them from both other digital assets that we consider do not satisfy our proposed criteria, and from pure information.
- 1.39 It is important to note, however, that the existence of property rights in relation to a thing does not affect the existence of the thing itself. Nor does the fact that property rights can relate to a crypto-token tell us anything about the “quality”, “strength”, “soundness” or “underlying value” of that particular crypto-token. That is likely to depend much more heavily on the crypto-token’s technical implementation and its wider social acceptance and use. This is the same for all things that can attract property rights — some things will have a greater market value or will be more useful for certain purposes than others. For example, the many items in a car boot sale might all be capable of attracting personal property rights, but not all of them will be useful, achieve their purpose, work properly, or be valued by the market.

CONSEQUENTIAL LEGAL DEVELOPMENTS

- 1.40 Having made and explained our central proposal we then discuss other areas in which further legal certainty might be achieved through law reform. In general, we illustrate our proposals by reference to existing market practice relating to crypto-tokens.

Control as a factual concept applicable to data objects

- 1.41 A foundational principle of personal property law is that the holder and the owner of an object might not be the same person. In other words, the person who happens to have or to hold an object at a particular moment in time may or may not be its legal owner. For tangible objects, the law employs the concept of possession to accommodate this notion of “holding” or “having”. Although possession is a complex concept, the factual notion of possession can be reduced to having the requisite degree of factual custody and control of the (tangible) thing, along with an intention to exercise that custody and control.
- 1.42 We provisionally propose that the concept of possession should not apply to data objects, and argue that the factual concept of control, though in many ways equivalent to the concept of possession, is the more appropriate concept to apply to data objects.
- 1.43 Rather than using the factual concept of control as a definitional characteristic of data objects, we instead consider how it might best be thought of as an important element of the way in which persons can interact with the object.
- 1.44 Our preferred concept of control can be understood as an analogue to the common law concept of possession, in that it is a factual relationship that a person can have with a thing, albeit without requiring the element of intention. A useful rule of thumb may therefore be that a person in control of a data object enjoys a level of control over that asset that would satisfy the control element of possession, were the object in question tangible. We consider that it would be possible to set out the factual concept of control in legislation. However, our initial view is that, on balance, it is not necessary or appropriate to do so. Instead, we suggest that the common law will work as the

principal driving force in developing an accurate and nuanced concept of control that can apply to data objects.

- 1.45 We do, however, make an additional proposal on how to facilitate the development of the concept of control, as applicable to data objects, under the law of England and Wales. The courts could look to a panel of industry experts, legal practitioners, academics, and judges to provide non-binding guidance on the complex and evolving issues relating to control (and other issues involving data objects and crypto-tokens more broadly).
- 1.46 We consider that this approach strikes the best balance between creating legal certainty for the market and maintaining the dynamism and flexibility that characterises the law of England and Wales in respect of the facilitation and development of novel technology.
- 1.47 We consider that the broad concept of factual control might best be utilised as an important constituent element of various complex legal mechanisms and arrangements that can apply to crypto-tokens. Those complex legal mechanisms and arrangements include the legal analysis of transfers of title, custody arrangements, collateral arrangements, and the operation of causes of action and remedies. In other words, the concept of control alone might not be sufficiently nuanced, refined, or market-specific to adequately deal with these complex legal arrangements; it could, instead, form a part of how those arrangements could be thought about or structured.

Factual transfers of crypto-tokens

- 1.48 When a tangible object is handed from one person to another, that object, in general, remains unchanged. What that transfer means as a matter of law will depend on the circumstances: the recipient may become the legal owner, or their interest may be a lesser one with someone else remaining the owner.
- 1.49 The proper factual characterisation of transfers of crypto-tokens is less straightforward. It is undoubtedly commonplace for participants in crypto-token systems to refer to and (at a non-technical level) understand such transfers as being analogous to the delivery of a tangible, physical object. However, we think that a deeper, more bespoke evaluation of crypto-token transactions suggests that this is not an accurate characterisation of their nature and operation. The way in which crypto-tokens are transferred as a matter of fact is idiosyncratic. The mechanism for the transfer of crypto-tokens as a matter of law might therefore need to recognise this, and be different from the methods and instruments of transfer used to transfer legal title either to tangible things, or to shares, securities and other registered intangible assets.
- 1.50 We consider the factual consequences of a transfer operation that effects a state change within such crypto-token systems. We make three observations:
 - (1) such a transfer operation will typically involve the replacing, modifying, destroying, cancelling, or eliminating of a pre-transfer crypto-token and the resulting and corresponding causal creation of a new, modified or causally-related crypto-token;

- (2) such a transfer operation will typically involve the imposition or creation of varying degrees of technical encumbrances in respect of the causally-related crypto-token, which will typically amount to a change of control as between the pre-transfer crypto-token and the causally-related crypto-token; and
- (3) such a transfer operation will typically result in a change of state of the distributed ledger or structured record in accordance with the protocol rules of the crypto-token system.

1.51 To illustrate this, we consider the factual nature of crypto-token transactions by reference to UTXO-based crypto-token systems such as Bitcoin, and Account-based crypto-token systems such as Ethereum. Additionally, we consider crypto-tokens constituted by smart contracts deployed to crypto-token systems, including by reference to both “fungible” and “non-fungible” crypto-token standards.

Legal transfers of crypto-tokens and the special defence of good faith purchaser for value without notice

1.52 Having considered the factual way in which crypto-tokens transfer, we discuss issues relating to the legal consequences of a transfer of a crypto-token by a transfer operation that effects a state change, a change of control, and the derivative transfer of title.

Legal title and the state of the distributed ledger or structured record

1.53 We argue that the state of the distributed ledger or structured record should not necessarily be regarded as a definitive record of (superior) legal title to a crypto-token. The state of the distributed ledger or structured record may provide a definitive record of the links between transactions within the crypto-token system, but this provides a factual, as opposed to legal, account of the world. The legal system is external to a crypto-token system: the state of the crypto-token system is not therefore constitutive of a participant’s legal title to any particular crypto-token. The state of the crypto-token system merely records the factual situation. That is, a transfer operation that effects a state change will typically result in the imposition or creation of varying degrees of technical encumbrances in respect of the crypto-token (most commonly, the association of the crypto-token with the receiving public key address).

Acquisition of title

- 1.54 When a person acquires a legal interest in an object of property rights, this may be either an independent (new or original) interest, or a derivative one: that is, one which is dependent or derivative on the (partial) transfer of a pre-existing legal interest.
- 1.55 The majority of legal interests that persons acquire in objects of property rights are derivative. That is, a person will receive by transfer the pre-existing interest of another (for example, through a sale or by taking delivery of a gift), or acquire some lesser interest, carved out of the better interest of another (as when a person becomes a pledgee).
- 1.56 We provisionally conclude that the existing legal rules on derivative transfers of title can apply to crypto-tokens within crypto-token systems, notwithstanding that a transfer operation effecting a state change will typically result in the causal creation of a new,

modified or causally-related crypto-token. We consider how the rules of derivative transfer of title can be applied to such transfers, including in the context of the unauthorised disposition of a crypto-token.

- 1.57 We provisionally propose an explicit clarification that the special defence of good faith purchaser for value without notice should apply to crypto-token transactions.

The role of control in legal transfers of crypto-tokens

- 1.58 We consider that the concept of control will be important in the context of crypto-token transfers in three related, but distinct ways:

- (1) as a constituent part of a transfer operation that effects a state change;
- (2) on the assumption that the rules of derivative transfer of title can be applied to transfers of crypto-tokens, for situations in which (superior) legal title to a crypto-token is separated from the factual control of a crypto-token; and
- (3) for the purposes of applying rules relating to priority of interests, particularly in the context of disputes over title and for the purposes of collateral arrangements.

- 1.59 In other words, we consider that control plays an important (although not determinative) role in the overall analysis as to the legal effect of a transfer of a crypto-token.

- 1.60 In the consultation paper, we discuss possible analogies with existing legal transfer methods of other things to help explain the differences between such transfers and those of crypto-tokens, such as sale, assignment, inter-bank payment instruction and delivery. While analogies are, to some extent helpful as analytical or explanatory tools, we consider that none is perfect. We also consider that any single analogy is likely to break down as it is stretched to encompass more complex crypto-tokens, crypto-token systems, and implementations.

Non-fungible tokens (NFTs)

- 1.61 We briefly consider non-fungible tokens (“NFTs”). From a private property law perspective, NFTs raise many similar issues to other crypto-tokens. However, given the increasing interest in the NFT market and their potential as a novel and flexible legal structuring tool, in the consultation paper we consider NFTs in more detail.

- 1.62 An NFT (like other crypto-tokens, as discussed above) can become a powerful technological structure that can be used to link to — and to transfer — other legal rights to things external to the NFT itself or the crypto-token system in which it is instantiated. NFTs can potentially be used, for example, to:

- (1) confer intellectual property rights on the holder of the NFT, or grant a licence to use certain intellectual property;
- (2) act as evidence of legal title to a tangible or intangible thing external to the crypto-token system, such as a gold bar, a share security or a debt security; or

- (3) embody intangible rights such that the holder of the NFT can claim performance of the obligations recorded by the NFT.
- 1.63 However, this is not straightforward. An NFT may not in fact, or as a matter of law, confer these rights and this can be a source of confusion for buyers of NFTs.
- 1.64 It seems likely that NFTs will play an increasingly important role in modern online interactions. In particular, we think that NFTs will take a leading, exploratory role in establishing property rights in data objects in mainstream and retail use. Beyond that, perhaps the most radical legal development that NFTs could bring about is a change in how the market, market participants, and the legal system operate and transact with respect to intellectual property rights.
- 1.65 Our view is that the correct approach is to begin with the understanding that an NFT is a crypto-token that is capable of attracting personal property rights in itself. From this point, one can work outward to find the limits of those rights and where, for instance, they overlap or conflict with intellectual property rights or other contractual rights. We do not make any law reform proposals in relation to NFTs specifically.

Links between crypto-tokens and other things

- 1.66 Many crypto-tokens are not linked to anything external to the crypto-token system in which they are instantiated. In such situations, the token itself constitutes the asset of interest or value. Within the system they represent only a quantity of a notional unit of account (such as bitcoin or ether) which is intrinsic or “endogenous” to its respective crypto-token system.
- 1.67 In contrast, some crypto-tokens are used either to represent something external to the crypto-token system or are in some way linked to another thing — normally something external to the crypto-token system. For example, a crypto-token might purport to link to an intangible thing (like an equity or debt security), or a legal right against an obligor (like a contractual debt) or to a tangible thing (like goods or land). We also note that some crypto-tokens can be linked to other crypto-tokens which may be instantiated within the same crypto-token system (for example, fractional ERC-20 tokens issued in connection with a locked NFT or a basket of other crypto-tokens).
- 1.68 There are multiple different ways to constitute a link between a crypto-token and another thing. The legal consequences of that link, and strength of the link, are likely to depend on several factors, including market practice, the evolution of the common law, and any contractual arrangements related to that record. Crypto-tokens might be used to create registers and/or records (of transactions or of title to other things, such as diamonds or bottles of wine). In this scenario, we argue that the link between a given crypto-token and the linked external thing would likely be evidential only, and the crypto-token itself would confer no additional legal rights to its holder. A crypto-token-based register could also be established by legislation, which would determine the strength of the evidentiary power of the record and any transfer formalities.
- 1.69 We consider that the law should recognise and give effect to the freedom of commercial parties to devise bespoke contractual arrangements. This includes systems in which the holder of a given crypto-token (as recorded by the state of the crypto-token system) is regarded as having legal title to the linked thing external to the

crypto-token system. For example, the terms of a debt security could provide that the obligation to pay is discharged only if it is made to the holder of the relevant linked crypto-token and provide for appropriate restrictions on assignment to ensure that the debt security successfully remains linked to the crypto-token.

- 1.70 We consider that such arrangements may be more challenging to implement successfully where the subject of the link is a tangible thing (such as a gold bar). This is because it is more difficult legally to prevent the transfer of the external, tangible thing *separately* to a (legal or factual) transfer of the crypto-token. Nonetheless, there are ways in which the link between the crypto-token and the tangible thing could practically be strengthened. Such steps might include, for instance, requiring the object to be stored in a secure location by a trusted custodian.
- 1.71 Finally, we consider that it may be possible to draw analogies between crypto-tokens linked to things external to a crypto-token system and “documentary intangibles”. These are, broadly speaking, documents which are said to embody, rather than merely evidence, a right to claim performance of the obligations recorded therein. The right can be transferred by transferring physical possession of the (paper) document. By analogy with documentary intangibles, a crypto-token could be treated as the “document”, with the crypto-token being taken to “embody” the rights recorded by it. This would theoretically be a very strong link, with the crypto-token being inseparable from the recorded obligations and corresponding rights it embodies. However, there are difficulties with applying these concepts to crypto-tokens, including the fact that documentary intangibles rely on the concept of possession.
- 1.72 In general, we think that the flexibility for market participants to structure their arrangements according to their business needs and preferences is characteristic of the law of England and Wales. We also expect that over time the legal mechanisms for constituting links will gradually become more uniform as the crypto-token markets develop. For this reason, we provisionally propose that no law reform is necessary or desirable further to clarify or specify the method of constituting a link between a crypto-token and something else or the legal effects of such a link.

Custody arrangements in respect of crypto-tokens

- 1.73 Owners of crypto-tokens routinely deploy their objects of property rights — their crypto-tokens — in facilities and arrangements in which they relinquish to another party a degree of direct control over the crypto-token. This might be for a variety of purposes, including improved security over their holdings; access to specific trading markets; lower cost and/or more efficient transaction execution and settlement systems; yield- or revenue-generating opportunities; and access to different token functionalities.
- 1.74 In addition, some crypto-tokens derive their market value or functionality from other “linked” crypto-tokens that are subject to (and may be “locked” or “encumbered” within) certain facilities and/or arrangements. In many cases, their owners do not simultaneously have direct control over the “locking” or “encumbering” facilities or arrangements, which are often administered, provided and/or controlled by other persons.

- 1.75 Crypto-token markets and market participants frequently use the term custody to describe a number of different kinds of facility, arrangement or relationship. A custodian can be characterised as a person holding crypto-tokens on behalf of, or for the account of other persons. In this context, “holding” refers to a custodian having the capacity to exercise, or to coordinate or direct, the exercise of “factual control”. In this respect, we emphasise that the term custody simply denotes a factual arrangement and that factual arrangement will not necessarily give rise to a uniform set of legal (or regulatory) consequences.
- 1.76 Not all providers of services relating to the safekeeping of crypto-tokens necessarily constitute, nor do they hold themselves out as being, custodians. Whether such arrangements are in fact custody arrangements in the full or “direct” sense (in which the custodian can exercise both positive and negative control), notwithstanding any disclaimers to the contrary, is likely to be a matter of construction of the particular legal relationships in question.
- 1.77 There are a range of crypto-token–specific holding structures under which a custody relationship could arise. These include intermediary custodians, custodial exchanges and “lock and mint” facilities such as bridges, wrapping protocols and NFT fractionalisation platforms.
- 1.78 Custody arrangements can be based on outright transfer of title to the custodian, or on arrangements based on either contract or trust. In the consultation paper, we compare the rights and responsibilities for participants and providers arising under each.
- 1.79 We provisionally conclude against law reform amounting to a default rule of interpretation that crypto-token direct custody arrangements take effect as trusts in the absence of clear evidence to the contrary.

Law reform proposals for crypto-token custody relationships

- 1.80 We also consider some areas for specific, targeted law reform relating to crypto-token custody arrangements and make two provisional proposals in this respect.

Section 53(1)(c) of the Law of Property Act 1925

- 1.81 Section 53(1)(c) of the Law of Property Act 1925 requires that dispositions of equitable interests or trust subsisting at the time of disposition must be in writing and signed by (or by a properly authorised agent of) the person making the disposition.
- 1.82 We consider the application of this section to transfers of equitable interests in crypto-tokens — both transfers of interests represented by book entries in the ledgers of intermediaries and transfers of on-chain tokenised equitable interests.
- 1.83 There are a range of possible and, in our view, strong arguments for asserting that dealings in book entry and tokenised equitable entitlements to crypto-tokens fall outside the scope of section 53(1)(c). Additionally, or in the alternative, there are strong arguments that any such dealings are in fact carried out by forms of electronic communication and authentication that satisfy the formality requirements of section 53(1)(c).

- 1.84 Notwithstanding this conclusion, we provisionally propose statutory law reform clarifying the scope and application of section 53(1)(c) in connection with certain dealings in specified forms of equitable crypto-token entitlements.
- 1.85 We provisionally propose an express exclusion from section 53(1)(c) of qualifying outright transfers of equitable entitlements to crypto-tokens represented by entries recorded in electronic ledger(s), that are, or are capable of being, subject to centralised discretionary control by a direct custodian. The exclusion would therefore cover entitlements recorded not only in internal electronic ledgers but also external ledgers (maintained for example, in permissioned networks and/or via upgradable smart contracts). It would apply where a professional custodian has the discretionary capacity to initiate, prevent, reverse, or rectify changes in entitlement balances. We propose that such an exception should apply to the extent that they are not already out of scope (whether on the basis of the arguments we set out in the consultation paper or otherwise).
- 1.86 By contrast, we think that a different approach is appropriate for equitable entitlements represented by crypto-tokens not recorded in account ledgers subject to professional, centralised discretionary control, where the underlying or linked crypto-tokens are held by a crypto-token custodian. Dealings in such entitlement-linked tokens should remain subject to section 53(1)(c) LPA 1925. However, we consider that the records and authentication processes maintained and utilised natively by the network in which such tokens are instantiated are already (or if not, should be) capable of satisfying in full the provision's writing and signature requirements. We consider that any perceived ambiguity in this respect could be eliminated by express statutory recognition that such records and authentication processes satisfy the formalities requirements.
- 1.87 We set out different options for how our proposals could be implemented.

Allocation of shortfall losses arising in connection with comingled unallocated accounts or pools of crypto-tokens held on trust

- 1.88 A shortfall is a situation in which a custodian does not hold or have access to sufficient crypto-tokens or crypto-token entitlements to meet the aggregate claims of its users or customers. Shortfalls can arise unintentionally (on the part of the custodian), for example, as a result of a fraud or hack, or because of an administrative or operational error. They can also happen as a result of activity consistent with the proper operation of the custody facility, such as following the exercise of a right of use over and subsequent lending of custodied crypto-tokens, either to a third party or through a DeFi platform.
- 1.89 If a shortfall occurs and the custodian enters insolvency proceedings, then the allocation of losses will again be dependent on the legal nature of the custody facility and the rights granted to users under it. If the facility is purely contractual, then users will have no proprietary rights of recourse to any specific crypto-tokens retained by the insolvent estate but will instead rank as general unsecured creditors.
- 1.90 For trust-based custody facilities, where crypto-tokens or crypto-token entitlements are held on an individually-allocated basis for each user, then a loss affecting any particular holding will be borne entirely by the user that is the beneficial owner of that holding.

- 1.91 However, where crypto-tokens or crypto-token entitlements are subject to a trust and held on an unallocated commingled basis for the benefit of multiple parties, there is some uncertainty as to the correct approach to apportioning any shortfall losses among such parties under the law of England and Wales.
- 1.92 We provisionally conclude that law reform clarifying and simplifying the apportionment of shortfall losses arising out of commingled crypto-token holdings held on trust by an insolvent custodian would be beneficial. We think that targeted statutory intervention would provide the necessary certainty to support the development of innovative, efficient, and operationally robust custody infrastructure for crypto-token markets to the extent subject to the (insolvency) law of England and Wales. We set out some potential options for the implementation of such law reform in detail in the consultation paper.

Bailment

- 1.93 We do not believe that there is, at present, a need for law reform extending the concept of bailment to crypto-tokens. We provisionally conclude that the private law concepts of trusts and contract already provide a range of structuring options for market participants.

Collateral arrangements in respect of crypto-tokens

- 1.94 As the value of various crypto-tokens has risen in recent years there has been increased demand from market participants for services and applications that facilitate a broader range of methods for extracting value from crypto-token holdings that do not involve their outright sale. This has led to the emergence of businesses and platforms that enable the extension of credit secured or covered by crypto-token collateral arrangements.
- 1.95 At a high level, a collateral arrangement involves granting recourse to certain specified property or pools of property to secure or otherwise cover a payment obligation or the performance of an undertaking. Collateral arrangements in crypto-token markets can help to extract value from otherwise underutilised assets. Arguably, they also have the potential to support increased market efficiency and stability by improving liquidity and promoting more effective management of counterparty credit risk. However, to achieve this potential it is important that the parties to these arrangements have confidence in their legal reliability and predictability.
- 1.96 Crypto-token collateral arrangements can take a wide range of forms, both in relation to the commercial terms on which financing can be obtained and the practical arrangements under which crypto-token collateral is controlled.
- 1.97 For example, we consider that collateral rights can already be granted in respect of crypto-tokens under title-transfer arrangements and in the form of non-possessory securities such as mortgage or charge.
- 1.98 Because crypto-tokens cannot be possessed, they cannot be the subject of possessory security arrangements such as pledge. We provisionally conclude that allowing for possessory security arrangements in respect of crypto-tokens would be of limited practical benefit and could give rise to problems. We do not therefore propose

law reform to allow for data objects to be the subject of possessory securities, or analogous security arrangements based on a transfer of control.

1.99 We then consider the extent to which the current statutory scheme for financial collateral arrangements (The Financial Collateral Arrangements (No 2) Regulations (2003, SI 2003 No 3226) could or should be applied effectively to crypto-tokens. We provisionally conclude that certain forms of crypto-tokens may fall within the definition of “financial collateral” used in the FCARs, particularly intermediated account-based entitlements to tokens denominated in state-issued currencies and tokenised securities. However, there is considerable uncertainty as to the definition’s application to different crypto-token forms and holding structures.

1.100 The FCARs are widely regarded as problematic even in their application to the conventional wholesale financial markets that were the primary driver for their original implementation. Concerns about the FCARs’ capacity, as currently drafted, to accommodate various market standard collateral management practices has prompted numerous calls for reform. These deficiencies will also raise difficulties in the context of crypto-token collateral facilities. We therefore provisionally conclude that an extension of the FCARs formally and more comprehensively to encompass crypto-token collateral arrangements would not be appropriate.

1.101 Instead, we begin to consider whether it would be desirable to develop bespoke statutory provisions designed specifically for collateral arrangements in respect of crypto-tokens. Such a legal framework for crypto-token collateral arrangements could be bifurcated, such that it consisted of two rules-based frameworks that would be capable of iterative development in parallel:

- (1) The first framework could apply to intermediated or “off-chain, custodial account based” crypto-token collateral arrangements where the crypto-token entitlements were represented by book entries in an internal register or an internal account ledger.
- (2) A separate parallel framework could then be developed for “on chain” crypto-token collateral arrangements that rely on technical features of (or of platforms or protocols built on) the network in which the relevant crypto-token collateral is instantiated.

1.102 However, we acknowledge that this would be a significant piece of work which is beyond the scope of the consultation paper. Rather than make provisional proposals for this latter piece of work, we seek only to highlight the issues that would have to be considered.

Causes of action and remedies

1.103 How does the law currently protect personal property rights in relation to different objects, and can these concepts neatly be applied to data objects (and crypto-tokens in particular)? We consider the application of several causes of action and remedies in the context of data objects, together with their associated practical difficulties.

1.104 We initially consider the following issues:

- (1) How the law on breach of contract and associated remedies might be applied to data objects.
- (2) How the law on vitiating factors such as mistake and misrepresentation might be applied to data objects, and the remedies that might be awarded if a contract involving a data object is void or set aside because of a vitiating factor.
- (3) How the law on following and tracing might be applied to data objects.
- (4) How the law on breach of trust and other equitable wrongs might be applied to data objects.
- (5) How the law on proprietary restitutionary claims in equity and at law might be applied to data objects. How the law on unjust enrichment might be applied to data objects.

1.105 In relation to these issues, we consider that much of the current law concerning causes of action and remedies can be applied to data objects in the same way as it is to other types of (non-monetary) objects of property rights. We provisionally conclude that there is no need for bespoke rules or reform. Instead, what is required is that the courts recognise the nuances or idiosyncrasies of data objects, and apply existing legal principles to such objects as far as possible.

1.106 However, our views in relation to the following issues differ somewhat. We further consider:

- (1) How the law on the tort of conversion might be extended to data objects.
- (2) How the law on freezing orders and injunctions might be applied to data objects.
- (3) How the law on enforcement might be applied to data objects.
- (4) Whether awards can be denominated in crypto-tokens.

The tort of conversion

1.107 When a person's tangible property is interfered with by another, they can sue in the tort of conversion. This is the law of England and Wales' primary means of protecting interests in tangible personal property. It is a strict liability tort, with limited defences. The standard remedy for conversion is damages, but an order for delivery up of the goods can also be made.

1.108 Under the law of England and Wales, the settled position is that conversion lies only in respect of dealings with tangible objects of personal property rights. It has been held that incorporeal property, copyright, information, and documents stored electronically on a computer hard drive, cannot be the subject matter of this tort.

1.109 Nevertheless, we think that there are arguments in favour of extending conversion (or a conversion-type cause of action) to data objects. However, we acknowledge that this would be a step change for the law, and one which requires further consideration. The most compelling argument in favour of extending conversion is that such a reform

would ensure that (at least insofar as data objects are concerned) legal protection is afforded to them in the same way as for tangible property, where the same interests are at stake. However, any extension is likely to give rise to various questions, including how to determine the equivalent of possession in the digital context, and what the necessary level of “interference” for a claim in conversion in relation to a data object is.

Proprietary injunctions and freezing orders

1.110 In relation to proprietary injunctions and freezing orders, we think that there is sufficient existing judicial authority for the conclusion that crypto-tokens can be the subject matter of proprietary injunctions and freezing orders on the basis that they are objects of property rights. We see no reason why other types of data objects, as distinct objects of property rights, could not similarly form the subject matter of such awards. As such, we provisionally conclude that no law reform is required to existing principles of injunctive relief to accommodate specifically any particular types of data object.

Enforcement

1.111 In cases where an unsuccessful defendant does not voluntarily comply with a court order or judgment, the successful claimant will be required to take steps to enforce their judgment.

1.112 While we do not presently propose any changes in this area, we are interested to obtain the general views of consultees as to whether existing methods of enforcement (and ancillary mechanisms) are satisfactory in the context of data objects and, if not, how they could usefully be developed.

“Monetary” awards denominated in (a certain type of) crypto-tokens

1.113 We consider whether the courts should be given the discretion to make monetary awards denominated in (a certain type of) crypto-token, prior to the point (if any) that they are recognised as or analogous to money. We recognise that it is arguably quite a radical step to issue and enforce “monetary” awards denominated in (what is, at least for the time being still likely to be treated as) a mere commodity. There are, however, several policy arguments which could be said to favour such a reform.

1.114 First, we think that (by analogy to the awards expressed in a foreign currency), denominating awards in crypto-tokens might provide a better reflection of parties’ losses.

1.115 Second, it appears to us that there is no compelling conceptual reason why secondary obligations ought always to be enforced as sums of money (as demonstrated by the fact that parties may explicitly agree a specific obligation to transfer property on breach, which could be specifically enforced by the courts).

1.116 Third, we consider that many of the key practical objections which might arise in relation to other commodities (such as fungibility, liquidity, and storage/delivery costs) do not apply in relation to (certain types of) crypto-tokens. We think that such a reform would be consistent with the commercial expectations of relevant contracting parties.