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# A guide to non-fungible tokens (NFTs).

An introduction to the legal and commercial implications of NFTs looking at **intellectual property**, **regulation**, **smart contracts**, **consumer rights** and **litigation**.

The internet continues to expand its prominence in everyday life, with the most recent evolution of this being the so-called “Web 3.0”, a new iteration of the internet which is based on blockchain technology.

Out of this technology, a new class of assets has begun to emerge, the “cryptoasset” or “digital asset”. As of yet, there are no fixed definitions for this emerging asset class due to its rapid development. The Law Commission has identified five sub-categories of digital asset, with “crypto-tokens” being the only one it recommends as constituting a new form of personal property right.

Nonfungible tokens (NFTs) are a type of “crypto-token” as categorised by the Law Commission but may also be referred to as “cryptoassets” or “digital assets” due to the flexibility of these terms. These new assets boomed in popularity in 2021.

This short guide is intended as an introduction to NFTs, with a background to the technology. It examines the legal and commercial implications of NFTs, dealing with intellectual property (IP) issues, regulation, smart contracts and consumer rights. It also addresses points to be considered when encountering contentious matters involving NFTs. Regulation of NFTs in gambling is not covered, and nor is taxation of NFTs.

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# What are NFTs?

**Non-fungible tokens** are a digital representation of ownership recorded on a blockchain.

A blockchain is a decentralised database, and is best understood as a public, digital ledger of transactions.

Blockchains use distributed ledger technology, which means the ledger process is carried out autonomously and cannot be readily interfered with, so transactions are indelible and easily verifiable.

Blockchains were originally used for currency-based transactions, using cryptocurrencies, but have now expanded to incorporate new kinds of cryptoasset, such as NFTs.

To understand what an NFT is, the terminology can be broken down as follows:

- **Non-fungible:** non-fungible means non-interchangeable, so the asset cannot be swapped or exchanged for another asset of the same kind. For example, fiat currency is a fungible asset, as one coin or note can be swapped for another of the same kind and value. In contrast, real estate is a non-fungible asset, as clearly one house cannot be swapped for another of the same value given that each possesses unique characteristics which have significance above and beyond monetary value.
- **Token:** a token is a piece of code forming part of a unit, or “block”, on the blockchain.

There are a number of blockchains that support NFT technology, the most well-known being Ethereum. The vast majority of NFTs are therefore based on the Ethereum blockchain, although this may well change in the future given the developing range of rival blockchains such as Solana, Cardano, Tezos and Polkadot. On the Ethereum blockchain, fungible and non-fungible tokens are distinguished by the use of different smart contract standards underlying each type of token.

# Technology of NFTs

## Constituent parts of an NFT

**The concept of an NFT as a non-interchangeable unit on the blockchain does not have obvious value, so why do people want to create, sell and buy them?**

An NFT holds value when it is used as a digital representation of ownership of underlying rights or assets. It is possible to create an NFT that is simply a unit on the blockchain and does not link to anything further. However, it is this ability of an NFT to be linked to a variety of rights and assets which gives them their significance. Therefore, in the remainder of this note when referring to an NFT, we do so on the presumption of its connection to certain external rights or assets.

An NFT therefore consists of the underlying asset, data and metadata.

To understand why NFTs have value, it is important to understand the difference between these three elements:

- The underlying asset holds the value. This asset could take any number of physical or digital forms, see further discussion in this paragraph below.
- The data is the piece of information itself, in this case the “token” or code on the blockchain. By analogy, a file on a computer is “data”. In an NFT, this is the representation or certification of ownership.
- Metadata is the description of this data. To follow the analogy that a file on a computer is data, if you right-click on any computer file, you can see a description of the file type, location, size and content: this is the metadata of the computer file. In an NFT, this describes and links to the underlying asset.

The data is the representation of ownership, but the metadata describes the underlying asset, and therefore it is through the metadata that the value of the underlying asset is attributed to the data, giving the NFT, as a whole, value.

The metadata is referenced by a cryptographically uniform resource identifier (URI) within the smart contract code of an NFT. For example, the Ethereum token standard smart contract for NFTs, ERC-721, contains a specific string of code (the URI) which references the metadata associated with the NFT and the associated asset. ERC-721 smart contracts link to metadata in a JavaScript Object Notation (JSON) format. The URI will specify a JSON file. What exactly the JSON file, or other metadata file, will contain depends on the form of the underlying asset itself and the choices made when minting the NFT.

The underlying asset could take the form of a:

- **Physical asset:** for example, a painting or pair of trainers. In this instance, the NFT would serve as a certificate of ownership and authenticity for that physical asset. In recent times, a number of artworks have been sold with corresponding NFTs, but the technology has also been used in other spheres, such as gaming and fashion, where NFTs have been linked to merchandise or clothing items. Often the metadata will contain or link to a copy of a visual representation of the physical asset, but the terms of the smart contract may also attempt to refer to or transfer ownership of the physical asset.
- **Digital native metadata file of the work:** a metadata file containing a digital asset, for example a digitally created artwork.
- **Digital copy of a physical work metadata file:** a metadata file containing a copy of a physical asset, for example a scan of a photograph.
- **Linked digital copy:** a metadata file containing a link to a site hosting a digital copy of a digital asset, for example a digitally created artwork.
- **Linked digital copy of physical work:** a metadata file containing a link to a site hosting a digital copy of a visual representation of a physical asset, for example, a scan of a photograph.
- **Blockchain embedded file:** certain very small files can be incorporated into the blockchain code themselves (as opposed to being contained in the metadata), but this is rare as it increases “gas” fees

# Creation of an NFT

**Most NFTs are created, or “minted”, using a platform which facilitates the creation of NFTs in a user-friendly way by handling the technical side (such as coding of the smart contract and implementation on the blockchain).**

Examples of platforms that allow the minting of NFTs include Rarible and OpenSea. Most of these use the ERC-721 smart contract standard for the Ethereum blockchain.

The downside of this is that it is often a “one size fits all” approach, taking control away from the creator. Therefore, many high-value NFTs have their own bespoke smart contracts, requiring technical expertise and customised development.

Regardless of the approach used, the key elements of the NFT need to be identified. This will include the name of the NFT, its description, its supply (for the asset to be non-fungible, the supply needs to be “one”, meaning there can only be one unique copy) as well as the underlying asset or contents. It is important to note that there is a distinction to be drawn between a “minter” of an NFT and the “creator” of the underlying asset, and care should be taken when assessing IP rights in the asset that the NFT represents.

## Buying & Selling an NFT

**Once created, an NFT can be bought and sold in the same way as any other asset.**

While some sales take place privately, or by traditional auction, the majority are sold using an online exchange. A lot of these platforms also facilitate the minting of NFTs, so creation and listing for sale can be part of the same process.

The buying and selling of NFTs on online platforms typically take place either at a fixed price, by buyers making offers to the seller for them to consider, or by way of a timed auction allowing multiple bidders to submit offers.

To buy or sell an NFT, it is essential to have a crypto wallet. A crypto wallet is a storage facility. The wallet does not store the NFT itself, as this exists on the blockchain, but instead stores the private “key” to the NFT. This is an alphanumeric password which stores the address of the NFT on the blockchain and allows the owner to sign transactions in relation to the NFT, and therefore control it.

Every transaction on the blockchain attracts fees, known as “gas”. The gas pays for mining, the process by which the transaction is autonomously verified and recorded on the blockchain by validators. Once validated the block is added to the chain. Some minting platforms, such as OpenSea and Rarible, have “lazy” minting systems which means that the NFT is minted off the blockchain so no gas fees are payable at the time of creation. The gas fees that would have been attributed to the minting process only become payable when the NFT is sold, so it is the buyer who must take responsibility for these. At this point, the gas fees for the original minting as well as for the sale process are added to the purchase price paid by the buyer, and it is only then that the NFT is entered onto the blockchain. This allows creators to avoid paying gas fees for NFTs that might never sell.

## Uses of NFTs

**NFTs are most well-known as a vehicle for digital art and media, with image- or sound-based files frequently being the underlying asset.**

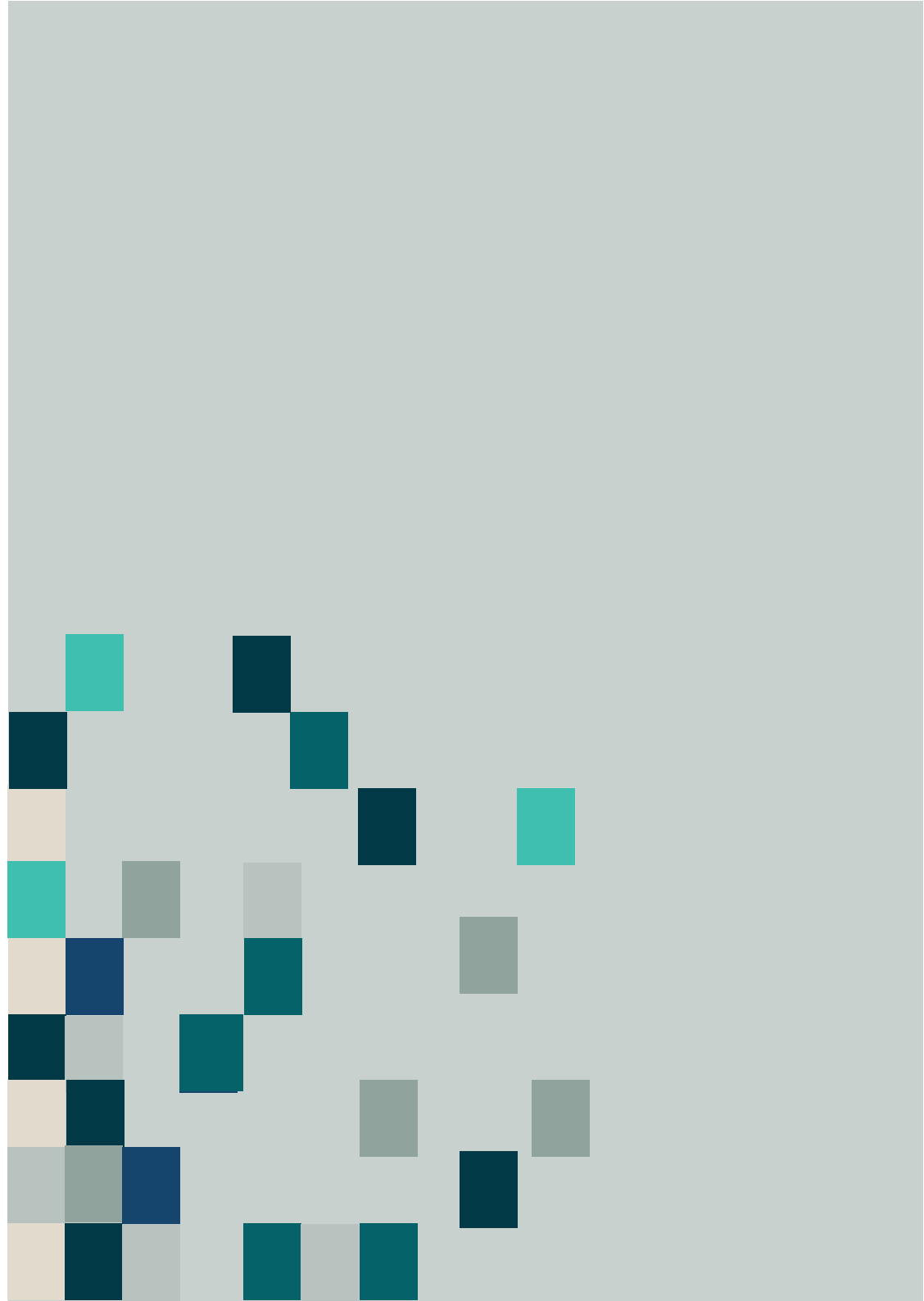
This lends itself to a number of markets, not just art but also music, fashion and gaming.

However, as the technology and market develops, NFTs are increasingly being used to represent a wider range of assets. Indeed, the utility of this technology has already been recognised by regulatory bodies, leading to their categorisation as “utility tokens”.

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Some more unusual use cases, where NFTs are already being used or have potential for use, include:

- **Finance.** The rise in popularity of NFTs has coincided with the rise of decentralised finance (DeFi), where finance instruments and transactions are carried out via the blockchain. The autonomous process of the blockchain in combination with NFTs has clear potential for use in financial transactions. A key example would be in secured lending, where NFTs (by way of the underlying assets that they represent) could be used as security for a loan. There are already online peer-to-peer lending sites offering this service.
- **Identity verification.** The indisputable nature of NFTs and their potential to act as certification could assist in numerous identity verification contexts. Some proposed examples include use of NFTs in relation to passports or identity cards and healthcare records, but this could be expanded to any situation in which some kind of certification or proof of identity is required. This would allow personal information to be kept in a secure way, without the need for government or authority input. An additional factor that could make NFTs useful in this kind of setting is that individuals could track their personal information on the “ledger” of the blockchain, allowing them to review access to this.
- **Access and events.** Another key use case relying on the verifiable nature of NFTs is within the events industry, in relation to ticketing and passes for both real world events and, more recently, to events and private spaces within virtual worlds, known as the “metaverse”. Using NFTs in this way gives added security and trust to both consumers and vendors. NFTs also offer capacity for ongoing royalties to be paid to event or private space hosts.



# Legal Issues.

**The discussions in this section of the note are informed by the recent Law Commission's Digital Assets Consultation Paper published on 28 July 2022 for feedback until 4 November 2022.**

Within this consultation paper, the Law Commission deals more widely with the applicability of personal property rights under English law to a range of digital assets, concluding that so called "crypto-tokens" should attract such rights as a result of being able to satisfy the proposed criteria for a third category of personal property, "data objects", (the other two categories being things in possession or tangible things and things in action or legal rights).

The consultation paper does not make any specific law reform proposals in respect of NFTs but proceeds on the basis that NFTs are crypto-tokens and are therefore capable of attracting personal property rights as data objects.

The Law Commission proposes that the flexibility of English law is well placed to determine the limits of these rights and, while it offers descriptions of the potential to link NFTs to other legal rights, it does not comment on the legal effectiveness of such links.

The below discussion of legal issues in relation to NFTs is intended to identify and discuss potential legal interactions of NFTs when they are linked or connected to underlying rights or assets, but clearly the law is far from settled in this area.

## Control & Ownership

**Issues arise both in relation to the NFT itself and the asset underlying it.**

### Ownership issues: underlying asset

As noted above, the "minter" of an NFT is not necessarily the "creator" of the underlying asset. Where NFTs are bought and sold the parties should have an understanding of who owns the underlying asset and intellectual property (IP) rights in the underlying asset.

An example of this would be where museums create NFTs of their art and other exhibits. In this instance the buyer will clearly not be gaining ownership or rights in the original exhibit, but instead will gain effectively a limited edition reproduction of such exhibit, with the value being added by the link with the creator as the museum with rights to the work.

The parties involved should therefore be clear on the NFT's relation to any asset it might represent, including to determine:

- Whether the minter of the NFT has obtained appropriate consents from the creator of the underlying asset or owner of the IP rights in the underlying asset (who will not necessarily be the creator).
- Whether or not ownership of the IP rights in the underlying asset is intended to be transferred to the person who acquires the NFT (which will not always be the case) or, if not, what (if any) rights there are to use the underlying asset.
- How the person who acquires the NFT obtains possession or control of the underlying asset if they have the right to do this.

There are potentially four aspects of legal ownership linked to an NFT. That of:

- The data and the metadata of the NFT.
- The IP rights in the data and the metadata of the NFT (if there are any: see section on computer-generated works under Ownership of intellectual property rights).
- The underlying asset.
- The IP rights in the underlying asset represented by the NFT.

An in-depth due diligence process should be undertaken by any potential buyer, just as would be done for a non-digital asset purchase, to establish the position in relation to all four. See further at Intellectual property rights in relation to the potential IP rights that may subsist in respect of NFTs.

## Possession or control: NFT

In this section, we use the term “control” to describe possession of an NFT. This is the term recommended for use by the Law Commission’s Digital Assets Consultation Paper, due to the non-tangible nature of these assets.

Once ownership of the NFT, the underlying asset and IP rights in the underlying asset has been established and understood, the next question concerns control of the NFT.

As described above, control and therefore effective possession of the NFT is held by the owner of the private key. Care should be taken by the owner to protect this private key as, if it is compromised by loss or hacking, access to the NFT will be jeopardised. As to the underlying asset, the question of possession is more complex. Assessing possession of the underlying asset will vary depending on whether it is digital or physical.

For digital assets, how they are stored is key. The data and metadata parts of the NFT are stored on the blockchain itself as a token; however, the underlying digital asset (such as a piece of digital art) can be stored in a variety of ways, including:

- **On chain:** where the digital asset is written into the blockchain itself. This is the most secure form of storage but is very expensive due to the “gas” fees derived from the amount of data to be validated when it is put onto the blockchain. However, for some high-value NFTs such as Larva Labs’ “Crypto Punks”, this is the chosen method of storage.
- **Decentralised storage:** where the digital asset is stored on a decentralised hosting system, such as the InterPlanetary File System (IPFS). As with all decentralised technology, these storage systems work by having multiple “nodes”, or computer systems, on the network which store the content and make it available, also known as “pinning” it. This is similar to storage on chain as it has no central control and is more resistant to failure as the network is effectively made up of multiple computers so if one fails, the others maintain the network. However, there is some potential for failure if many “nodes” or computers are hacked or removed.
- **Centralised storage:** where the digital asset is stored on a centralised website or on a single device that is connected to a network. This not a safe way for an NFT digital asset to be stored, as websites can be controlled and modified by the owners, and devices can crash, be hacked or tampered with or be taken offline.

- **Offline storage:** although not common, it is possible to store an underlying digital asset offline, for example on a computer system that is not connected to a network or on an external hard drive. The NFT will need to be configured in such a way that allows for clear identification of the underlying asset. This is difficult to achieve under current protocols, but is possible theoretically.

With any NFT that has a physical underlying asset, as adopted in various sectors such as art and fashion, the metadata of the NFT would, instead of linking the token directly to the underlying digital asset and, if desirable, the storage location, need to reference the physical item. This could potentially be done with use of a hybrid contract, to create the link with natural language contractual wording. The NFT can function as proof of authenticity. However, this is not necessarily fool proof as the physical item is easily movable and could be lost or counterfeited.

While transfer of control of the data and metadata of the NFT, as a token on the blockchain, may be dealt with by way of a fully smart contract, it is likely that effective transfer of any underlying asset or other rights attached to such a token would require a hybrid contract to record the legal requirements for transfer. While the law in this area is not yet settled, it can be presumed that, for example, in the case of a copyright assignment, which must be in writing and signed on behalf of the assignor, it may be difficult to evidence compliance with use of a purely smart contract. For further discussion on the distinction between fully smart and hybrid contracts.

## Permissioned & private blockchains

A potential solution for control and ownership issues, both in respect of the underlying asset itself and any IP rights, could be the use of private or permissioned blockchains:

- **Private blockchain:** a blockchain that only a certain and identifiable group of verified persons have access to.
- **Permissioned blockchain:** a blockchain where certain actions, while happening automatically as on a permissionless blockchain, require authorisations from a person or entity.

As noted above, these kinds of blockchains still retain their drawbacks, such as expense, so are not a complete solution to the problem. Also, expertise is required, which prevents more general access and there is a possibility of transactions not being carried out in a verifiable way. They are also not likely to be interoperable with other blockchains.



# Intellectual property rights

Types of intellectual property (IP) rights involved with NFTs  
The most important type of IP for NFTs is copyright. Closely interlinked with copyright are the moral rights of the author. This note focuses mainly on copyright, as this is likely to be of most significance.

There are other types of IP which may potentially be involved but these will generally not be as central to NFTs as copyright and moral rights. In roughly descending order of anticipated importance, the other possible IP rights are:

- Performers' rights
- Database rights
- Design rights
- Confidential information (including inventions, trade secrets, and know-how)
- Patents
- Trade marks

There are also other civil rights that are not IP rights but that may be involved in some specific NFTs. These include royalty resale rights, personal data protection and privacy rights (including, potentially, image rights), rights in domain names, the tort of deceit (such as passing off) and even economic torts, such as interference with contract. With the exception of artists' royalty resale rights, these rights are not dealt with further in this note. Also not dealt with in this note is the possibility of criminal liability arising from an NFT that, for example, incites racial hatred.

## Copyright: overview

The basis of copyright is a work created by a person who is the author. The works protected by copyright under UK copyright law, which is set out in the Copyright Designs and Patents Act 1988 (CDPA), include:

- Original literary, dramatic, musical or artistic works (section 1(1)(a), CDPA) which, in the case of literary, dramatic or musical works are recorded in some way (section 3(2), CDPA).
- Sound recordings, films or broadcasts (section 1(1)(b), CDPA).

A computer program, the source code, object code and preparatory design materials in relation to it may be protected by copyright as a literary work.

The key originality test set down in *Infopaq International A/S v Danske Dagblades Forening* (Case C 5/08) (Infopaq I) requires that, to be protected by copyright, the subject matter is the expression of the author's own intellectual creation.

In the later case of *Cofemel - Sociedade de Vestuário SA v G-Star Raw CV* (Case C-683/17) EU:C:2019:721, the ECJ's findings included that, to be original, a subject matter had to reflect the personality of its author, as an expression of their free and creative choices. It is unclear whether Infopaq I has altered the originality test applied by the UK courts, which required the author to have created the work through their own skill, judgement and individual effort and not have copied it from other works.

Copyright arises automatically on the creation of the work (provided that the work meets the requirements for copyright to subsist (including originality in the case of literary, artistic and musical works), and qualifies for copyright protection under UK law) and lasts for 70 years after the death of the author and 50 years from the year of making of sound recordings and broadcasts.

The owner of copyright has the right to prevent copying (whether direct or indirect) and various other uses of the whole or a substantial part of their copyright work in the UK, including communicating the work to the public or authorising another person to do these acts, subject to various permitted acts which may be carried out without a copyright owner's permission.

## Copyright: application to NFTs

The most important type of IP right for NFTs is copyright. Copyright may be relevant as follows:

- The work that forms the underlying asset of an NFT may be protected as a copyright work. As noted in Constituent parts of an NFT the underlying asset will often be an artwork. However, the asset underlying an NFT might also, or alternatively, involve one or more other copyright works such as a literary or musical work, film, sound recording or dramatic works.
- It is also important to note that both the data or the metadata of the NFT, explained in Constituent parts of an NFT, may themselves be copyright literary works, if they meet the originality test as detailed above. See Copyright: overview. However, it is unclear whether pure code would meet this test. An analysis would be required on the particular facts.

## Moral rights

The author of literary, dramatic, musical or artistic works and films also has moral rights which could be relevant in relation to any copyright in the asset underlying an NFT. These rights are threefold:

- To be identified as the author.
- To object to the work being subject to derogatory treatment.
- To object to false attribution of authorship.

Unlike copyright, an author's moral rights can only be waived and cannot be transferred by assignment.

It should be noted that there are certain cases in which the first two moral rights do not apply, including that the rights do not apply to computer programs or any computer-generated work (sections 79(2) and 81(2), CDPA) and are therefore unlikely to apply to the NFT data and metadata.

## Ownership of intellectual property rights

The general rule is that the first owner of copyright in a work will be the author (section 11(1), CDPA). However, there are exceptions to this rule, including where works are made by a person in the course of their employment. The author of a computer-generated work (that is, when there is no human author) is the person by whom the arrangements necessary for the creation of the work are undertaken (section 9(3), CDPA).

It is important when exploring the potential ownership of IP rights in an NFT to consider the following:

- The identity of author of the copyright work(s) that comprise the asset underlying the NFT, and the entity which owns copyright in those work(s) (which may not be the same, since the author is not always the first owner or may have assigned their rights to someone else). This could be a singular individual or entity, or multiple if there is more than one copyright asset involved or joint copyright.
- Whether the author might have assigned their copyright in the asset(s).
- The identity of the author of the token and metadata portion of the NFT. This will be the individual or entity that generated the associated code, but ownership of the code (assuming copyright subsists in it) may not vest in the individual, for example, if they were acting in the course of their employment. Also, if the NFT is computer-generated, the author will be the person by whom the arrangements necessary for the creation of the work were undertaken (section 9(3), CDPA) (see Control and ownership).
- If relevant, whether any associated trade marks or other IP rights are used in the underlying asset, token or metadata.

Some aspects of IP rights in relation to NFTs are not yet settled. For example, in the case of digital works (including code or metadata) that were algorithmically (that is, computer) generated and are not the product of a human author, it is unclear whether copyright will subsist insofar as literary works must be the expression of the author's intellectual creation to be original, so as to be protected as copyright works (see Copyright: overview).

## Transfer and sale of IP rights in the underlying asset

As set out in Creation, where the “minter” of the NFT is not the current owner of the underlying asset embodied in the NFT, care should be taken to establish the identity of the owner of any IP rights in the underlying asset of the NFT and to ensure that consent is obtained. A due diligence process can and should be undertaken here. In any due diligence review, the buyer should consider, in relation to the asset underlying the NFT:

- Whether the minter or seller is the IP rights owner.
- If not, whether the IP-rights owner has licensed the minter or seller to use the IP rights.
- How to ensure protection, if at all, from the possibility that the minter or seller is not validly licensed to mint or sell the NFT.
- How to ensure protection from reuse of the underlying asset to create other NFTs and otherwise. This is a critical and often overlooked point as, while the token part of an NFT is non-fungible, the asset the token points to is not and could be used as the basis for future NFTs.

All of the above points can be dealt with either before purchase as a due diligence review, or by protection within a contract for sale. See Smart contracts for details of use of a hybrid contract incorporating non-smart terms such as these.

# Regulation

At present, there is no separate regulatory framework applicable to NFTs. In addition, most of the focus of the UK government on regulation of cryptoassets has been directed at fungible assets such as cryptocurrencies, as these more closely align with other regulated assets such as fiat currency.

However, as can be seen from the information below, there is scope for regulation to be expanded to encapsulate NFTs in the future, and this will be an area for those involved with this technology to monitor closely.

## Financial regulation

Currently, NFTs are not specifically regulated within the UK’s financial services regulatory landscape. However, there are some instances in which UK financial regulation will be applicable to NFTs.

The Financial Conduct Authority (FCA) released Guidance on Cryptoassets: Feedback and Final Guidance to CP19/3 (PS19/22), which provides the most up to date position in relation to the potential regulation of NFTs. In the guidance, the FCA identifies two main types of cryptoassets, unregulated tokens and regulated tokens.

In respect of unregulated tokens, the FCA identified two main categories:

- **Exchange tokens:** cryptoassets primarily used as a means of exchange, such as cryptocurrency coins.
- **Utility tokens:** cryptoassets used to provide customers with access to products or services, a category into which many NFTs are likely to fall. See further on the utility of NFTs at Uses of NFTs.

In respect of regulated tokens, the FCA identified a further two main categories:

- **Security tokens:** tokens that provide rights akin to specified investments, as detailed in the Financial Services and Markets Act 2000 (Regulated Activities) order 2001 (RAO), including those that amount to financial instruments under the MiFID II Directive (2014/65/EU) and Markets in Financial Instruments Regulation (600/2014) (MiFID).
- **Electronic-money (e-money) tokens:** tokens that fall into the definition of e-money under the Electronic Money Regulations 2011 (EMR).

This regulatory approach allows all types of cryptoasset to be categorised for the purpose of determining whether or not they fall within the regulatory perimeter. Therefore, to determine whether NFTs (as a form of cryptoasset) are regulated under the UK financial services regime, it must be determined whether they meet the criteria set out within any one of the RAO, MiFID or EMR.

The vast majority of NFTs are unlikely to fall within these legislative regimes, and therefore it is probable that most NFTs will be unregulated tokens not subject to financial services regulation. However, care should be taken where NFTs have any characteristics of regulated investments, such as where they represent fractional ownership akin to a shareholding, or where they represent value which might amount to e-money. Where NFTs are deemed to be regulated tokens, the usual regulatory requirements will apply, including requiring activities to be authorised by the FCA.

Currently, unregulated businesses are also not subject to the restrictions on financial promotions under section 21 of the Financial Services and Markets Act 2000 (FSMA). However, the government has announced plans to include the promotion of certain qualifying cryptoassets within the scope of this restriction. It is likely that this will apply primarily to fungible cryptoassets, such as cryptocurrency, but could be expanded in the future to NFTs.

### Anti-money laundering regulation

The EU's Fifth Money Laundering Directive ((EU) 2018/843) (5MLD5) came into effect in the UK on 10 January 2020 through amendments to the Money Laundering, Terrorist Financing and Transfer of Funds (Information on the Payer) Regulations 2017 (SI 2017/692) (MLRs 2017) by way of the Money Laundering and Terrorist Financing (Amendment) Regulations 2019 (SI 2019/1511).

This expanded the scope of the MLRs 2017 to incorporate cryptoassets exchanges and custodian wallet providers. The definition of "cryptoassets" under the MLRs 2017 is wide enough to incorporate NFTs. However, at present, the regulations only apply to NFT exchanges or wallet providers, requiring them to register with the FCA and comply with MLRs 2017, including significant disclosure requirements. Individuals buying or selling NFTs are unlikely to be caught by the MLRs 2017, unless they are undertaking such activities by way of business offered to other participants.

In terms of the broader approach, the Financial Action Task Force (FATF), of which the UK is a member, currently sets international standards for money

laundering and counter-terrorism for "virtual asset service providers". However, the FATF (which refers to virtual assets rather than cryptoassets) published guidance in 2021 on Virtual Assets and Virtual Asset Service Providers stating that NFTs are not generally considered virtual assets. However, they make it clear that this space is rapidly evolving and the guidance should be applied on a case-by-case basis, so there may well be instances in the future where NFTs may be considered to fall within the scope of FATF standards. This is likely to be the case where NFTs are used for payment or investment purposes.

### Data protection

Data protection laws have potential implications with regard to NFTs, as they commonly apply to any processing of personal data regardless of the context.

Post-Brexit, the data protection regime applicable in the UK now comprises the UK GDPR.

This note focuses on issues that apply under the UK GDPR, although the EU GDPR may continue to have extra-territorial effect in some situations, and is likely to present similar issues which may also need to be considered.

The applicability of UK GDPR in the context of blockchain transactions is challenging. There are a range of ways in which blockchain technology is incompatible with UK GDPR, including:

- **Immutability:** the unchangeable nature of blockchain is in opposition to some rights protected by UK GDPR, such as the right to be forgotten, or to have incorrect personal data amended.
- **Enforcement:** the relative anonymity offered to users would pose issues for data subjects in identifying the person(s) against which they can exercise their rights under UK GDPR. In particular, there may not be one single entity against which to enforce, given the distributed nature of the technology.
- **Pseudonymity:** blockchain transactions are not entirely anonymous but rather pseudonymous as personal identifiers in the hash are able to be linked back to an individual user. As a result, this data would remain "personal data" for the purposes of UK GDPR.

It is yet unclear the precise interaction that UK GDPR will have with NFT technology, as further regulation may well be needed to deal with the inconsistencies of blockchain technology in general.

In terms of limiting or controlling the applicability of the UK GDPR in NFT creation and transactions, there are some key areas that can be considered. The creation of the NFT should be managed carefully to ensure that no personal data is inadvertently included within the design which could then be included on the blockchain. When undertaking a transaction involving NFTs that contain personal data, any issues with UK GDPR can likely be dealt with using contractual measures (probably requiring a hybrid contract with written terms).

There are also potentially some technical work-arounds, including use of “zero-knowledge proof” (ZKP) protocols, such as Zero-Knowledge Succinct Non-Interactive Argument of Knowledge (Zk-SNARKs). These ZKPs enable participants in transactions to prove certain key pieces of information, such as identity, without revealing them to the other party. This would ensure that any personal data remained anonymised and outside of the scope of UK GDPR, whilst still giving reassurance of security and validity to those engaged in blockchain transactions.

## Potential future developments

As will be clear from the above, the regulatory landscape surrounding NFTs is in no way fixed and may well be subject to change with the expansion of this technology.

A key factor in change may well be the provisional proposal made by the European Commission for a Regulation on markets in cryptoassets (MiCA). This proposed regulation seeks to establish a European framework for cryptoassets, to capture those currently unregulated tokens such as NFTs. The latest text published in relation to MiCA had two key aims:

- A uniform legal framework for cryptoassets and protecting consumers.
- Safeguarding against market manipulation.

The third aim from the draft proposal, including cryptoasset mining in the EU taxonomy, was rejected. While the current focus of the legislation is on cryptocurrencies, the plans could include compliance requirements for NFT issuers.

It remains to be seen what implications this will have for EU law when MiCA is formally adopted. In addition, it is unclear to what extent the UK will also reflect these provisions in domestic law but, nonetheless, MiCA should give some guidance as to the trajectory of NFT regulation.

In November 2022, the Digital, Culture, Media and Sport (DCMS) Committee launched an inquiry and a call for evidence in relation to NFTs and the blockchain. The inquiry will look into the operation, risks and benefits of NFTs and the wider blockchain. MPs are expected to consider whether NFT investors, especially vulnerable speculators, are put at risk by the market. The inquiry is likely to examine whether more regulation is needed, ahead of a Treasury review. For more information, see Legal update, DCMS Committee launches inquiry into NFTs and the blockchain.

## Other areas of regulation

Other potential areas for regulation which are currently outside the scope of this note include:

- Regulation of NFTs within the gambling regulatory landscape.
- Taxation of NFTs.

# Commercial Issues

## Smart Contracts

For an introduction to smart contracts as they form part of the underlying technology of NFTs, see [Constituent parts of an NFT](#).

Smart contracts are computer programs, pieces of code, that automatically run predetermined transactions when certain conditions are met. A smart contract is created when an NFT is minted. This contract is stored on the blockchain, and is used, amongst other things, to determine the ownership and transferability of the NFT.

Smart contracts are different from natural language contracts. The code automatically carries out certain actions or steps when specific conditions are met, while natural language contracts dictate the actions or steps that are obliged to be undertaken when specific conditions are met. For example, a smart contract might be programmed to issue an asset on receipt of funds, or a certain date; this action would be automatically undertaken on the satisfaction of the condition. A natural contract could specify an obligation to issue the asset but, when the specific conditions arose, the action would not be automatic and would need to be undertaken to avoid breach of contract.

The Ethereum token standard smart contract for non-fungible tokens is called ERC-721. However, a standard form of smart contract does not have to be used and in many cases will not be appropriate for use, with the NFT requiring a bespoke smart contract to be coded.

Smart contracts can be either full or hybrid:

- **Fully smart contract:** all the terms and performance of the contract are written in and carried out by code.
- **Hybrid smart contract:** some of the terms and performance of the contract are written in and carried out by code, but with some natural language written terms.

Typically, smart contracts will be hybrid, as there will be some terms between the parties in addition to the code itself. Alternatively, smart contracts may have natural language terms in the metadata or a link to terms and conditions stored off the blockchain incorporating written terms, also making them hybrid contracts. While performance-focused terms, such as payment of funds or transfer of assets, can be dealt with through a smart contract, other key terms that define the scope of the contract, such as governing law and jurisdiction, will likely be lost. As a result, any fully smart contract is likely to be limited in the contractual protections that it offers.

In many cases with higher value NFTs, bespoke contracts will be used. These bespoke contracts allow control over the distribution of coded and written terms and, as detailed below, this mix is likely necessary to ensure the contracts are effective under English law and properly support the interests of the contracting parties. In addition, it is likely that many bespoke hybrid contracts will be largely natural language focused, with only some key actions effected by code, in order to maintain contractual efficacy.

Any level of hybrid contract is likely to be undertaken either through close collaboration across disciplines between lawyers and software developers in order for the coded aspects to effectively reflect and undertake the intention of the contract, or by specialist tech lawyers able to undertake construction of both the natural and coded language aspects of a smart contract.

## Contractual efficacy

**The Law Commission has published [Smart legal contracts: Advice to Government, with guidance on the legality of smart contracts and the applicability of English law contractual principles to them](#). For a [summary of the Law Commission advice](#).**

In short, the guidance concludes that the current legal framework of England and Wales is able to support the use of smart legal contracts as binding contracts.

# Specific terms

**While the applicability of contractual principles to a smart contract are key to its effectiveness, it is important that any contract also reflects and gives effect to the wishes of the parties involved.**

While the smart aspects of the contract can give effect to key terms, such as transfer, there are numerous other aspects that the parties will want to consider, and which will likely require consolidation within a natural language contract. These can include:

- Maintaining exclusivity and digital scarcity of the NFT, that is, limiting the use of the underlying asset for future NFT issues.
- Maintaining the persistence of both the original metadata or other digital file of the work in an asset and the blockchain relevant to the NFT. The way this can be done will depend on how the asset is stored, see Control and ownership.
- Whether the NFT will grant rights to physical possession of the asset. See Control and ownership for further explanation of whether this is likely to be possible.
- Dealing with any IP rights in the underlying asset and NFT. See Intellectual property rights for further details of the considerations to be had here.

# Consumer rights

## Applicability

**The large majority of NFTs are currently bought on online marketplaces, and therefore by individuals acting outside any trade or business, rather than commercial buyers.**

In addition, it is quite possible that NFT sellers and creators may be acting for purposes in relation to a trade or business (including a craft). As a result, many NFT transactions will involve consumers and traders and therefore current UK legislation governing advertising to and contracting and dealing with consumers may well be applicable where NFTs are offered for sale in the UK.

The exact requirements of consumer legislation will depend on the context of any NFT sale, such as whether it takes place online or offline, see Practice Note, Consumer Contracts: which rules apply? However, some of the potentially applicable provisions of UK consumer law and their interaction with NFT products are examined further below.

## Transparency & fairness

**In any contract between a trader and a consumer, all written terms must be transparent and fair.**

As smart contract natural language terms and source code terms are likely to be deemed to be “in writing”, meeting the requirement of transparency may be challenging. Source code is the language that is inputted into computer systems to create computer programs, encompassing forms such as JavaScript or HTML. This is likely not to be easily intelligible to the average consumer without previous training or education in coding, so traders will need to take additional steps to give adequate explanation within a natural language contract to ensure transparency.

## Information requirements

**In any case, where products are offered for sale to consumers, traders must ensure that certain key terms of such a transaction are provided in advance to the consumer.**

This includes details such as information about the trader and its contact details, the contract price, characteristics of the product and information about the right to cancel. The precise information to be provided and the method for this provision will depend on the method of sale, see for example, in relation to online selling. Where a hybrid contract is being used (see Smart contracts), care should be taken to ensure these information requirements are met in natural language, wherever they must be presented (either in the terms or elsewhere in the consumer’s purchase journey).

## Impiled terms

A consumer contract for sale of an NFT is likely to have some terms implied, such as the product or NFT being of satisfactory quality, free from defects and fit for purpose.

To the extent that the NFT is linked to a tangible asset (a good) then terms as to title and quiet possession may also be implied and if the NFT is purely a digital asset there will be an implied term that the trader has a right to supply it. For information on the terms implied into contracts for digital content and goods.

## Right to cancel

Typically, consumer contracts carry a right to cancel, known as a “cooling off period”, during which the consumer is entitled to a full refund.

A consumer will only lose their cancellation right in respect of digital content if they request its immediate supply and acknowledge that their cancellation rights will be lost as a result, and a trader can build this into its sales process. Cancellation rights in respect of goods run for 14 days after their delivery (longer if the consumer is not informed of them) and cannot be waived. To the extent that the sale of an NFT involves the supply of a mix of digital content and goods (or services), cancellation rights are likely be determined by assessing the “real main purpose” of the contract; if the real main purpose is the supply of goods, the goods cancellation rules will apply.

Given the immutable nature of blockchain transactions, it is evident that the technology may encounter challenges with implementing this consumer right. A potential workaround might involve the smart contract providing for a re-sale back to the trader in the event of their exercise of this right. However, this would require serious forethought and technical application on the part of the trader to provide an effective mechanism that would be fair and acceptable to both parties.

## Unfair commercial practices

Traders are constrained by laws which require them to deal fairly with consumers during the whole lifetime of a consumer to trader transaction: advertising, marketing, entry into the contract, performance and enforcement.

Certain practices are always unfair and prohibited, such as falsely stating that a product will be available for a very limited time in order to obtain an immediate decision. Other practices, such as providing false or misleading information, omitting material information, acting without due diligence or aggressively, are unfair if they cause the average consumer to take a transactional decision that they would not otherwise have made. Most unfair commercial practices are criminal offences. A consumer who can prove that a misleading or aggressive practice led them to enter into a contract or make a payment has the right to have the transaction unwound and to claim damages. As with the right to cancel mentioned above, blockchain technology’s nature as a fixed record presents somewhat of an obstacle to the unwinding of transactions.

## Advertising

**The Advertising Standards Agency (ASA) has issued guidance and an enforcement notice in relation to cryptoasset advertising, stating that it is treating this as a red alert priority issue.**

Key takeaways for those advertising cryptoassets, such as NFTs, include the need to flag clearly that that cryptocurrencies are unregulated in the UK, that profits may be subject to capital gains tax and that the value of investments can go up and down. In addition, advertisers must not state or imply that investment decisions are trivial, simple, easy or suitable for everyone, or otherwise imply a sense of urgency to buy or create a fear of missing out, or that investments are “low risk”.



# NFTs in the art market

While NFTs can be used to represent a range of underlying assets, one of the most well-known and established use cases for the technology is within the art market.

Most often they are used to establish and certify ownership of a piece of digital artwork, but examples can also be found of NFTs being used to represent physical artwork.

## Relevant law

As detailed above, the EU's Fifth Money Laundering Directive (5MLD) has been incorporated into UK law by the Money Laundering and Terrorist Financing (Amendment) Regulations 2019 and, as currently drafted, individuals buying or selling NFTs are unlikely to be caught by this legislation. However, the provisions may have applicability when considered in relation to the art market specifically.

The regulations require art market participants to apply customer due diligence measures in relation to any trade in works of art involving transactions amounting to 10,000 euros or more. This would require steps to be taken including nominating an individual responsible for compliance, applying customer due diligence procedures, providing necessary staff training and reporting suspicious activity. For the purpose of 5MLD, currently a "work of art" is defined in relation to section 21(5)(a) of the Value Added Tax Act 1994, but neither piece of legislation provides clear guidance on exactly what would fall into this category. In fact, neither 5MLD or the British Art Market Federation's 2020 Guidance on Anti-Money Laundering for Art Market Participants offer direct guidance in relation to NFTs. It is therefore still unclear whether NFTs representing underlying artistic assets will be subject to these regulations.

Given the risks of money laundering targeted by 5MLD are likely to be equally applicable to the NFT market, it may well be that a broad view would be taken by the courts in this respect. If that was the case, the regulations would likely have a wide-reaching application, requiring compliance from NFT platforms, dealers and artists.

## Artist resale regime

The Artist Resale Right (ARR), as introduced by the Artist's Resale Right Regulations 2006 (Resale Right Regulations) (implementing the Resale Right Directive (2001/84/EC)) entitles artists and their successors in title to a percentage of the sale price where works are sold in which they have subsisting copyright, subject to certain conditions, including that the buyer or seller is acting in the course of a business dealing in works of art and the sale price is not less than €1,000 (regulation 12).

In the UK, the royalties are calculated on a cumulative sliding scale for sales achieving more than €1,000, up to a maximum of €12,500 (or equivalent in British pounds) (see Artist's Resale Right – GOV.UK ([www.gov.uk](http://www.gov.uk))). The royalties are collected on behalf of artists by societies, including the Design and Artists Copyright Society (DACS) and the Artists Collecting Society (ACS).

Regulation 10 of the Resale Right Regulations provides that the resale right may only be exercised in respect of the sale of a work where its author was one of the following:

- Living at the date of the sale and was at that date a national of the UK or a state the legislation of which permits resale right protection for authors from the UK and their successors in title.
- Deceased at the date of the sale and, at the date of the author's death, the author was a national of a state falling within one of the above.

Subject to this, and meeting the requirements in regulation 12 for a "resale", including that the sale price is not less than €1,000, the right applies to any works in which copyright subsists (regulation 3(1)), defined as any work of graphic or plastic art such as a picture, a collage, a painting, a drawing, an engraving, a print, a lithograph, a sculpture, a tapestry, a ceramic, an item of glassware or a photograph (regulation 4(1)), and subject to the proviso that a copy of the work will not be regarded as a work for Resale Right Regulation purposes unless the copy is one of a limited number made by the author or under their authority (regulation 4(2)).

“Sale” has the meaning given in section 2 of the Sale of Goods Act 1979 (regulation 2), the provisions of which include that:

- A contract of sale of goods is a contract by which the seller transfers or agrees to transfer the property in goods to the buyer for a money consideration, called the price.
- A contract of sale may be absolute or conditional.

Therefore, a physical work meeting these requirements which is being sold for use as an NFT could potentially trigger the Resale Rights Regulations.

Regarding the sale of NFTs dealing with a digital artwork, it is as yet unclear whether such a sale would fall within this definition. Regulation 4(2) arguably suggests that a digital copy of the artwork sold via an NFT could be regarded as a work for the purpose of the Regulations so long as it is one of a limited number. However, it is not clear whether a resale of NFTs linked to such digital artwork would meet the requirements in regulation 12, including that “the buyer or the seller, or (where the sale takes place through an agent) the agent of the buyer or the seller, is acting in the course of a business of dealing in works of art” (regulation 12).

It is arguable that NFTs themselves, as a token on the blockchain, will be deemed to be blockchain instruments separate from any work of art, given they are largely a means of representation. Therefore, the right would not be applicable where, in reality, the only property transferred is the NFT without any associated rights in an underlying artwork.

However, in any case where a copyright assignment in a work of digital art is included within the rights conferred by an NFT, or the smart contract also deals with physical possession of a digital work of art, the line may be blurred and it is not yet clear whether such a transfer would amount to a resale under the regime.

Regardless of the applicability of this specific regime, it is still possible for digital artists to specifically provide for the payment of resale royalties in relation to an NFT either:

- Within the smart contract: it is possible for smart contracts to be coded to automatically perform the payment of royalties in any future sales. However, the durability of this is unclear. It is possible that this code could be avoided by buyers, with use of side agreements.

- Within a natural language contract: it is likely that any provisions relating to resale royalties should be contained within a separate natural language document, to ensure the effectiveness of the obligation.

It should be noted that the ERC-721 standard does not provide for this automatically, so artists will need to consider the addition of this right, or the creation of a bespoke smart contract.

## Litigation & Contentious issues

**Given the numerous uncertainties detailed above in relation to the legal issues surrounding NFTs as an emerging technology, it is perhaps inevitable that contention will spring up.**

Indeed, in some respects litigation will assist in strengthening case law, and therefore certainty, around the application of legal principles.

## Misrepresentation

**It is often the case that contention around NFTs focuses on conflict and misunderstanding over the rights and assets being either sold or acquired, which could lead to claims for breach of contract, or misrepresentation.**

It is therefore crucial that all parties to any transfer or other transaction involving NFTs are completely clear on what rights are being acquired by the buyer and what rights will remain with the seller.

Buyer rights that require consideration include:

- The terms of the contract with respect to future NFT issues. As a great deal of the value surrounding NFTs lies with their exclusivity and uniqueness, it is important that any buyer has an awareness of the link this has with their value. Any future NFT issues in a collection that was previously limited will clearly increase availability and therefore reduce the market value of associated NFTs. The terms of any smart contract should be reviewed closely to see what rights the minter or seller has in relation to the creation of further issues.
- The ownership and control rights granted by the smart contract in relation to both the NFT and the underlying asset. See further at Control and ownership.

Seller rights that require consideration include:

- The rights that the seller will retain. Where the minting or sale takes place by use of an online platform or marketplace, the terms and conditions associated with this should be reviewed closely. The minter should ensure that they are content with any rights that they will lose as a result of this and, if not, should consider preparation of a bespoke smart contract to adequately reflect their needs.
- The current position with respect to any rights in the NFT and underlying property. It is often the case that NFTs are sold on multiple times in a trading-like fashion. In this instance, the seller may well not be the original minter, and it is therefore crucial for a seller to correctly identify their own rights in the NFT and underlying asset before considering what rights to pass on to any potential buyer. Problems will arise where, for example, a seller attempts to transfer IP in an asset where it does not have ownership of the rights in the first place.

## Dispute resolution mechanisms

**There are a number of resolution mechanisms open to parties engaged in NFT disputes, ranging from litigation to alternative dispute resolution in the form of arbitration, expert determination or mediation.**

Parties may wish to consider incorporating the Digital Dispute Resolution Rules (DDR Rules) into smart contracts concerning NFTs. These rules help create a dispute resolution structure specifically applicable to resolving disputes in the digital technology sector.

## Additional practicalities

**A key factor in dealing with enforcement of disputes will be the applicable law and jurisdiction.**

This is often not a simple task to determine, especially where any smart or written contract is silent on this point. As discussed above at What are NFTs?, due to the distributed ledger technology of NFTs, the precise location of the NFT as an asset, and even the acts of the parties involved in any dispute, can be difficult to pinpoint as the code may be stored on multiple servers in a variety of jurisdictions. Secondary to this, once any judgement or order has been secured, enforcing this may also prove problematic, as explored further below.

## Jurisdiction

**When deciding whether the English courts have a jurisdictional basis for any NFT dispute, the courts are likely to apply the common law rules on jurisdiction, except where the European regime (including the Recast Brussels Regulation) or the Hague Convention on Choice of Court Agreements applies.**

Under the common law rules, the English court is likely to have jurisdiction if the defendant has been served with the proceedings (either within or outside the jurisdiction; note that if serving outside the jurisdiction it may be necessary to obtain the court's permission) or otherwise submits to the jurisdiction of the English courts.

However, due to the cross-border nature of NFTs, complex questions are likely to arise. Where the defendant disputes the jurisdiction of the English courts to hear the claim, or contends that the English court should decline to exercise its jurisdiction, the court will usually consider whether England and Wales is the most appropriate forum, or the proper place to bring the claim.

This is likely to draw on a range of factors, which may include:

- **The domicile of the defendant:** given the nature of blockchain transactions, the identity of the defendant will often be unclear on the basis of solely their pseudonym. In many cases, the defendant's identity may not be clear when the court is considering whether to grant permission to serve the claim form outside the jurisdiction. This was a factor in the recent case of *Osbourne -v Persons Unknown* [2022] EWHC 1021 (Comm), which concerned an application made by Ms Osbourne in relation to a fraudster removing NFTs from her wallet without her knowledge or consent. When considering whether proceedings could be served on persons unknown out of the jurisdiction (to the extent that the persons unknown were out of the jurisdiction), His Honour Judge Pelling QC held that in all the circumstances England was the most appropriate forum: "I have no information as to where the persons unknown are located, or the jurisdictions in which they are to be found. On the other hand, what I do know is that the claimant is located in England and English law treats the assets as having been removed from her in England. In those circumstances, on balance, and at this stage in the enquiry, I am satisfied that England is the appropriate forum. I am satisfied in those circumstances that permission should be granted to serve the persons unknown out of the jurisdiction."

This approach followed that taken by Mr Justice Butcher in the earlier case of *Ion Sciences Ltd v Persons Unknown and others* (unreported), 21 December 2020 (Commercial Court). Butcher J. See further at Legal update, Commercial Court grants interim injunctions against persons unknown and Bankers Trust order against cryptocurrency exchanges in ICO fraud.

The identity of the parties and especially the defendant, may be further complicated in instances of fraud or counterfeit, where a minter of an NFT may be sued by a person claiming rights to that NFT.

- **The domicile of the owner of the NFT:** In *Ion Sciences Ltd v Persons Unknown and others*, Butcher J held that the *lex situs* of a crypto asset is the place where the person or company who owns it is domiciled. For further discussion of the concept of domicile in this context, see Practice note, *Transfer of digital assets on death: Specific issues relating to cryptocurrency*.

- **An agent:** determination on the basis of the location of the defendant, as above, would become even more difficult where there is an agent acting on behalf of any defendant, or indeed applicant. The agent could take the form of a coder or other person implementing the transaction via the blockchain.
- **Formation of the contract:** the place where the contract is made will likely be England and Wales if this is where the person making the offer for the contract resides or is located, given that this is where any communication of acceptance of an offer will be received. However, this may be challenging to determine in instances where there is no clear acceptance, and particularly in a case where the contract is purely smart, and there is no hybrid element (that is, it is formed entirely on a computer network).

## Governing law

**As with jurisdiction, determination of the law which will govern any smart contract where this is not made express by the parties is likely to pose a challenge.**

It is of course possible that parties will have made, or attempted to make, a choice of the governing law. This could be done within the metadata or within a separate natural-language contract. If the parties purport to choose the rules and protocols of a digital platform or blockchain protocol as the governing law of the smart contract, that choice might be ineffective. In the event of a dispute arising out of the smart contract, it is likely that the courts will apply the law of a country as the governing law of the smart contract. The difficulties of establishing the governing law of digital assets is one of the issues which the Law Commission is planning to tackle in its recently announced consultation *Digital assets: which law, which court?* (which is sponsored by the MoJ).

In any case, where the law has not been determined by the parties, factors that the courts are likely to consider include:

- Location of private key.
- Location of central administrator.
- Location of ledger.
- Location of underlying assets.
- Location of parties involved.

These issues of jurisdiction and applicable law are explored further in the Law Commission's Smart legal contracts: Advice to Government. However, this paper does make it clear that the approach used and endorsed by the courts is yet to be established. For a summary of the Law Commission advice, see Legal update: Law Commission publishes advice to government on smart contracts. In October 2022, the Law Commission launched a review on how the rules of private international law on governing law and jurisdiction apply to digital assets and other emerging technology: Digital Assets: Which Law, Which Court? The Law Commission aims to develop reform proposals in a public consultation paper, which is due to be published in the second half of 2023.

## Service

**Usual methods of service permitted by the Civil Procedure Rules may not be possible in respect of an NFT, as the owner of the wallet may be unidentifiable, that is, “persons unknown”.**

However, following a recent example in the US Supreme Court of the State of New York's 2 June 2022 order in LCX AG, -v- John Does Nos. 1 – 25), recent UK case law has also concluded that service on persons unknown can be effected by air dropping an NFT to a digital wallet over the blockchain.

## Enforcement

**Following a successful claim, and even in advance of any claim being made, it is important to consider how any judgment, order or injunction can be enforced against the NFT and asset in question.**

Key issues will include:

- **Identity of the defendant:** due to the pseudonymous nature of the blockchain, the identity of the defendant may be unclear. In this instance, the claimant can apply for an order requiring the associated platform or blockchain provider to disclose documents, or information, in order to establish the identity of the defendant.
- This may be possible through an application for:
  1. A Norwich Pharmacal order. For more on Norwich Pharmacal orders.
  2. A Bankers Trust order (granted in *Osbourne v Persons Unknown* and in *Ion Sciences Ltd v Persons Unknown* and others). For more on Bankers Trust orders.
- **Seizure of assets:** while some judgments will relate purely to a monetary claim, many will require appropriation of the NFT itself, or the underlying asset. With regard to judgments made in relation to NFTs, it is likely that any order will deal with prevention of transfer of the NFT. If the smart contract provides for suspension of its code in specified circumstances, it is probable that an order for specific performance or injunction might apply to this. In an instance where the smart contract does not provide for suspension of the code, or where the NFT has been transferred on by the defendant, the position is less clear. In terms of gaining control of the NFT, the crux of this will lie with access to the private key of the defendant, which may not be simple to secure. Furthermore, when considering the underlying asset, the court may have limited powers in the protection of this, depending on how and where it is stored (see *Control and ownership*).

While the courts have successfully granted remedies including injunctions and freezing orders in relation to cryptocurrencies, these principles have yet to be applied in practice to NFTs, so it remains to be seen how the principles may apply. However, the Court has now held that there is “at least a realistically arguable case that such tokens are to be treated as property as a matter of English law” (see *Osbourne v Persons Unknown*). For more on freezing orders, see Practice note, Freezing orders: an overview.

The recent ruling in *Tulip Trading Ltd v Bitcoin Association for BSV and others* ([2022] EWHC 667 (Ch)) also has implications for the enforcement options available in the context of digital assets. While the court rejected the idea that cryptocurrency software developers owed a fiduciary duty to network users on the specific facts, some non-binding comments did leave the door open for future developments in this area.

As suggested above, it is important to bear in mind that solutions to any enforcement issues can be coded into the NFT smart contract itself. For example, in a situation where security is being taken over an NFT with a right to take control or, where there is an agreement for onward sale of an NFT, a transfer mechanism could form part of the smart contract terms. This would effect transfer of the NFT on the occurrence of certain predetermined events, with a condition that the NFT is to remain in a certain location for the duration of the contract term to allow such an automation to be effective. This would be for commercial discussion between the parties but demonstrates how forward-thinking in the creation of a smart contract could help avoid difficulties further down the line.

# Digital Assets at Boodle Hatfield

Over recent years, digital assets have emerged, becoming increasingly important in modern society and investments – with around one fifth of the UK population now owning at least one form.

Our digital assets group is underpinned by specialists from around the firm, who can advise on everything from corporate structuring, disputes and intellectual property through to tax, financial claims in divorce and estate planning.

## Interested in hearing more about NFTs?

Our specialist team produce a monthly litigation roundup blog that closely monitors the developments surrounding key NFT disputes to be aware of visit [www.insights.boodlehatfield.com](http://www.insights.boodlehatfield.com) to subscribe and view the archive of blogs.

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Fred specialises in advising clients from the art, cultural property and classic car sectors. He also advises entrepreneurs and privately held businesses on their various business arrangements in a broad range of sectors.

In the art, cultural property and classic car sectors, Fred's clients include collectors, event organisers, artists, dealers, galleries, auction houses, art fairs, public institutions and private collections. He advises on the full range of commercial matters relevant to his clients, including sale and purchase agreements, consignment agreements, commission agreements, loans, terms of business and import and export matters. He has experience advising on issues relating to title, provenance, history, authenticity and condition and in relation to looted art, restitution. Fred is on the advisory board of the Woolwich Contemporary Print Fair.

In the business services sector, Fred advises on M&A, debt and equity finance, shareholder and Board governance issues and other corporate and contractual matters. He has experience dealing with data protection and intellectual property matters.



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Rosie advises clients on a wide range of commercial disputes and art litigation. Rosie acts for companies and high net worth (HNW) individuals. Her commercial litigation practice has most recently focussed on contractual claims, negligence claims, insolvency and breaches of directors' duties. She also has experience in enforcing both domestic and foreign judgments in England & Wales.

Rosie is a member of the Firm's leading art law team and has experience in advising on breach of contract, title disputes and the recovery of artwork. She has completed a secondment with the Royal Academy of Arts and is an author of the Firm's dedicated art law blog, Art Law & More. Rosie is also a member of the digital assets team and co-founded the Firm's monthly NFT litigation round-up.

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