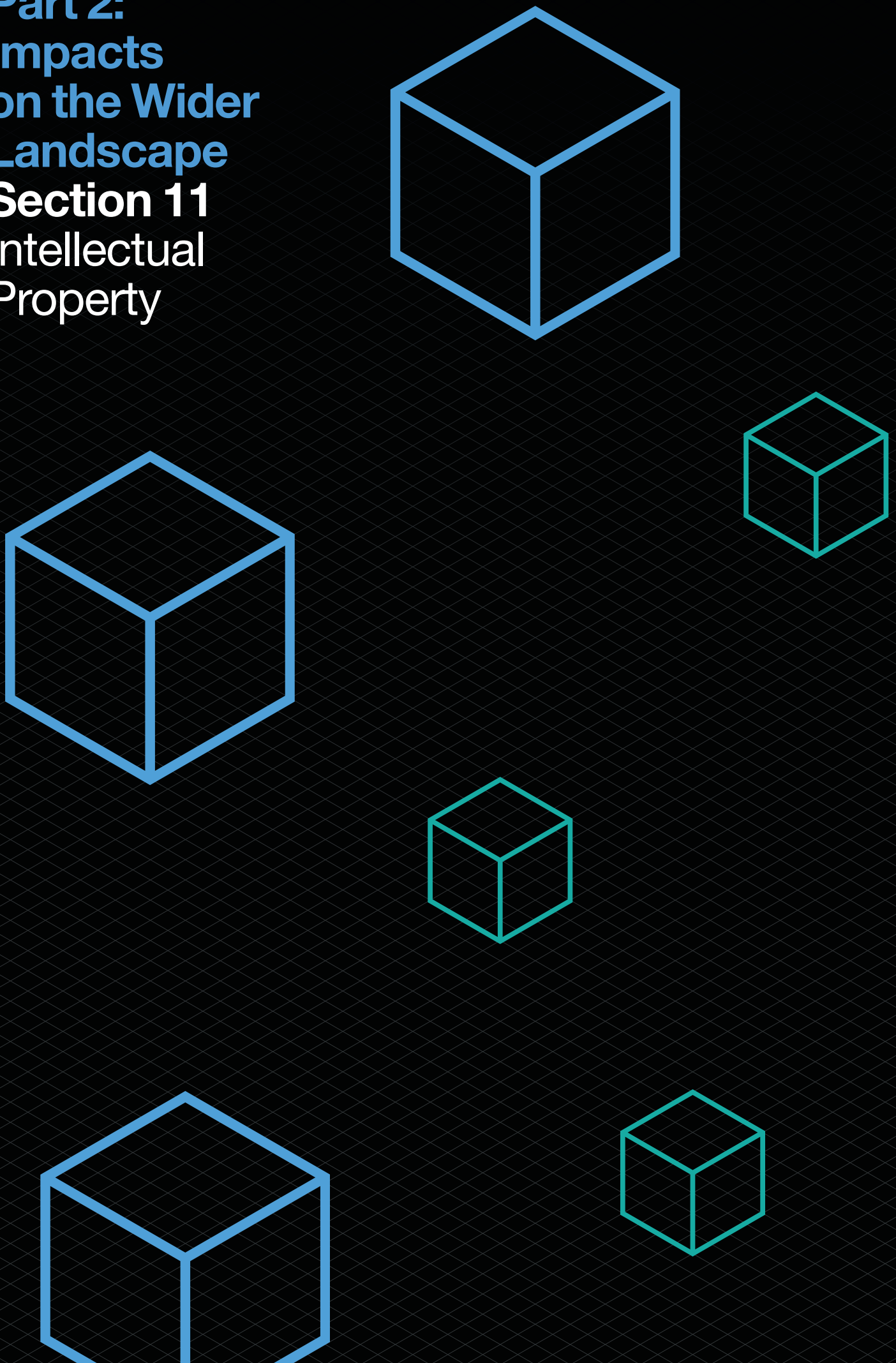
# Part 2: Impacts on the Wider Landscape

## Section 11 Intellectual Property



## Section 11: Intellectual Property

Hayleigh Bosher, Brunel University London; John Shaw, Brandsmiths; Kaetlin Gale, Foot Anstey LLP; Sophie Parkinson, Jani Ihalainen, Noonie Holmes, Rory Graham, Jack McAlone and Sophia Gofas, RPC; Terence Broderick, Arthur Roberts and Karen Fraser, Murgitroyd

### Introduction

Many of the positive functionalities presented by Distributed Ledger Technology (DLT) have implications relating to Intellectual Property Rights (IPR). Intellectual Property Offices around the world are setting out guidance on how to address the goods and service for trade marks registered in this space. Whilst DLT's immutability provides an incorruptible record of transactions, this raises issues for any notice and takedown regime seeking to address copyright infringement. Patentability of DLT will require an analysis of any software purporting to have a technical effect. Supply chains will take advantage of DLT, but there remains the question of whether or not information stored on DLT remains confidential. Non-Fungible Tokens (NFTs) provide a cryptographically unique asset, but IPR is likely to subsist in any linked media which requires some form of transfer to any new owner.

Whilst the issues raised by DLT in respect of IPR should not be downplayed, they do not appear to be insurmountable for practitioners given the various existing IPR regimes. This third edition of the guidance echoes previous editions in its view that most tensions between the technology and IPR regimes can be addressed by practitioners while the remaining uncertainty would benefit from legislative or judicial clarification.

### Trade Marks

The growth in the value of blockchain-backed assets in digital environments has raised questions of how trade marks should be registered where they relate to goods backed by blockchain.

Many influential brands have filed applications to register their trade marks for use in relation to blockchain backed assets and as NFTs, which has caused Intellectual Property Offices, such as the European Union Intellectual Property Office (EUIPO) and the United States Patent and Trademark Office (USPTO), to give consideration to the classification of virtual goods and services.

<u>European Approach to trade marks in virtual goods and services</u>

In summer 2022, the EUIPO published initial guidance[214] on the approach it intends to take for the classification of virtual and blockchain-backed goods for trade mark filings to reduce the number being rejected for lack of clarity.

For the first time, the draft EUIPO Guidelines for 2023[215] (2023 Guidelines) will include a description of 'virtual' goods as "non-physical items that are purchased and used in online communities or online games". Anyone wanting to register a trade mark for a downloadable virtual good should do so using Nice Classification Class 9, as they are considered digital content or images. Importantly, the term 'virtual goods' will not alone be sufficient for registration of a trade mark, as the EUIPO considers that the term "lacks clarity" and must be supplemented by a statement that sets out the content to which the blockchain-backed goods relate. An example might be: "downloadable virtual clothing, namely shoes".

The new 12th Edition of the Nice Classification also includes the term *"downloadable digital files authenticated by non-fungible tokens". This would appear to be the term*

214 https://euipo.europa.eu/ohimportal/en/web/guest/news-newsflash/-/asset_publisher/JLOyNNwVxGDF/https://euipo.europa.eu/ohimportal/nl/draft-guidelines-2023

215 https://euipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/contentPdfs/trade_marks/draft-guidelines-wp-2023/Trade_mark_Guidelines_2023_consultation_en.pdf

*used by the EUIPO for any blockchain-backed digital good or NFTs, and highlights that the blockchain registration or NFT certifying ownership is to be treated as distinct from the digital 'item' itself (a theme which is revisited later in this section). It seems that the NFT alone cannot be accepted for classification purposes, and instead the downloadable digital good and blockchain-certification together would be acceptable, again in Class 9, for example as "downloadable digital clothing, authenticated using blockchain".*

The new 2023 Guidelines also highlight that that there can be no one-size-fits-all approach when it comes to blockchain-backed digital assets. In particular, the above classification applies to downloadable digital goods only. Any non-downloadable blockchain-backed goods (e.g. a browser-only digital good or artwork) cannot fall within Class 9 and must be classified and therefore registered separately. The EUIPO considers that non-downloadable blockchain-backed items are distinct and should be classified in Class 42, i.e. as services. This means applications to register trade marks for virtual goods that can be used in-browser only or downloaded should seek registration in both classes.

The 2023 Guidelines are currently in draft form and will be reviewed by stakeholders before they are finalised. The approach suggests an awareness from the EUIPO of the requirement for certainty from brands who want to ensure that their trade marks are protected even when applied to blockchain-backed digital assets.

US Approach to trade marks in virtual goods and services

The USPTO has been less direct in providing guidance on how trade marks for metaverse and blockchain-backed virtual goods are to be registered. Instead, we can look to recent trade mark infringement case updates from the US courts to understand the approach that is likely to be taken.

In *Hermes v Rothschild*[216], the international brand and owner of the relevant IP rights in the infamous 'Birkin' bag, Hermes, have sued a Mr Rothschild for trade mark infringement and cybersquatting in relation to NFTs that were created using images of Birkin bags, so-called 'MetaBirkins'. The progression of this case in the US courts suggests that authorisation will be required for the commercial use of a trade mark when that mark is being used to create a separate digital asset. This is a position reflected in *Nike v StockX*[217], a similar US case in which the exchange StockX was sued by Nike over its use of the brand's logo in NFTs. These cases are ongoing in the US and demonstrate the risks of using trade marks registered for use in other classes in NFTs without proper authorisation from brand owners. The position taken by the US courts, while not final, appears to reflect the position taken in the UK and EU, where brand owners appear to be able to pursue unauthorised use of trade marks in relation to digital assets.

The UK Perspective to trade marks in virtual goods and services

The UK IPO has not yet published its proposed practice for the registration of trade marks for blockchain-backed goods, however it is possible that they will adopt the same approach as the EUIPO.

The most prominent case related to NFTs to date in the UK has been Osbourne v Persons Unknown[218]. While the case did not involve any alleged intellectual property infringement, it is worth mentioning here for the guidance it might provide on the attitude that UK authorities will take in relation to the registration of such assets, since the High Court decided that an NFT could be "property" for the purposes of an injunction. This is a pivotal decision that is likely to have a far-reaching impact on the way that NFTs are treated in the court system in England and Wales.

Practitioners are advised to review any trade mark portfolios and keep up with the emerging guidance from the Intellectual Property Offices as recent case law suggests

216 Hermes v Rothschild USDC SDNY 22-CV-384
217 Nike v StockX USDC SDNY 22-CV-983
218 Osbourne v Persons Unknown [2022] EWHC 1021

that unauthorised use of trade marks will continue to be a battleground in the DLT space.

**Copyright**

There are two areas where copyright infringement may arise – in NFTs and items placed on the blockchain, and in the copy and use of the underlying code itself. For comments relating to copyright infringement and NFTs please see Section 5 This section focuses on copyright, and its infringement in the context of blockchain code. To do so, this section will explore (i) copyright protection in software generally; and (ii) the difference between software generally and blockchain software. This section will also address some issues that should not be ignored by the blockchain community, including copyright infringement in a blockchain ecosystem (including whether the immutability of blockchain is incompatible with the notice and takedown regime), copyright vulnerabilities in NFTs and a reminder to consider commercial relationships when advising on copyright infringement in an NFT context.

Copyright protection in software (generally)

Protectable copyright works include computer programs[219]. Whilst 'computer program' is undefined, it likely encompasses "programs in any form, including those which are incorporated into hardware"[220], including both source code and object code (that which is machine readable). Graphical user interfaces and the function of a computer program cannot be protected, as code, written in a different format, could produce the same function[221]. An IPO-commissioned report opined that whilst copyright protection will not extend to the functionality of software, it will cover the expression of computer code[222].

Software that underpins blockchain is open source

Practitioners should be wary of advising on copyright protection in a blockchain context. Where software, such a blockchain, is initially created/programmed by a human, and is then followed and built-on by a computer using automatic/embedded rules (creating further code), the usual rules of copyright are unlikely to apply.

Superficially, the copyright of the original code of a specific blockchain program will be attributed to the code-writer (subject to any employment provisions to the contrary) under standard copyright law. However, due to the decentralised nature of blockchain technology (and the licences that are wedded to the underlying software) it is likely that blockchain programs will not be copyright protectable.

The underlying works behind the theory of blockchain (e.g. the Satoshi Nakamoto white paper[223] that established the model for blockchain and the underlying C code behind Bitcoin[224] which was the first form of blockchain technology in action) would ordinarily be afforded copyright protection. However, the decision in Wright v BTC Core[225] highlights the complexity in this area, with the court finding that although copyright may subsist in a work such as the white paper, copyright does not subsist in the Bitcoin file format. This is because of a lack of fixation of the file format structure in any of the Bitcoin blocks. There is also the issue of copyright in the code itself.A short review of the Bitcoin website and associated licence(s) confirms that the MIT licence applies:

219 as literary works under the s.1(1) Copyright, Designs and Patents Act 1988
220 Section 1(2) of the Software Directive, which was implemented in the UK by the Copyright (Computer Programs) Regulations 1992 (SI 1992/3233) (Computer Program Regulations)
221 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/549045/Study-I.pdf; SAS Institute Inc., v. World Programming Ltd., (C-406/10) [2012] 3 CMLR 4. See also Guarda P., Looking for a Feasible Form of Software Protection: Copyright or Patent, Is that the Question? [2013] 35(8) European Intellectual Property Review pp.445 – 454 at p.447
222 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/549045/Study-I.pdf;
223 https://www.ussc.gov/sites/default/files/pdf/training/annual-national-training-seminar/2018/Emerging_Tech_Bitcoin_Crypto.pdf
224 https://bitcoin.org/en/
225 [2023] EWHC 222 (Ch)

"Copyright […]

*"Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions: The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software."*

Copyright protection of the blockchain software appears to have been waived, and anyone seeking to implement blockchain technology (which was separated from Bitcoin in 2014) and rely on the software must also agree to waiving copyright protection to uphold the values and objectives of the open-source initiative. Although copyright protection is possibly afforded to the white paper (as an academic work), www.bitcoin.org is listed under the paper's heading and the MIT licence grants "permission… to any person obtaining a copy of… associated documentation files", which may be interpreted as applying to the white paper.

Any rights to software and computer code in Ethereum are similarly waived as they are licenced under the above MIT licence[226]. On initial consideration it appears that Ethereum maintains its rights to the website itself and all information, text, audio files, photos and imagery on the website. These rights are afforded to the Ethereum Foundation (a non-profit organisation dedicated to supporting Ethereum and related technologies[227]). However, on deeper analysis it is evident that unless otherwise marked, the website and all material (text, audio files, photos etc.) is licenced under the Creative Commons Attribution 4.0 International Licence (CCA4.0IL), which confirms that individuals are free to share, copy, redistribute and adapt material (even for commercial gain) so long as appropriate credit, evidence of any adaptions and a link to this licence is provided. Therefore, anyone that uses Ethereum software or information must rely on the MIT provisions and the CCA4.0IL provisions accordingly.

Some blockchains are decentralised systems, and the creators have sought to protect this by an apparent waiver of copyright protection, which is married to the underlying software, and must be passed down to any progeny. Practitioners should keep one eye on the open licences when advising on the protection of the creation of apps and websites that do not specifically rely on the blockchain software, should any of the software subsequently be used as this may impact IPR ownership

Copyright infringement in a blockchain ecosystem

The immutability of the blockchain makes it a particularly challenging environment in which to protect IP rights. If someone mints an image that has been taken or created by a third party (and therefore does not own the relevant copyright) what recourse is available to the copyright owner?

If an infringing NFT is put on sale in an NFT marketplace, it is possible to send a takedown notice to that marketplace to remove the infringing image from their platform, if it has not been minted. However, if the NFT has been minted and/or is associated with a cryptowallet, the platform will not be able to necessarily 'burn' (i.e. delete) or recover the asset from any purchaser.

Similarly, many blockchain operators will be unable to take any action in the event of an infringing work being uploaded on to the blockchain. While the decision in Osbourne v Persons Unknown[228] does show a willingness from the courts to apply the rules to fit a newer paradigm, it is unlikely that platforms will be under any degree of obligation in terms of NFTs listed for sale on their services. The owner or purchaser of the NFT could

226 https://ethereum.org/en/terms-of-use/
227 https://ethereum.org/en/foundation/
228 Osbourne *v Persons Unknown* [2022] EWHC 1021

similarly be uncontactable or untraceable, as was the case in Osbourne v Persons unknown[229].

Copyright Vulnerabilities in NFTs: ownership and infringement

Clearly, NFTs do present new challenges to the legal framework. The form of ownership, sometimes straddling between the world of physical and digital ownership, also presents vulnerabilities that NFT owners and sellers should be mindful of.

The distinction between 'off chain' and 'on chain' ownership separates the ownership of the potential physical form of a work (like a physical piece of art minted as a digital NFT), and the associated rights between the two will differ. The purchaser may be transferred the copyrights in a work under a licence, or might get nothing at all, with the original artist retaining their rights through the original, physical, work. Likewise, rights may be retained by the platform (NFT licences are discussed in more detail below). For example, the terms and conditions of the Serenade platform state:

> *"The Artist hereby acknowledges, understands, and agrees that launching a Serenade Product on Serenade constitutes an express and affirmative grant to Serenade, its affiliates and successors a non-exclusive, world-wide, assignable, sublicensable, perpetual, and royalty-free license to make copies of, display, perform, reproduce, and distribute the Serenade Products on any media whether now known or later discovered for the broad purpose of operating, promoting, sharing, developing, marketing, and advertising the Platform, or any other purpose related to Serenade, including without limitation, the express right to: (i) display or perform the Serenade Products on the Platform, a third party platform, social media posts, blogs, editorials, advertising, market reports, virtual galleries, museums, virtual environments, editorials, or to the public; (ii) create and distribute digital or physical derivative Serenade Products based on the Serenade Products..."* [230]

Therefore, should someone utilise or disseminate their NFT it is possible that they are infringing on someone else's copyright. This will depend on the terms of the smart contract and the specific terms of a given NFT, as different rights (or none) may be given or retained in different instances. Any NFT purchaser will therefore need clear rights to be able to commercialise an NFT.

Licensing and assignments are also important in the space, where, without these proper terms (as discussed above), one may infringe on rights they thought they had. Without proper licensing or transfer of copyrights in the NFTs one may have purchased they could very well have simply purchased the rights to display the work only and not to use or commercialise it in any way.

The same applies to derivative works and whether any licensing or smart contract terms allow for the creation of those derivative works (e.g. using an NFT character in a TV show/film). It is vital that these terms are clear and understood when any NFTs are transferred, as they will impact the use by any subsequent buyers.
Even established creators can misunderstand these limitations, such as was the case for Quentin Tarantino who was sued by Miramax for breach of contract, unfair competition, copyright, and trade mark infringement, after announcing an NFT auction of seven 'never-before-seen' scenes of his handwritten Pulp Fiction script, discussed below[231].

Miramax v Tarantino USDC CDC 21-CV-8970

In seeking to allege copyright infringement via NFTs, practitioners should keep at the forefront any commercial relationships between the parties. In this case[232], Quentin

229 Osbourne v Persons Unknown [2022] EWHC 1021
230 https://serenade.co/terms
231 Miramax v Tarantino USDC CDC 21-CV-8970
232 Miramax v Tarantino USDC CDC 21-CV-8970

Tarantino was accused by Miramax LLC of copyright (and trade mark) infringement, as Tarantino granted Miramax "all rights (including all copyrights and trade marks) in and to the film", whilst reserving his rights to specific media (that Miramax argued did not cover NFTs). Tarantino then sought to create NFTs of the Pulp Fiction script, graphics and images as well as scenes with unknown secrets on the basis that NFTs (that didn't exist at the time of the agreement) fell outside its scope. Whilst Tarantino told the court that Miramax had no right to block his NFTs, the parties reached a confidential settlement in order to collaborate and work together on future projects (and, possibly, NFTs).

**Design rights in a blockchain backed metaverse: can they subsist?**

The question of whether a design right can subsist in a metaverse does not have a straightforward answer, having not yet been properly tested by the Courts. Under UK legislation, the "appearance of the whole or part of a product"[233] can be protected by registration of a design, but there is no clear definition as to whether the virtual recreation of such a design amounts to 'using'[234] of the product in the sense envisioned by legislators. Some commentators have suggested that, without careful contractual protection, rights in the virtual recreation of a physical design might lie with the software licence holder, or virtual designer[235], whilst others argue that the lack of limitation as to a particular class of goods or services when registering a design in the UK suggest that the digital recreation of a design could be covered by a registration in respect of a physical design[236].

UK legislation protects unregistered designs by preventing creation of 'articles', "exactly or substantially" to a design[237]. Whether a digital object can be an 'article' or whether the recreation of a physical design would be considered substantially similar are questions that also remain unanswered.

Lawmakers are certainly alive to this lack of legislative clarity. The UK Intellectual Property Office is in the process of considering how it can "ensure the designs system is flexible enough to support developments in technology"[238]. Similarly, the European Union Intellectual Property Office is updating its own Design Guidelines, clarifying its classification of terms such as 'virtual goods'[239].

This is an area in which much remains to be determined. Nevertheless, areas that practitioners should consider are highlighted below.

Protection of Virtual Assets through Design Rights

It is possible that registration of physical designs could operate to protect digital recreations given the flexibility provided by the lack of restriction of a registration to a particular class of goods. This would be of use to designers in providing long periods of protection (up to 25 years under the UK and EU regimes, subject to renewal[240]). However, the relevance of registered design rights in a metaverse may be limited.

Currently, the use of designs in a metaverse often relates to fashion, with individuals seeking to adorn avatars with digital versions of 'real world' designs. Registration can take up to four months and the costs per application represent a significant financial burden[241]. Considering the rapid fashion cycle, registering a design may

233 Registered Designs Act 1949, s.1(2)
234 Ibid. s.7(2)
235 Brooke Roberts-Islam, Forbes, 3 November 2020, "Digital Fashion: Who Really Owns The IP Rights?" <https://www.forbes.com/sites/brookerobertsislam/2020/11/03/digital-fashion-who-really-owns-the-ip-rights/>
236 Richard Burton and William Burrell, D. Young & Co, December 2021, "Brand enforcement in the metaverse - time for a re-think?" <https://www.dyoung.com/en/knowledgebank/articles/brand-design-metaverse>
237 Copyright, Designs and Patents Act 1988, s.226
238 UKIPO, 12 July 2022, "Consultation outcome, Call for views on designs: Government response" <https://www.gov.uk/government/consultations/reviewing-the-designs-framework-call-for-views/outcome/call-for-views-on-designs-government-response#contents>
239 Intellectual Property Helpdesk of the European Commission, 29 July 2022, "Intellectual Property in the Metaverse. Episode 5: Enforcement measures and conclusions" <https://intellectual-property-helpdesk.ec.europa.eu/news-events/news/intellectual-property-metaverse-episode-5-enforcement-measures-and-conclusions-2022-07-29_en>
240 The Registered Designs Act 1949 (as amended) Council Regulation (EC) No 6/2002
241 Ioanna Lapatoura, 'Fashion Beyond Physical Space: Nfts and Intellectual Property Challenges In The Metaverse' (2022) 33 Entertainment Law Review.

be beneficial only if designers limit registration to the most timeless articles of their collection[242]. This would mean leaving many articles unprotected.

In the 'real world', a high number of designers rely on Unregistered Design Rights (UDR) to secure IP protection for their creations. The Unregistered Designs regime allows for designs to be protected without the need for registration, bridging the gap created by rapid fashion cycles. It follows that UDR might be useful for the IP protection of digital assets in the context of a decentralised metaverse as well[243].

However, whether UDRs apply to digital recreations remains open to debate. To the extent that they might, designers are likely to encounter further difficulties in relying upon UDRs. A blockchain backed metaverse is a borderless space with no territorial boundaries. One of the most important challenges that arise when thinking about the application of UDR in the virtual world is that of territoriality[244].

Art.11 of the Design Regulation allows for unregistered designs to be protected for three years, on the sole condition that the work qualifies[245]. A key requirement for a design right to automatically subsist is for the article to be made available to the public (disclosure) within the territory of the European Union (for the UK following Brexit a "supplementary unregistered design" would be required). Potentially, a design published in a metaverse is published globally, as users from all over the world can access the platform simultaneously. Thus, whether UDR can subsist in the borderless sphere of a metaverse is difficult to determine.

The distinction between an open and a closed metaverse is likely to be a relevant consideration. In an open metaverse the aim is for users to be able to utilise digital assets across different platforms without barriers, whereas a closed metaverse has an 'owner' that is usually able to restrict individuals' access and control available content. Designers might be able to utilise virtual borders in closed metaverses to control the extent of first disclosure by revealing designs to a limited and chosen public.

Enforcement of design rights in a blockchain backed metaverse

Whilst it is possible that design rights subsist in a blockchain backed metaverse, the enforceability of such rights is a different matter. The most obvious potential barrier to enforceability is also one of the key facets of a metaverse, the lack of visibility as to the identity of individual users. Whilst enforcement action might be possible against individuals who have identified themselves in the real world[246], claims against anonymous infringers will be harder to enforce.

Whether infringement takes place in an open or closed metaverse may greatly affect the extent of enforceability. In a closed metaverse, it is conceivable that design rights might be enforceable through the 'owner' of a metaverse, through similar methods to those by which regular social media platforms can be required to take action to remove infringing content[247]. However, this, in and of itself, pulls up important, currently unanswered questions regarding what onus should lie with platform providers in identification as well as in enforcement action.

In an open, blockchain backed metaverse, decentralisation and self-sovereignty are key concepts, neither of which is necessarily conducive to identification by third parties for the purpose of enforcement. Whilst blockchain may enable users to identify themselves, it will likely remain difficult for third parties to do so. Similarly, the existence of a borderless virtual space throws up the potential for jurisdictional enforcement issues[248].

242 ibid
243 Ioanna Lapatoura, 'Fashion Beyond Physical Space: Nfts And Intellectual Property Challenges In The Metaverse' (2022) 33 Entertainment Law Review.
244 Fashion Law and others, 'Design Protection In The Metaverse: How Is It Going To Be?' (Fashion Law Journal, 2022) <https://fashionlawjournal.com/design-protection-in-the-metaverse-how-is-it-going-to-be/> accessed 14 October 2022.
245 Art.11, Council Regulation (EC) No 6/2002
246 Hermes International v. Rothschild, U.S. District Court for the Southern District of New York, No. 1:22-cv-00384
247 Article 14, Directive on Electronic Commerce
248 Intellectual Property Helpdesk of the European Commission, 29 July 2022, "Intellectual Property in the Metaverse. Episode 5: Enforcement measures and conclusions" <https://intellectual-property-helpdesk.ec.europa.eu/news-events/news/intellectual-property-metaverse-episode-5-enforcement-measures-and-conclusions-2022-07-29_en>

These questions remain to be tested. The answers will be crucial for designers and creators that rely on design rights as it will determine the scope and effectiveness of their rights. Given that the metaverse is only getting larger, with a report by Strategic Market Research anticipating its global market value will surpass $678.80 billion by 2030[249], these uncertainties are likely to become increasingly relevant as time passes.

**Patents and DLT**

Patents are an intellectual property right which protects technological innovation. They last 20 years and provide a legal monopoly over the scope of the patent (as determined by its claims). That is to say, a granted patent gives its owner the ability to stop others from exploiting an invention as defined in the patent's claims. This is an extremely useful commercial tool and allows any innovator to carve out sections (or implementations) of technology to make it difficult for competitors to compete with them.

While it may seem counter to DLT's open source beginnings, patent filings mentioning blockchain or DLT have increased year on year. Over 20,000 patent applications were published in this space in 2021, up from 17,000 in 2020 and 6,300 in 2019, showing a generally upward trend and a thirst from innovators in this space to seek to protect the unique features of their technology.

Based on data provided by ipQuants[250], blockchain related patent applications are not only being filed in large numbers, but also being granted. Of 837 cases identified at the European Patent Office (EPO) with the terms "blockchain" or "distributed ledger" in the clams, 519 were granted. This gives a grant rate of 62%. Statistics also indicate that the grant rate has increased in recent years.

Currently, granted DLT patent rights can and do already cover many different aspects of DLTs including the core implementation of ledger itself (sometimes called layer 1 technology), protocols built on top of DLTs (sometimes called layer 2 technology), and applications built using either or both layer 1 or layer 2 technologies. More recent patent applications tend to be aimed at protecting further developments of these foundational DLT technologies.

To obtain a patent, an application is first filed at an intellectual property office (IPO). The IPO will then examine the patent application. Patent examiners look at three main things for DLT related applications: novelty, inventive step, and patentable subject matter. When seeking a patent for DLT related technology, the biggest obstacles to overcome, especially in Europe, are typically inventive step and patentable subject matter.

Focusing primarily on the EPO, once they have established that a claim has novelty, they will assess inventive step of subject matter by deciding whether the novel features address a technical problem. That is to say, they will seek to determine whether the novel features relate to patentable subject matter and whether they address a problem which requires technical, rather than commercial, skill to solve. Given the EPO is often regarded as the gold standard for inventive step, especially in the software space, patent applications which can overcome this obstacle will often be granted both at the EPO and most other countries.

The concept of a technical problem has a very broad scope at the EPO and in the context of DLT can encompass everything from problems related to the hardware used to run blockchain nodes through to solutions which improve the security of the use of blockchain to store information relating to public or private cryptographic keys. However, those DLT applications which are focused solely on, say, commercial problems related to cryptocurrency, will find the requirement of a technical problem difficult to satisfy.

249 Strategic Market Research on the Metaverse Market, June 2022, <https://www.strategicmarketresearch.com/market-report/metaverse-market>
250 https://ipquants.com/

It is often difficult to judge, at the initial drafting stage of a patent application, exactly which side of the line a patent application will fall on, as a lot of it depends on what else has been disclosed or published (and is therefore prior art) – but experience is teaching us which applications will stand a better chance than others.

Those applications which will stand the most chance of success in demonstrating a technical problem tend to either address problems in the underlying technical architecture or use DLT features (such as the immutability of the blockchain) to address technical problems outside of the architecture.

For example, as the use of the blockchain increases, transaction processing becomes an important problem. Inventions which modify how the underlying nodes process transactions or manage unconfirmed and/or confirmed transactions are more likely to satisfy the requirement for an invention to address a technical problem. However, inventions that involves a generic use of the blockchain to address a commercial problem, such as managing data for a betting application or smoother process of forex transactions, are very likely to struggle. The EPO would likely acknowledge the technicality in the processing but find the novel features related to the betting and financial aspects to lack technical character.

As set out above, the EPO provide what is arguably the 'gold standard' in examining patent applications in this space. However, the UKIPO provide a way of obtaining protection in the UK for much lower filing fees. Aside from the geographical scope of protection which can be obtained, the UKIPO adopt a very different approach for assessing the patentability of subject matter to the EPO. This can sometimes make it difficult to obtain patents using the UKIPO if they relate to DLT technology. The UKIPO appear to assess patentability before they can consider inventive step. By comparison, the EPO acknowledge the differences first, and then determine inventive step and patentability based on these novel features.

A key difference between the approaches is that the UKIPO can often require an applicant to address patentability irrespective of any cited prior art (which can then be cited later if you overcome this objection) which may mean narrowing amendments to the claims without sight or idea of what could be novel or inventive.

The EPO approach has more structure given that the EPO Examiner must demonstrate that some features are known using evidence from the prior art.

For further comparison, the USPTO adopt a different approach again. Recently, it has been indicated that they look more at the practical applications of the invention and, provided the invention is not just limited to the abstract (i.e. difficult maths or a business concept), they will look at novelty and inventive step as the first port of call.

It is clear at this stage that the world of patents is far from harmonised when it comes to assessing the patentability of DLT-based inventions. However, this is not unexpected since it is the way that the above discussed patent offices access all computer implemented inventions. Thus, the differing approaches should not deter applicants from filing a patent application if they are confident that they can demonstrate the merits of their invention beyond just enabling a business method to be implemented. This will provide the most chance of success in most countries. Much of the discussion of patents related to DLT is currently limited to those drafting and prosecuting (applying for) these patent applications. Many patents are, as we stand, not tried before the English Courts as litigation before the higher courts is not yet taking place – although it is expected in the future as interest in the commercial applications of DLT grows.

For this reason, it is key when pursuing patent applications in this space to be as clear as possible in how the features are used and defined to give the best chance of effective protection around your technology.

A particular point of interest will be the extra-territoriality of DLT. Similar to the cloud, DLT does not have a territory of its own and, by its very nature, is multi-jurisdictional. For this reason, it is important to ensure that patent applications are worded to provide flexibility to protection in that the entities involved with the DLT are given individual protection rather than relying on protection for the entire system, as implementations by infringers will often cover multiple jurisdictions. This is not always straightforward but it improves enforceability if your invention is not reliant on activity at more than a single node.

In summary, how the world of patents will treat DLT remains to be determined, but we can say with certainty that patents are being obtained for various aspects of both the application and underlying architecture of this technology.

**Trade Secrets and Confidential Information on blockchain**

Can a blockchain be used as an escrow for confidential information?

Another use for DLT, given its cryptographic security, is for supply chain management, which would in turn result in the storage (and possible release) of confidential information. In this situation, the DLT would function as a form of escrow between the uploader of the information and any authorised recipient. Given the public nature of some blockchains, and the possibility of reviewing transaction, the question then arises as to whether, once information is added to a blockchain, it can be protected by the common law of confidence.

The three-limb test for whether information could be protected by the common law of confidence was set out in Coco v AN Clark (Engineers) Ltd[251] and is as follows: (i) the information must have the necessary quality of confidence; (ii) the information must have been imparted in circumstances importing an obligation of confidence; and (iii) there must be an unauthorised use of that information to the detriment of the rights holder. These elements are assessed below in relation to DLT.

Do DLTs have the necessary quality of confidence?

One key question is whether information can retain the necessary quality of confidence if it is placed on DLT. It was held in Saltman Engineering Co Ltd v Campbell Engineering Co Ltd[252] that, outside of contractual provisions, the necessary quality of confidence required that the information was not public property or public knowledge. By comparison, the statutory definition[253] of a trade secret is information which is secret and not generally known or readily accessible to those who normally deal with the information, has commercial value and has been subject to reasonable steps by the owner to keep it secret.

One relevant question is whether the blockchain is open or closed. An open blockchain can be accessed by anyone, meaning that anyone can attempt to decrypt the information contained on it. While it is difficult to decrypt information held on a sophisticated distributed ledger, especially when salted and peppered hashes are used[254], it is not impossible. It was held in Mars v Teknowledge that the mere fact that information was encrypted did not impart the quality of confidence as “anyone with the skills to decrypt has access to the information”[255]. More recent case law, however, such as Kerry Ingredients v Bakkavor Group[256] has held that information ascertainable by reverse engineering or decryption could still have the necessary quality of confidence if the process of decrypting or reverse engineering would involve significant amounts of work. The courts have yet to determine whether the amount of work required to decrypt information on a DLT is sufficient to give rise to the quality of confidence.

251 Coco v AN Clark (Engineers) Ltd [1968] F.S.R. 415
252 Saltman Engineering Co Ltd v Campbell Engineering Co Ltd [1948] 1 WLUK 12
253 Regulation 2 of the Trade Secrets Regulations
254 Salted hashes include additional (and unique) random data to a password before hashing and then storing a ‘salt value’ with the hash, making it harder for hackers to use pre-computation techniques to crack passwords. A pepper is a secret added to an input, such as a password prior it being hashed. A pepper differs from a salt because it is secret.
255 Mars UK Ltd v Teknowledge Ltd [1999] 6 WLUK 149
256 Kerry Ingredients (UK) Ltd v Bakkavor Group Ltd [2016] EWHC 2448 (Ch)

Closed blockchains require that a user is authorised before they can access the ledger, and the information is stored on the devices of the trusted intermediary. For an outsider to gain unauthorised access to the information, they would have to overcome the additional (and significant) hurdle of gaining access to the blockchain. It may be that the additional work and complexity involved, combined with the fact that the blockchain was made private in the first place (which may make a court more willing to infer that the information was intended to be confidential), is sufficient for the information to have the quality of confidence. It should be remembered, however, that any dispute in this area will turn on its own facts.

Practitioners should also remember the other steps that can be taken to safeguard the confidentiality of information. While marking information as confidential is not conclusive, it will aid any argument that the information has the quality of confidence, as will any evidence of an agreement between the parties that the information should be treated as confidential.

**NFTs and Intellectual Property**

NFTs may be considered as a new form of asset but, when considering the IPR related to them, it is unhelpful to distinguish them in this way. Much focus has also been given to what a third party may do with a copy of the asset, which may be in breach of various IPR (such as copy and pasting a digital image). As a result of assumptions people make when acquiring NFTs, the ease of online infringement and relatively limited (albeit growing) understanding of the licences involved, it has become unclear what the purchaser of an NFT owns. Below is a consideration of the IPR that may be acquired when purchasing an NFT, with a review of various NFT collections terms.

<u>NFT Acquisition – who owns the art?</u>

A purchaser of an NFT usually acquires two things:

1. The digital token. This is normally governed under Ethereum's ERC-721 standard, and it bears a unique address containing metadata stored on a blockchain. The metadata describes (or "points to") a location that is usually off-chain (for example within The Interplanetary File System, IPFS) where the relevant artwork that you associate with the digital token is stored.

2. A licence or assignment (in the form of a smart contract, but usually set out in natural language terms on the minter's website). This is issued to the new owner of the NFT from the NFT Project that created the image. This licence or assignment sets out the rights which the new owner has in respect of the intellectual property in the image.

The implication of this is that a purchaser of an NFT is acquiring lines of code written onto a blockchain. More importantly, from an IPR perspective, they are also acquiring rights which prescribe what they may do with the off-chain asset to which the code points.

The IPR in the artwork are separate to the ownership rights in the token. Unless there is a legal instrument transferring them, they will remain with the creator of the art (which may be the minter of the NFT). IPR may be transferred by an assignment or a licence and practitioners should be aware of the formalities related to them and the differences.

It is also necessary for practitioners to consider whether the rights transferred under the initial sale may in turn be transferred in the event the new owner would like to sell or commercialise the artwork. Some platforms facilitate an equivalent to the artist's resale right, meaning that when an NFT is resold the original seller receives a percentage of the subsequent sale. The purpose of the resale right is to compensate the author for the loss of control over their work by granting them remuneration for each successive sale and therefore seems appropriate in these circumstances. Whether this law applies to digital art is not clear, but the effect can be achieved

through contractual terms. This means that the capacity for the seller to benefit from this depends on the terms of the platform they are selling through.

An assignment of IPR with NFT purchases

Under English law, the formalities for an assignment are set out in CDPA 1988 s.90(3). A transfer of IPR must be in writing signed by or on behalf of the assignor. In writing includes any form of notation or code but it is untested as to whether or not a smart contract will fulfil the requirement that the assignment be signed. Practitioners should be aware of this where parties are considering a transfer of IPR in their projects. Minters of the NFT, if attempting to assign the IPR, will likely require a licence back to cover the digital copy and enable authorised continued promotion of the NFT artwork (and project as a whole).

A licence of IPR with NFT purchases

Practitioners should consider if any licence of the NFT art is sole, exclusive or non-exclusive. Each of these are discussed in relation to NFT purchases below.

Under a sole licence, the licensor retains the right to exploit the relevant IPR but may not appoint any other licensees. An exclusive licence differs in that the licensor is itself excluded from using the licensed IP, but it is important to understand that an exclusive licence may not be truly exclusive in the sense that it may be limited by purpose or jurisdiction (for example). A non-exclusive licence entitles the licensor to grant further licences in addition to the one granted as well as continue to exploit the IPR itself. These forms of licences have serious implications when it comes to restricting the use of the IPR in any NFT artwork. As the summary below shows, different projects take different approaches when it comes to IPR in NFT art and practitioners should not ignore this as it has a direct impact on what NFT holders (and unrelated third parties) may and may not do with NFT art.

— The Cryptopunks licence[257] provides that the NFT holder is granted an exclusive, universe-wide, royalty-free, sublicensable licence to reproduce, distribute, preparate derivative works based upon, publicly display, publicly perform, transmit, and otherwise use and exploit the CryptoPunk Art. This licence intends to enable the NFT holder to make both commercial and non-commercial use of the CryptoPunk Art in any and all mediate.

— The NFT License 2.0 (NIFTY) has been created:

> *"as an open-source resource for the wider community to encourage adoption of the ERC-721 standard. DLI's goal is to positively shape the future of NFTs for creators of blockchain-based art (each, for the purposes of this License, a "Creator") by demystifying the associated user rights while empowering Creators to license their work at scale."* [258]

Under this licence NFT holders are granted a broad non-exclusive licence relating to non-commercial use as well as a non-exclusive licence relating to commercialising the NFT in merchandise (provided the commercial use does not result in earnings over $100,000).

— Under the Doodles licence[259] the NFT holder is entitled to use the Doodle as their profile picture, sell it and merchandise it up to $100,000 through sales of physical merchandise or by using the Doodle in a piece of art that they create. There are restrictions on minting further NFTs or altering the work and there are limitations on what material the Doodle may be used with.

257 https://licenseterms.cryptopunks.app/
258 https://www.nftlicense.org/
259 https://docs.doodles.app/terms-of-service

— The World of Women digital ownership assignment[260] includes an assignment of IPR to the primary owner of the NFT and there is a "secondary assignment". This agreement appears to be unique, not only because it attempts to assign the IPR in the art, but also because it attempts to impose obligations on subsequent owners of the NFT. Under the secondary assignment, there is an attempt to impose obligations on any future owner of the NFT so that the new owner is under the obligation to assign to any subsequent buyer all rights it has in the art under the same conditions.[261]

The above shows how different projects have attempted to address the transfer of IPR. Practitioners should be aware that there is no correct option when it comes to an assignment, non-exclusive, or exclusive licence. The aims of the project and expectation of the purchasers are the key elements to align with the transfer of IPR.

NFTs sold under Creative Commons licence

One form of licence that is being used by creators of artistic works linked to NFTs is a Creative Commons Licence (also known as CC0). Practitioners should be cautious when considering or having been approached with a CC0 licence. Under a CC0 dedication all rights are released so that the work belongs to the public and the creator is effectively saying that they do not wish to have any control of the copyright in the work. One further complication here is that other intellectual property rights, including trade marks would need to be waived, otherwise they may still be enforced.

This means that any work which has been linked to an NFT and released under a CC0 licence may be copied and reworked as no one owns the exclusive commercial and non-commercial rights. Practitioners should note that these rights are separate from the rights of ownership in the token.

**Decentralised autonomous organisation (DAO) ownership of IPR**

The issue of ownership is not only important for practitioners so that entities may be able to license rights, which they do in fact own, but it is also important so that it is possible to determine which legal entity owns the relevant IPR. As discussed above in relation to software, where an employee creates a copyright work in the course of their employment, the employing entity will own the copyright in the work (subject to an agreement to the contrary). One question that has been raised in relation to blockchain is: can a DAO own IPR?

This question is, in part, answered by determining the legal status of a DAO which will in turn be influenced by the factual organisational nature of each DAO. If, as suggested in this report, a DAO is considered to be a general partnership, the issue of joint ownership of IPR arises. The DAO's "token holders", being individual investors with a common view of making profit, may well be considered joint owners of any IPR which has been created by or transferred to the DAO.

In the UK, without an express agreement to the contrary, co-owners of IPR may not exploit jointly held IPRs without the consent of the other joint owners. This can stifle commercial exploitation of the IPR, and even management of an IPR portfolio. For example, in respect of patents, all applicants have to agree on any amendments to the specification. Therefore, DAOs would need a mechanism for making decisions around IPR exploitation and portfolio management.

However, practitioners should be aware that not all IPR is treated in the same way. For example, if goodwill is owned by a general partnership, the goodwill attaches to the partnership itself and not to the individual members[262]. This could raise issues if certain token holders ever sought to exploit the goodwill associated with a DAO in a new project, for example.

260 https://worldofwomen.mypinata.cloud/ipfs/QmRPn2jf3u5tc47Z2PDJRbzKZhBUyi4qBABfSVCDWeUBPz
261 Disclaimer - all licences are as accessed on 10 October 2022. The above comments should not be considered as legal advice in relation to the enforceability of terms of the licences and assignments (as applicable) but are intended to highlight the issues, using examples, that practitioners should consider when approaching a NFT project.
262 Gill v Frankie Goes to Hollywood, Decision of Registrar of Trade Marks 0-140-07 of Mr Foley 25 May 2007

## Conclusion

As this section has demonstrated, blockchain and related technologies such as NFTs and metaverses pose both potential opportunities and risks for IP rightsholders in every area from registration and ownership to infringement and enforcement. The mapping of intellectual property regulation onto these technologies, as with all new developments, is haphazard at least until the full extent of the technology is realised and its impact for rightsholders is understood.

Guidelines are being developed and the impact of these technologies is being considered by national, regional and international policymakers. Consultations around the extent of IP protection are currently taking place at international level, through WIPO[263], and at national level, for example the UK Digital, Culture, Media and Sport (DCMS) Select Committee announced an inquiry into Non-fungible tokens (NFTs) and the blockchain in November 2022. The call for evidence asks pertinent questions such as "is the UK's light-touch NFT regulation sufficient?" as well as considering the potential benefits and harms posed by NFTs.[264] Practitioners must keep track of these developments and rightsholders should engage with policymakers at this pivotal time to ensure that IP protection is upheld in the future of blockchain and related technologies.

263 https://www.wipo.int/about-ip/en/frontier_technologies/
264 https://committees.parliament.uk/work/7038/