

Intellectual Property Rights and Distributed Ledger Technology

with a focus on art NFTs and tokenized art



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artworks

Abstract

This study, commissioned by the European Parliament's Policy Department for Citizens' Rights and Constitutional Affairs at the request of the JURI Committee, aims to provide an overview over Intellectual Property Rights and Distributed Ledger Technology with a focus on IP issues relating to art NFTs and tokenized physical art works.

This document was requested by the European Parliament's Policy Department for Citizens' Rights and Constitutional Affairs, Committee on Civil Legal Affairs (JURI).

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LIST OF ABBREVIATIONS

DLT	Distributed Ledger Technology
NFT	Non Fungible Token
InfoSoc Directive	Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society
Resale Rights Directive	Directive 2001/84/EC of the European Parliament and of the Council of 27 September 2001 on the resale right for the benefit of the author of an original work of art
Copyright-Directive	DIRECTIVE (EU) 2019/790 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 April 2019 on copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC
CJEU	Court of Justice of the European Union
MiCA	Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Markets in Crypto-assets, and amending Directive (EU) 2019/1937
CMO	Collective Management Organization

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EXECUTIVE SUMMARY

Applications based on Distributed Ledger Technology such as NFTs bring about many legal questions among which are traditional as well as new questions regarding IP rights, particularly copyright law.

The application of existing laws to NFTs raises interesting questions also in areas outside of IP law (e.g. ownership), harmonization of which would likely support the further development of business models in that area. For example, it is difficult to subsume tokens under the notions and rules of property law according to the understanding in many European countries. In addition, the private international law principle of *lex rei sitae* fails when it comes to distributed ledgers. Due to the values at stake, it seems necessary to protect NFTs similarly to ownership, as court cases abroad show.

As sometimes small technical details can make a difference in the legal assessment of a DLT application, it is important that definitions which might be used for eventual regulation are very carefully forged. An example for this is the upcoming MiCA regulation and its definition of “crypto-assets”, which might, under certain circumstances, also have an impact on specific types of NFTs.

The opportunities that NFTs bring with them are manifold:

NFTs bring about the opportunity to give digital artworks a uniqueness and thus a value.

NFTs bring about new opportunities of exploitation to artists.

NFTs/smart contracts bring about the opportunity to fully automate resale royalties for secondary sales.

Although certain phases in the minting process seem to be neutral from a copyright perspective and an NFT is not identical to a work, but only represents it, it is clear that the creation and offer of an NFT representing a work under copyright law in most cases constitutes a reproduction as well as a making available subject to the prior consent of the copyright holder. The trade of NFTs on NFT marketplaces brings about the classical mass copyright infringement risks related to any marketplace. However, the enforcement of certain claims such as desist or destroy claims might be difficult, due to the technical nature of NFTs related to the immutable nature of the blockchain.

There remain certain grey areas in copyright law relating to NFTs, in particular as far as NFTs representing physical artworks are concerned:

Is the reproduction of a work used for the offer of a tokenized physical artwork covered by eventual copyright limitations according to some national copyright laws applicable when a physical artwork is sold (limitation concerning catalogue images, Article 5 (3) lit. j InfoSoc Directive)?

Does *droit de suite* apply when an NFT representing a physical artwork is sold?

Regarding such grey areas it can be said that a harmonized approach might support the growth of NFT-related businesses within the European Union.

Apart from the opportunities relating to NFTs, Distributed Ledger Technology creates potential further opportunities in the fields of rights management, combat against piracy and IP registration:

One of the opportunities of distributed ledger technology not only for the art sector, but for any field involving intellectual property is that rightsholdership, as well as licences, can be made transparent and accessible for all users of a blockchain. This might facilitate chain of title researches and might make the work of collecting societies more efficient. The precondition is, however, that rightsholdership is scrutinized at an entry point.

In addition, DLT creates opportunities in the fight against piracy. Certain marketplaces already use DLT in order to authenticate luxury goods.

The preliminary findings of this study in relation to the Union IPR regime can be summarized as follows:

The study finds that in order to support DLT applications like NFTs, the intellectual property law regime is not primarily the key, but – at least as far as certain types of NFTs are concerned - rather the legal regime related to banking regulation, tax regulation or, more specifically, crypto-regulation dealing with crypto-currencies and other crypto assets.

The question of intellectual property protection - or of intellectual property infringement - of a specific content that is tokenized, hence connected to a distributed ledger, although providing for new challenges, is legally very similar to the questions raised since the early times of the internet.

Despite the finding that, if someone tokenises a digital work that was created by someone else, copyright infringement will not be established for the tokenisation itself if an "off-chain" minting is concerned, in most cases the creation of the source which precedes the actual minting, will constitute a reproduction. In addition, the online display of the work as a token, even in thumbnail form, may constitute a copyright infringement, if the author did not give its prior consent. Therefore, as a conclusion, NFTs minted without the consent of the author of the underlying work, as a general rule, are violating the author's copyright, if the underlying falls under copyright law.

As a consequence, most NFT marketplaces pragmatically provide for a notice-and-take-down functionality.

In addition, copyright law provides for remedies.

Therefore, it can be said that despite some grey areas, the EU intellectual property regime as it stands does provide rightsholders with the material rights and claims to defend against infringements relating to NFTs. Nevertheless, one has to point out that the national laws of the EU member states are not fully harmonized. Due to that, IP issues relating to NFTs might slightly differ from one EU member state to another.

All in all, the biggest challenge for trademark and copyright holders is the detection and enforcement of infringements, for which the application of artificial intelligence/upload filters – if possible on a self-regulation, voluntary basis – might be useful. Without such tools, the detection of infringements would face serious obstacles.

In the area of enforcement, the decentralized nature of DLT provokes questions regarding the applicable law, jurisdiction and competent authorities. Also, from a practical point of view, enforcement is difficult in cases, in which the identity of the infringer is unknown. This is another argument for technical solutions preventing any infringement in the first place.

As shown above, even though NFTs open up the possibility for authors to sell their works directly to the public and to provide for further royalty payments in the smart contract, there will still be a need for CMO's. There is a potential that the CMO's work can be facilitated through DLT, if an initial instance on a European level verifies the true authorship to a work before its rights status can be written on the blockchain. Only if such initial instance is provided for, the advantages of distributed ledger technology regarding authenticity and immutability can be seriously used.

Also, it is important to understand that the buyer of an NFT, identical to the purchase of an artwork in the real world, as a principle, does not acquire any copyright in the tokenised work on which the NFT is based, and will not be entitled to use the underlying work in any way other than the free uses/limitations to copyright law that are currently in place, without the permission of the copyright holders and without paying royalties.

As a conclusion, it can be said:

It is possible to apply the Union IPR Regime in the context of NFTs.

However, the fact that the Union IPR Regime is not fully harmonized, will likely lead to diverging situation in different member states in certain situations.

As far as enforcement is concerned, it is in the own interest of NFT marketplaces to provide for mechanisms that prevent the offering of infringing NFTs. It will be important for the European legislator to observe what kind of self-regulating mechanisms they will come up with and how effective they will be.

1. SUBJECT OF THE STUDY

The European Parliament's Committee on Legal Affairs (JURI) has requested a study on **Intellectual Property Rights and Distributed Ledger Technology focusing on applications of such technology in the field of art.**

1.1 Background, scope and objectives of the study

JURI defined the background of the study as follows:

Blockchain is defined as a decentralized, distributed ledger technology (DLT) that records the provenance of a digital asset. It is a system of recording information that is difficult to change, hack or cheat. In simpler terms, blockchain is a technology where any digital information is distributed across the network, given the information is time stamped, immutable and transparent to everyone present in the network. blockchain has prominent implications in various domains such as cryptocurrency, art, health care, real estate, voting systems, supply chain and logistics, etc.

Distributed Ledger Technology is a protocol that enables the secure functioning of a decentralized digital database. Distributed networks eliminate the need for a central authority to keep a check against manipulation.

DLT allows for storage of all information in a secure and accurate manner using cryptography. The same can be accessed using "keys" and cryptographic signatures. Once the information is stored, it becomes an immutable database and is governed by the rules of the network.

Given the accountability, security, transparency, and immutable nature of blockchain, it can have a significant impact in the field of Intellectual property and copyright related to Artworks.

Distributed ledger technology is helping in the production of digital art as well as the sale of traditional pieces. Over the last couple of decades art and technology have had an uneasy relationship. The internet has accelerated access to art, but at the same time it has flooded the market with copies. However, the rise of blockchain promises to change the sector with interesting new opportunities.

The blockchain is creating its own genre of art: crypto art. This is digital artwork which is either created and stored entirely on the blockchain or created to be displayed digitally. It uses a non-fungible token (NFT) which makes the ownership, sale and transfer of the artwork possible cryptographically. The art industry has commercialised and popularised NFTs, with the volume and value of NFT transactions rapidly growing.

Metadata relating to digital works of all shapes and sizes are registered on a blockchain as 'non-fungible tokens' (NFTs) and change hands via smart contracts for astronomical sums: Twitter founder Jack Dorsey's first tweet for the equivalent of almost €2.5 million, an album by EDM producer 3LAU for over €9 million a series of artworks by digital artist Beeple for almost €60 million.

Given, the growth of digitalization technologies in artworks, there is need in the system for providing proof of ownership towards intellectual assets and their security."

The study inter alia will address the following issues:

- *What exactly is an NFT,*

Technical aspects

Fields of application

- *What is its legal value,*

Securities law orientation

Intrinsic vs. extrinsic tokens; fungibility

Terms and conditions of NFT platforms:

- *What risks are associated with it from a copyright law perspective? Like for instance:*
- *plagiarism, unknown type of use, droit de suite, does the freedom of catalogue images apply*
- *sales support measures (reproduction rights, freedom of catalogue images, other limitations)*
- *Assess brand integration and usage (trademark protection) in relation to NFTs?*
- *Are NFTs supported by the Union IPR regime?*
- *Some physical art works are tokenized and fractionalized. Does the Union IPR regime support such business models dealing with tokens of physical art works?*

1.2 Latest developments, disclaimer

As new blockchain-applications relating to artworks and new NFT marketplaces are emerging at a fast pace and at the same time more and more legal questions concerning such applications are identified, this study cannot exhaustively describe all intellectual property law issues connected to all different types of applications of distributed ledger technology in the field of digital or analogue artworks, but only give an overview.

The objective of the study at this stage must therefore necessarily be to describe the currently known applications of distributed ledger technology in the art sector, in particular NFTs. This description will be made from a legal viewpoint and give a preliminary overview and a first preliminary assessment of the – partly yet unresolved – questions as to intellectual property rights raised by such applications.

1.3 Basic terminology

Firstly, the terms used in this study need to be defined.

There is no “official” or “legal” definition for the terms Distributed Ledger Technology (hereinafter: DLT) and Non Fungible Token (hereinafter: NFT) used in the title and/or the description of this study. To quote, discuss and evaluate all different kinds of definitions used in the field of DLT and NFTs would have a low knowledge value and therefore go beyond the scope of this study.¹

The study tries to use definitions which are as factual as possible, in order to then apply the law to these facts.

¹ For a more extensive discussion of the „legal terminology“ on the field of DLT see Grieger/von Poser/Kremer: Die rechtswissenschaftliche Terminologie auf dem Gebiet der Distributed-Ledger Technology, ZfDR 2021, 394.

1.3.1 Definition of the term « Distributed Ledger Technology»

DLT is “an approach to recording and sharing data across multiple (decentral) data stores (or ledgers). This technology allows for transactions and data to be recorded, shared, and synchronised across a distributed network of different network participants.”² Distributed ledger, broadly defined, is a consensually shared decentral database through which a transaction is validated.³

Although the draft of the Regulation on Markets in Crypto-assets⁴ (hereinafter: “MiCA Regulation”) in its Article 3 uses the term DLT in its definition for crypto-assets, the term DLT itself is not further defined in the draft regulation.

The best-known form of application of DLT is the blockchain. The terms “DLT” and “Blockchain” are sometimes used synonymously.

A blockchain can be described as a decentral public database, which is constantly updated in a decentral manner by many computers in a global network.⁵

“A blockchain is a particular type of data structure used in some distributed ledgers which stores and transmits data in packages called *blocks* that are connected to each other in a digital *chain*. Blockchains employ cryptographic and algorithmic methods to record and synchronise data across a network in an immutable manner.”⁶

Due to the cryptographical linking of the blocks to each other, the information saved on those blocks is protected from manipulation. Any subsequent change of a block can be performed, but will be noticed. Therefore, the blockchain enables a tamper-proof storage and recording of data and transaction information. In addition, the data is stored in a decentralised manner, and can be viewed by everyone, enabling transparency and thereby building trust in the integrity of the blockchain. As opposed to the transparency relating to each transaction on the blockchain, users can participate in the blockchain incognito under a pseudonym: In order to participate, only a so-called crypto wallet is necessary, which consists of an alphanumeric code and represents an account that contains cryptocurrency/tokens owned by the owner of the wallet. Given the accountability, security, transparency, and the immutable nature of DLT in general and a blockchain in particular, blockchain technology can have a significant impact in various industries. DLT has promising fields of applications in various domains such as cryptocurrency, arts, health care, real estate, voting systems, supply chain and logistics, etc. The Bitcoin blockchain was the first workable implementation of such best-known form of DLT.⁷

The most common blockchain in the field of NFTs is the Ethereum blockchain.

² <https://openknowledge.worldbank.org/bitstream/handle/10986/29053/WP-PUBLIC-Distributed-Ledger-Technology-and-Blockchain-Fintech-Notes.pdf?sequence=5>.

³ <https://www.consilium.europa.eu/de/press/press-releases/2021/12/21/distributed-ledger-technology-member-states-endorse-agreement-reached-with-european-parliament/>.

⁴ Proposal for a Regulation of the European Parliament and of the Council on Markets in Crypto-assets, and amending Directive (EU) 2019/1937, see https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CONSIL:ST_13198_2022_INIT&from=EN for the draft.

⁵ Ernst, in: MüKoBGB, BGB Einleitung (Einl. SchuldR), 8. Aufl. 2019, Rn. 68.

⁶ <https://openknowledge.worldbank.org/bitstream/handle/10986/29053/WP-PUBLIC-Distributed-Ledger-Technology-and-Blockchain-Fintech-Notes.pdf?sequence=5>.

⁷ Grieger/von Poser/Kremer: Die rechtswissenschaftliche Terminologie auf dem Gebiet der Distributed-Ledger Technology, ZfDR, 2021, 394, 397.

1.3.2 Definition of the term « Token »

Every entry or "block" on the blockchain, which represents an asset, is called "token". Tokens can be classified from different perspectives:⁸

1.3.3 Different categories of tokens

1.3.3.1 Classification of tokens from a securities law perspective

Securities law differentiates between three types of tokens: Currency Token, Utility Token and Security Token.⁹

Currency or payment tokens are cryptocurrencies such as Bitcoin or Ethereum etc. These tokens are intended to serve as alternative means of payment that are independent of financial institutions.

Security, equity or investment tokens embody shares in companies and the associated rights of co-determination. Due to their proximity to securities, they may be subject to the provisions of securities law.

Utility tokens have the function of providing access to products or services. They represent virtual vouchers for future products or services of a company, the establishment of which is financed with the help of token sales.

From this perspective, art NFTs would generally be classified as utility tokens, as their main purpose is to link them to a digital or real value. But under certain circumstances, e.g. if they confer a co-ownership share in a real asset, they might also be qualified as security, depending on their specific content.¹⁰

1.3.3.2 Classification of tokens as intrinsic vs. extrinsic tokens

Another distinction has to be made according to whether real goods or values are linked to the respective token or not, i.e. whether the value of the token results from itself (intrinsic), as this is the case with the various cryptocurrencies, or whether the value of the token depends on the value of the underlying asset (extrinsic).

Intrinsic tokens are those that represent a value existing only within the blockchain ("on-ledger asset"). According to Article 1 No. 1 of the fifth Money Laundering Directive¹¹ this includes "virtual currencies". So, virtual currencies have to be regarded as intrinsic tokens.

Extrinsic tokens are tokens that represent an existing object outside the blockchain ("off-ledger asset"), be it rights to claims or membership rights conferred to the owner of the token, rights to property or other absolute or relative rights. There is some sort of linkage required, according to which a transfer of the token on the blockchain also changes the legal or factual situation with respect to the represented underlying asset or such transfer at least prepares steps into such direction, which leads to a "tokenization" of a real-world asset.¹²

⁸ See Jonathan Tobler, Non-fungible Tokens – Einsatzmöglichkeiten aus Sicht des deutschen Rechts, DSRITB 2021, 251.

⁹ Jonathan Tobler, Non-fungible Tokens – Einsatzmöglichkeiten aus Sicht des deutschen Rechts, DSRITB 2021, 251.

¹⁰ Ibid.

¹¹ Directive (EU) 2018/843 of the European Parliament and of the council of 30 May 2018 amending Directive (EU) 2015/849 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing, and amending Directives 2009/138/EC and 2013/36/EU.

¹² MüKo-Wendehorst, Art 43 EGBGB, Rn. 310 ff.

1.3.3.3 Classification of tokens as fungible vs. Non-Fungible Tokens

Another distinction that can be made is the distinction between fungible (“exchangeable”) and non-fungible (“non-exchangeable”) tokens:

The best-known applications of fungible tokens are cryptocurrencies, like Bitcoin, Ether or Solana. Such tokens are exchangeable like coins or bills are in the real world, as one Bitcoin looks like another Bitcoin.

As opposed to cryptocurrencies, *Non-Fungible Tokens* (hereafter called NFTs) correspond to or represent (parts of) goods that are unique due to their characteristics, such as (digital or physical) works of art – or even real estate.

1.3.4 Importance of clear definitions

One of the points the authors of this study would like to raise is that the clarity and harmonization of definitions is naturally crucial for the acceptance and the application of any potential future regulation concerning DLT in general or NFTs in particular. In order to properly shape such definitions and delimitations, lawyers, technicians and stakeholders from the NFT business have to work hand in hand.

1.4 Fields of application of DLT in relation to IP rights

DLT creates potential opportunities in all scenarios in which the decentral nature as well as the immutability of the blockchain can have a positive impact. This is always the case when authenticity of a good or of information plays a role.

The most prominent example of a DLT application in the context of items mostly protected by copyright law are NFTs.

2. WHAT EXACTLY IS AN NFT?

In order to answer such question, many technical and legal aspects have to be considered.

2.1 Functional description

Described in a functional way, an NFT is a cryptographic tool that uses a blockchain to create a unique, non-fungible digital asset which can be owned and traded. The blockchain serves as an immutable ledger of ownership of the NFT.¹³

2.1.1 Technical aspects

In a nutshell, an NFT consists of a number and an alphanumeric code: A tokenID and an address code of a so-called smart contract. These two codes are stored on a blockchain, for example the Ethereum blockchain. The combination of such tokenID and address code is unique, which makes the NFT a unique original – thus “non-fungible”.

The technical basis for NFTs was developed in the Ethereum blockchain in 2018 through the technical standard¹⁴ ERC-721.¹⁵ The standard specifies which properties and functionalities NFTs must fulfil. By contrast, the Ethereum infrastructure also deploys tokens using the ERC-20 standard, which sets rules for fungible and divisible tokens, such as the cryptocurrency Ether.¹⁶ Within the Ethereum

¹³ Frye, Brian L., NFTs & the Death of Art (April 19, 2021). Available at SSRN: <https://ssrn.com/abstract=3829399> or <http://dx.doi.org/10.2139/ssrn.3829399>, Page 3.

¹⁴ A standard is simply a template or format that other developers agree to and follow so that, among other things, codes are compatible with applications such as wallets or platforms that require that standard.

¹⁵ <https://eips.ethereum.org/EIPS/eip-721>.

¹⁶ <https://www.weforum.org/agenda/2022/02/non-fungible-tokens-nfts-and-copyright/>.

environment, NFTs and their underlying smart contracts are all based on the ERC-721 standard. While there are also other blockchains that support NFTs (e.g. Cardano, Flow, Polygon, Solana, Tezos, Zilliqa), Ethereum is currently the most commonly used.¹⁷ The ERC-721 standard provides that each NFT must have its own ID number (so-called *tokenId*) which is generated upon the creation (so-called *minting*) of the token.¹⁸ The NFT consists of a blockchain address of the smart contract through which the token was generated (so-called *contract address*).¹⁹

A smart contract (also called "protocol") is software that can execute, control and/or document certain actions.²⁰

The contract address can be viewed by using a blockchain scanner such as "Etherscan".²¹ Each NFT is unambiguously defined by its *tokenId* in connection with its smart contract. There is only a single token with this combination.²² Moreover, NFTs are not reproducible, so that each NFT is unique and can be addressed individually in the blockchain.²³ In its core, an NFT is an entry in the blockchain containing two codes.²⁴

The heart of the NFT is its underlying smart contract. A smart contract is a program made up of code (its functions) and data (its state) and is deployed at a specific address on the blockchain.²⁵ It thereby constitutes a type of account in the blockchain, which can send transactions over the network.²⁶ However, a smart contract is not controlled by a user, but instead is deployed to the blockchain network and runs as programmed.²⁷ Hence, the smart contract self-executes the rules (so-called *functions*) defined in the code of the smart contract, i.e. it can automatically enforce the functions if the defined prerequisites are satisfied.

In the context of an NFT, for example, a function within the smart contract enables an automatic transfer of ownership of the NFT when payment is made by the buyer to the seller. Another common function that can be stipulated by the creator of the smart contract is that resale royalties are paid automatically to the author of the digital work each time the NFT is resold.²⁸

It is therefore the combination of the *tokenId* together with the smart contract that powers and describes the NFT and enables its functionality as a tradable asset in the first place.

In addition to its functions, the smart contract also contains a storage for persistent data. As a consequence, any data can be permanently "saved" in the storage of the smart contract. Being a part of the smart contract, these values get stored permanently on the blockchain as well.²⁹

This is especially relevant, for the linking of the NFT with whatever content or asset it represents.

¹⁷ <https://www.forbes.com/advisor/investing/cryptocurrency/nft-non-fungible-token/> („typically held on Ethereum”).

¹⁸ https://www.wipo.int/wipo_magazine/en/2021/04/article_0007.html.

¹⁹ <https://eips.ethereum.org/EIPS/eip-721>; https://www.wipo.int/wipo_magazine/en/2021/04/article_0007.html;

²⁰ Kaulartz/Heckmann, Smart Contracts – Anwendungen der Blockchain-Technologie, CR 2016, 618.

²¹ E.g. Etherscan, <https://etherscan.io>; https://www.wipo.int/wipo_magazine/en/2021/04/article_0007.html.

²² <https://eips.ethereum.org/EIPS/eip-721>; https://www.wipo.int/wipo_magazine/en/2021/04/article_0007.html.

²³ <https://eips.ethereum.org/EIPS/eip-721>; Noh/Odenkirk/Shionoiri, „GM! Time to Wake Up and Address Copyright and Other Legal Issues Impacting Visual Art NFTs”, page 3.

²⁴ https://www.wipo.int/wipo_magazine/en/2021/04/article_0007.html.

²⁵ <https://ethereum.org/en/developers/docs/smart-contracts/>.

²⁶ <https://ethereum.org/en/developers/docs/smart-contracts/>.

²⁷ <https://ethereum.org/en/developers/docs/smart-contracts/>.

²⁸ <https://ethereum.org/en/nft/>.

²⁹ <https://ethereum.org/en/developers/docs/smart-contracts/anatomy/>.

In case the NFT represents a digital artwork/digital file, the content is a combination of such file (i.e. the work) itself and its metadata, i.e. information with which the creator describes the properties of the NFT, such as title, author, description, edition number, etc.

In the case of a physical asset represented by an NFT (e.g. a physical artwork or even real estate), the content is primarily the metadata (i.e. a description of the specifications) of the asset (e.g. title, author, measurements; or address, lot number, measurements; depending on the asset). An image of the physical asset may also be added to the NFT; however, such image has a merely descriptive function in order to sell the NFT itself and is not part of the NFT as such.

2.1.2 Creation of NFTs = « Minting » of NFTs

The actual NFT is created through a technical process called “minting”. “Minting” refers to the process of publishing a tokenID for the unique token on a blockchain.

To mint an NFT, the associated smart contract must already be deployed on the blockchain. The order to mint an NFT executes a code stored in the smart contract, which leads to the following steps: (1) Creating a new block, (2) validating information, (3) recording information into the blockchain.³⁰ Through this process, a tokenID for a new NFT is created and is linked to the user account of its creator.³¹

Technically and factually, any item can be used as underlying asset for the creation of an NFT.

Legally, the creator of the NFT has to observe third-party rights to the underlying asset when creating NFTs.

In reality, sometimes, such third-party rights are not observed. Therefore, NFT marketplaces like e.g. OpenSea provide for a notice-and-take-down functionality.

Please find examples of infringements further below.

2.1.3 Off-chain vs. On-chain NFTs

Generally speaking, tokenized content such as files and metadata can be stored in- or outside the blockchain.

Most commonly, the NFT’s smart contract – which is deployed on the blockchain – does not store the digital work/image of a physical work or any metadata on the blockchain, but only stores a pointer to an off-blockchain storage location. The pointer is basically a link that leads to a file containing the NFT’s respective metadata.³² This metadata file contains, among other information, the link to the image file of the represented digital work or an image of the represented physical asset.

Although such Off-chain NFTs are currently the most common way of linking NFTs with the assets it represents (e.g. an image file), such approach is technically rather risky. There is no guarantee that the file will not be subsequently replaced or overwritten by a file with the same name.³³ There is also a potential risk that the link leading to the work or even to the metadata file “breaks” as the server hosting the work or the metadata might be no longer operated, leaving the smart contract and the NFT on the blockchain effectively as what could be compared to an “empty shell”. The entry in the blockchain would still exist and its buyer would still own the NFT, which is, after all, only consisting of a tokenID

³⁰ <https://ethereum.org/en/nft/#how-nfts-work>.

³¹ <https://ethereum.org/en/developers/tutorials/how-to-write-and-deploy-an-nft/>.

³² https://medium.com/treum_io/on-chain-artwork-nfts-f0556653c9f3.

³³ Heine/Stang, „Weiterverkauf digitaler Werke mittels Non-Fungible-Token aus urheberrechtlicher Sicht“, MMR 2021, 755, 756.

and an alphanumeric address of a smart contract. However, the buyer remains only with a tokenID, but not the file of the digital work or the image of the physical asset or, even worse, the metadata. If this happens, the sale of this NFT would be practically impossible or at least the purchase would be rather unattractive. In a case like this, the NFT can no longer fulfil its function as a digital security element,³⁴ as the tokenID alone (and in the case of a digital work, even in connection with metadata) is not sufficient to link the NFT to the represented asset. The buyer is therefore unprotected from manipulation.³⁵

The risk of a broken link is very real.³⁶ This can happen, for example, if a web server company can no longer operate its servers due to insolvency or other reasons.³⁷ Already today, there are links to NFTs that were traded that lead nowhere.³⁸

To avoid the risks involved with this kind of technical set up of an NFT, there are alternatives how to link an image or sound file to an NFT. For example, it is possible for an NFT to contain a digital fingerprint, the so-called hash value, of the original file. In order to create such a digital fingerprint, the work is uploaded to an InterPlanetary File System (IPFS). An IPFS is a peer-to-peer network. This means that uploaded files are stored and exchanged on several computers, which allows for the network to work in a decentralized and secure manner. When using an IPFS, any user can access the file and compare the hash value of the file with the hash value of the NFT. Therefore, anyone can verify that the NFT actually refers to the original file.³⁹

Another alternative is to store the work associated with the NFT on a physical data carrier, which would be handed over with the transfer of an NFT.⁴⁰

Certain NFT marketplaces such as OpenSea or Rarible have created the option for users to link a smart contract to their NFT that contains "unlockable content". This is additional content which is unlocked only for the item owner as soon as the NFT is purchased. Such unlockable content can consist of a digital file or contact info for redeeming physical items or an access key and more.⁴¹

As an alternative to the off-chain storage of the represented asset, technically, there is also the possibility to upload the entire digital work or an image of a physical asset to the blockchain by adding it to the NFT's smart contract's storage "on chain". As a consequence, a full and digitally tradable copy of the work or an image of the physical asset is stored permanently on the blockchain.

However, storing entire images requires considerably more computer capacity and power. It is therefore extremely expensive and hence not very common yet.⁴²

³⁴ Rauer/Bibi, „Non-fungible Tokens – Was können Sie wirklich?“, ZUM 2022, 20, 23 et seq.

³⁵ Heine/Stang, „Weiterverkauf digitaler Werke mittels Non-Fungible-Token aus urheberrechtlicher Sicht“, MMR 2021, 755, 756.

³⁶ <https://jboogle.medium.com/the-broken-promises-of-nft-art-e5ee8a4b7412>.

³⁷ E.g. in 2019, the NFT creation and hosting service „Editional“ ended its service after creating over 100.000 NFTs. It continued to host the metadata and image contents on their servers, however, they may not be able to host them in future; <https://medium.com/editional/sunsetting-editional-f0f3a49ffb6e>; https://medium.com/treum_io/on-chain-artwork-nfts-f0556653c9f3.

³⁸ Rauer/Bibi, „Non-fungible Tokens – Was können Sie wirklich?“, ZUM 2022, 20, 23 et seq; https://medium.com/treum_io/on-chain-artwork-nfts-f0556653c9f3.

³⁹ Heine/Stang, „Weiterverkauf digitaler Werke mittels Non-Fungible-Token aus urheberrechtlicher Sicht“, MMR 2021, 755, 756, 757.

⁴⁰ Ibid. p. 757.

⁴¹ Ibid. p. 757; <https://opensea.io/blog/guides/the-beginners-guide-to-creating-selling-digital-art-nfts/>.

⁴² Rauer/Bibi, „Non-fungible Tokens – Was können Sie wirklich?“, ZUM 2022, 20, 23 et seq; 7.

2.2 Transaction of an NFT

Each of a blockchain's participants has a user account, i.e. an address in the blockchain (so-called wallet ID). The ERC-721 standard provides that NFTs are always linked to such a specific account.

The NFT is associated with the account of its "creator" (i.e. the person minting it), when originally minted.

The creator of the NFT can then transfer (the "ownership" of) the NFT to another account/wallet. This transaction takes place automatically according to the rules of the smart contract. Typically, this will mean that with the payment by the buyer, a function will be executed in the smart contract which will implement the change of "ownership" by linking the NFT to the buyer's blockchain address (i.e. user account/wallet ID). This transaction is stored in the blockchain and can be viewed by anyone participating in that blockchain.

Typically, NFTs are traded on NFT marketplaces or marketplaces like opensea.io, rarible.com, superrare.com, binance.com or misa.art. New marketplaces are emerging almost every day.

In order to be able to either mint or trade NFTs, a crypto wallet is required. Common wallets are for example Metamask, Coinbase, Dapper, Trustwallet.

Such wallet has to be filled with cryptocurrency of the respective blockchain, e.g. Ethereum on OpenSea and Rarible, Rare as well as Ethereum for superrare, Flow as well as Ethereum for misa.art.

2.3 Fields of application for NFTs in the art market

The rise of DLT-based applications entails new opportunities for the art world in general and artists in particular. Such opportunities are mainly twofold:

Firstly, regarding digital artworks: Through NFTs representing digital artworks as the underlying asset, digital art becomes unique through its connection with a unique token on the blockchain and can thus – due to its uniqueness – more easily receive a value. These "digitally born" tokens are generated and stored entirely on the blockchain and created to be displayed digitally

Secondly, regarding physical artworks: Through tokens representing (parts of or rights in) a physical artwork, such artworks, being the underlying asset of the token, can be more easily traded and moreover fractionalized in small pieces and thus the possibility to invest in particularly valuable "blue chip" physical artworks is available to a broader public, thus democratized. Such "blue chip" tokens can be bought on marketplaces as for example masterworks.io.

NFT's made headlines in 2021, with a steep rise in trades of such NFT's for important sums: The art industry has commercialised and popularised NFTs in particular, with the volume and value of NFT transactions rapidly growing over the year 2021. In fact, according to the Art Basel & UBS Report on the Art Market 2022, the value of sales for art-related NFTs expanded over a hundredfold in 2021 year-on-year reaching € 2.3 billion.

The most prominent example of an outstanding art NFT sale of a digital artwork is the artwork "Everydays: the First 5000 Days" by digital artist Mike Winkelmann alias Beeple, which was sold online by Christie's for almost 70 Million US-Dollar on March 11, 2021.

In the context of fine art, tokens can, as shown above, mainly represent two different kinds of underlying assets. Digital and physical artworks. In both scenarios, Intellectual Property rights can play a role:

When minting a token, intellectual property rights have to be respected.

When offering a token, intellectual property rights have to be respected.

Due to the possibility to participate in the blockchain anonymously (with a wallet ID and a user name), the enforcement of eventual IP infringements is naturally difficult. Technically, an NFT can refer to literally everything, and can – in relation to art - represent any digital or physical artwork.⁴³

Within the context of art, this means that both, a digital or a physical artwork can be tokenised.

However, not only digital artworks can be tokenized, but any digital content. Such digital content may include memes, GIFs, literary works, music, videogames, trademarks/logos, inventions, but also unexpected content like a tweet on twitter.⁴⁴

The same applies to physical assets: Any physical item can be represented by an NFT. For example, an NFT can represent a physical artwork or certain rights in such artwork, a classic car or certain rights in such car, or even real estate or certain rights in such land or building. This leads the financial industry to making use of the functions and benefits of NFTs and explore new business fields in that context.

The enthusiasm surrounding NFTs is partly due to their potential to create a uniqueness in an environment where digital artworks can be reproduced infinitely: An NFT can be created for any digital asset for which a unique or limited number of pieces is important⁴⁵ and thus give such digital asset, formerly without any value due to its ubiquitous nature, a real value.

Also, due to the immutable nature of the blockchain, NFTs have the potential of proving ownership of the asset which the respective NFT represents.

Since artworks (whether digital artworks or physical artworks) represented by NFTs are also often subject to IP rights, NFT's raise certain legal questions in that respect.

Depending on the field of application, the use of NFTs raises even more legal questions relating to banking regulatory/securities law, anti-money laundering legislation and tax law and less IP related issues. But such questions are outside of the scope of this study.

2.3.1 NFTs which represent a work of art created digitally

The most common form of art NFTs are NFTs representing works of art, or generally speaking image or video files, which are created purely digitally.

With a unique work of art, which is created in an analogue way, whether it is a painting, drawing, or a sculpture, there is only one original.

As opposed to that, digital art works are files, and as such easily reproducible. While any reproduction is absolutely identical to the original, as the data set of the copied file corresponds to the data set of the original file.

As a result, traditionally, there is no equivalent to a physical unique "original" for digital artworks.

The image file the NFT represents falls under copyright protection if the requirements of an original work according to copyright law are met. Whilst the term "original work" is not yet fully harmonized, the decisions of the CJEU over the past years have laid out a frame, what type of creation falls within the field of application of copyright law. A work must be "original in the sense that it is an intellectual

⁴³ Guadamuz, WIPO magazine, https://www.wipo.int/wipo_magazine/en/2021/04/article_0007.html.

⁴⁴ The platform "Valuables by Cent" (<https://v.cent.co/>) gives the opportunity to make offers on tweets "autographed by their creators". The first tweet of Twitter's co-founder Jack Dorsey, for example, was sold for around €2.5 million: <https://v.cent.co/tweet/20>.

⁴⁵ Kaulartz/Schmid, „Rechtliche Aspekte sogenannter Non-Fungible Tokens (NFTs)“, CB 2021, 298, 299.

creation of its author” so that it “reflects the personality of its author” and displays the “free and creative choices” of an author.⁴⁶ The bottom line is set where the “realisation of an object is determined by technical considerations, rules or other constraints”.⁴⁷ The work last but not least must be expressed in an identifiable manner with sufficient precision and objectivity.⁴⁸

The requirements for an “original work” according to copyright law might not always be met when it comes to so-called “generative art”.

Certain NFTs are generative in the sense that their appearance is (co-)determined by an algorithm. The question whether a work of generative art is protected by copyright law has to be decided on a case-by-case basis and depends on the details of the creation process of such artwork.

The famous “Crypto Punk” NFTs as well as “Bored Ape” NFTs both have generative elements.

Another well-known example of generative art is the NFT project called “Fidenza”, which allows the owner of the NFT to receive a unique print.⁴⁹ Such generative NFTs are partly the result of code and randomness. The actual image is sometimes even generated fully randomly with a mixture of predetermined traits, that can be accessed in publicly accessible databases. In some cases, each trait itself is created by an author but the combination of the traits and thereby the resulting image is not directly connected to an intellectual creation of an author. At times, the images are created by an algorithm, but the combination is curated by the NFT artist.

It is not always clear, to what extent such generative art fulfils the requirements of an “original work”. If an NFT represents a generative file and does not meet the requirements to be regarded as an “original work”, it is questionable how such image could possibly obtain protection as intellectual property. If one assumes that such an NFT is not protected by copyright law, the consequence would be that anyone could mint an NFT with such non-protected image file containing a piece of generative art.⁵⁰

Regardless the copyright aspects, NFTs, in any event, allow for digital uniqueness. Because of being unique, a digital artwork represented by an NFT acquires value-defining characteristics, such as exclusivity and unambiguous provenance by certifying the “ownership” of the digital work to a specific person and documenting all transactions with such NFT in the future within the blockchain. NFTs are therefore a great opportunity for digital creators, who can monetize their works not only by licensing, but also by selling NFTs.

2.3.2 NFTs which represent a digital reproduction of an already existing, physical work: Example: The Kiss

NFTs are not limited to represent works created as purely digital artworks. Instead they can also represent (fractions of) digital reproductions of a physical artwork. This way, an existing work can be exploited twice: The physical unique artwork itself as well as its digital reproduction, which acquires digital uniqueness through the NFT.

⁴⁶ Eva-Maria Painer v Standard VerlagsGmbH, Axel Springer AG, Süddeutsche Zeitung GmbH, Spiegel-Verlag Rudolf Augstein GmbH & Co KG, Verlag M. DuMont Schauberg Expedition der Kölnischen Zeitung GmbH & Co K, Case C-145/10, ECLI:EU:C:2013:138.

⁴⁷ Football Dataco Ltd, Football Association Premier League Ltd, Football League Ltd, Scottish Premier League Ltd, Scottish Football League, PA Sport UK Ltd v Yahoo! UK Ltd, Stan James (Abingdon) Ltd, Stan James plc, Enetpulse ApS, Case C-604/10, ECLI:EU:C:2012:115.

⁴⁸ Levola Hengelo BV v Smilde Foods BV, Case C-310/17, ECLI:EU:C:2018:899.

⁴⁹ <https://tylerxhobbs.com/fidenza-prints>.

⁵⁰ <https://www.technollama.co.uk/nfts-could-have-a-generative-art-copyright-problem>.

For example, several Italian museums have started to sell editioned "digital replicas" of particularly valuable and fragile masterpieces e.g. of Raphael and Leonardo da Vinci from their collections as NFTs. Such NFTs are available in editions of nine and priced at between €100,000 and €250,000.⁵¹

An NFT can also represent only fractions of a digital reproduction. In the course of an NFT project of the Belvedere Museum in Vienna in collaboration with artèQ, a high-resolution digital copy of Gustav Klimt's famous painting "The Kiss (Lovers)" was fractionalized into 10.000 individual image tiles, with each of such tiles being offered as an NFT.⁵² Those NFTs representing a certain one ten thousandth tile of a high-res reproduction of the actual artwork can be traded individually.

2.3.3 NFTs which represent a physical/analogue original work of art (or fractions thereof)

An NFT cannot only represent a digital copy of a physical artwork, but can also represent rights in a physical artwork as such. So, a physical artwork in the real world or fractions thereof can be the underlying asset of one or several NFT's.

One token can represent a whole physical artwork.

As an example for a token representing a whole physical artwork, a group of buyers together bought a Banksy print from a gallery in New York. They burned the original print and offered only a digital version of the work as an NFT. Consequently, the token represented – or even replaced - the physical artwork⁵³. In this specific case the physical artwork itself does not exist anymore, but only the NFT. From a legal perspective, the case is problematic: To burn an artwork can, in some jurisdictions, be seen as a copyright infringement by distortion. In addition, the offering of the NFT with an image could constitute a further infringement if the artist did not give his consent (See below 3.1.2).

However, the destruction of the artwork represented by the NFT does not always have to be the case. An NFT can also represent an entire physical artwork which still exists. To the contrary, in some cases a print is even sold along with the NFT. In such cases, the NFT is the precondition in order to being entitled to receive the physical good and the NFT can at the same time be regarded as a certificate of authenticity of the print.⁵⁴

Alternatively, a token can represent a (fraction of a) physical artwork. In such case, several tokens are minted with a smart contract from which it appears that each of these tokens stands for a certain right relating to a fraction of the physical asset (e.g. a profit participation share). Such fractionalization of an artwork allows investors who cannot afford to buy the entire artwork to invest into a share of the artwork. As a consequence, single tokens, each representing only a share of the physical art work, can be traded individually.⁵⁵ An example for such fractionalization is the marketplace masterworks.io.

While the purpose of NFTs for digital works is to create a uniqueness of an actually ubiquitous item, the purpose of the tokenisation of a physical artwork is twofold: Through tokenisation, the owner of such underlying physical asset can generate liquidity from an asset that is actually illiquid. The buyer of such NFTs can thus participate in a potential value increase of (a fraction of) the underlying asset.

⁵¹ <https://www.theartnewspaper.com/2022/02/11/eternal-return-italian-museums-to-sell-digital-copies-of-masterpieces>.

⁵² <https://thekiss.art/s/about.html>.

⁵³ <https://www.faz.net/aktuell/feuilleton/kunstmarkt/digital-kunst-burnt-banksy-als-nft-fuer-380-000-dollar-versteigert-17238599.html>.

⁵⁴ <https://tylerxhobbs.com/fidenza-prints> : "You must prove ownership of the NFT at the time of purchasing the print."

⁵⁵ Kaulartz/Schmid, „Rechtliche Aspekte sogenannter Non-Fungible Tokens (NFTs)“, CB 2021, 298, 299.

2.4 Aspects regarding the legal nature of NFTs

2.4.1 Areas of law involved

Although this study is supposed to mainly deal with IP rights, it is impossible to answer the question what exactly an NFT is without mentioning the current legal environment: NFTs relate to many different areas of law, which are mostly national laws. For example: Contract law, property law and tax law. Also, banking law can be involved as NFT's can, under certain circumstances, be seen as securities or crypto-assets, subject to national and EU regulations.

NFTs also relate to anti-money-laundering regulations, which are mostly harmonized within the EU.

Last but not least, NFT's relate to copyright law and other intellectual property rights.

2.4.2 Regulatory: Draft Regulation on Markets in Cryptoassets (MiCA)

Currently, there are no specific rules for art NFTs in place yet. However, there can be an overlap between "crypto-assets" according to the draft MiCa regulation and NFTs.

The EU's draft Regulation on Markets in Crypto-Assets (MiCA)⁵⁶ provides for extensive regulation in relation to crypto-assets, which shall however not apply,

if the crypto-assets are unique and not fungible with other crypto-assets (Art. 2 (2) (a)).

In Recitals (6b) and (6c) of the draft it is further explained that the regulation should not apply to digital art and collectibles, whose value is attributable to each crypto-asset's unique characteristics and the utility it gives to the token holder. Similarly, it also does not apply to crypto-assets representing services or physical assets that are unique and not fungible, such as product guarantees or real estate. While these crypto-assets might be traded in market places and be accumulated speculatively, they are not readily interchangeable and the relative value of one crypto-asset in relation to another, each being unique, cannot be ascertained by means of comparison to an existing market or equivalent asset.

It is further explained that also the fractional parts of a unique and non-fungible crypto-asset should not be considered unique and not fungible.

However, it is then specified that the issuance of crypto-assets as non-fungible tokens in a large series or collection should be considered as an indicator of their fungibility. The sole attribution of a unique identifier to a crypto-asset is not sufficient to classify it as a unique or not fungible. The assets or rights represented should also be unique and not fungible for the crypto-asset to be considered unique and not fungible.

It is further explained that the regulation should apply to crypto-assets that appear unique and not fungible, but whose de facto features or features linked to de facto uses would make them either fungible or not unique. In this regard, when assessing and classifying crypto-assets, competent authorities should adopt a "substance over form approach", under which the features of the asset in question should determine the qualification, not its designation by the issuer.

Thus, as a principle, the regulation shall not apply to NFTs – however there are exceptions for large series or collections and further grey areas remain as to what is meant by "de facto uses" making the NFT either fungible or not unique.

⁵⁶ https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CONSIL:ST_13198_2022_INIT&from=EN.

2.4.3 What is the legal nature of an NFT?

What an NFT legally is or which rights an NFT conveys, depends on the underlying smart contract and other contractual framework relating to the NFT and has several aspects.

As a starting point, technically the NFT consists of a number (the tokenID) and an alphanumeric code (the address code of the smart contract) and is linked in some way to a digital file or a physical asset.⁵⁷

Primarily, the buyer of an NFT acquires the right a) to have the NFT in their crypto wallet and b) to sell the NFT.

However, it is still unclear, if the rules on ownership according to civil law apply to NFTs. According to most jurisdictions with a roman law tradition, ownership refers to a physical object.⁵⁸

In addition to the right to have the actual NFT in their wallet, the buyer may also acquire ownership rights to the underlying asset, an exclusive licence or a limited licence relating to the underlying asset, depending on the underlying asset, the content of the smart contract and the associated terms of sale. Since neither of those factors are standardised, the NFT's legal nature is not uniform.

2.4.4 What does the buyer of an NFT acquire?

After "minting" an NFT on their own user account (i.e. under his own wallet ID), the creator can transfer (the "ownership" of) the NFT to another user account, i.e. to another wallet.

Such transaction to another account (the buyer's account) is recorded on the blockchain where it can be accessed by anyone. The buyer of the NFT is the new "owner" and can now dispose of the NFT by transferring it to yet another account.

It is important to highlight the following:

Owning an NFT does not necessarily mean owning the asset that it represents. Buying an NFT leads to the acquisition of a token entered on a blockchain. The purchaser of an NFT has ownership-like rights in the NFT in the sense that they can dispose of it: they can swap, sell or give their unique token away (for more detail see 3.1.2.4).

Also, buying an NFT does not necessarily mean to acquire rights (for more details see 3.1.2.4).

2.4.5 Can an NFT be owned in the sense of (national) property laws?

In the absence of harmonization of property law in the EU, the answer might differ according to the different national regimes.

According to German civil law, for example, NFTs cannot be classified as property within the meaning of Section 90 of the German Civil Code (BGB) due to the lack of physicality of the purely digital tokens.⁵⁹ Physical objects must be tangible and spatially definable. This criterion does not apply to digital tokens. Therefore, ownership of NFTs within the strict meaning of Section 903 of the German Civil Code is not possible. The strict *numerus clausus* of property law normally also prohibits an analogous application to non-corporeal things. However, there is a discussion about an analogue application of Section 903 of the German Civil Code. Such discussion is based on the argument that NFTs are not identical to data,

⁵⁷ https://www.wipo.int/wipo_magazine/en/2021/04/article_0007.html.

⁵⁸ Example for Germany: §§ 90, 903 Bürgerliches Gesetzbuch (German Civil Code), Example for France: Article 544 and following Articles Code Civil (French Civil Code).

⁵⁹ MüKoBGB/Stresemann, 9. Aufl. 2021, BGB § 90 Rn. 21; Kaulartz, Die Blockchain-Technologie, CR 2016, 474, 478; Omlor, Kryptowährungen im Geldrecht, ZHR 183 2019, 274, 308; Shmatenko/Möllenkamp, Digitale Zahlungsmittel in einer analog geprägten Rechtsordnung, MMR 2018, 495, 497.

which the German legislature actively decided not to include as a classification of property since data is easily replicable. NFTs are due to the blockchain technology much more similar to property since they are unique as a token and therefore can be allocated to a specific person (the owner) as well as exclude other persons from ownership.⁶⁰ These arguments are similarly applicable when it comes to tort law. German tort law protects *inter alia* property, but also so called “similar rights”. It is possible for NFTs to fall, due to their allocation and exclusion function, under similar rights according to Section 823 of the German Civil Code.⁶¹

In a recent case⁶², the UK High Court has recognised NFTs as “legal property”. This case will probably have a huge impact on other future legal disputes concerning the legal nature of NFTs. *Lavinia Osbourne*, the founder of Women in Blockchain Talks, had two of her NFTs stolen from the Boss Beauties collection, a series of 10,000 NFTs depicting illustrated, diverse, successful career women.⁶³ By recognizing NFTs as property the UK High Court aligned this decision with the decision of *AA v Persons Unknown, Re Bitcoin*⁶⁴ dealing with the question whether crypto assets can be object to a proprietary injunction. In the latter judgement the High Court took the basis for the question of property from the criteria of property as established in *National Provincial Bank v Ainsworth* [1965] 1 AC 1175. According to this ruling there are four principles of property: being definable, being identifiable by third parties, being capable by their nature of assumption by third parties and lastly having some degree of permanence. Due to the fact that crypto assets meet those criteria the High Court stated: “crypto currencies are a form of property capable of being the subject of a proprietary injunction”.⁶⁵ Furthermore, in the case *Osbourne v Persons Unknown* the High Court clarifies that in accordance with *Ion Science Ltd v Persons Unknown and others* (unreported) [2020] (Comm) the “lex situs of a crypto asset is the place where the person or company who owns it is domiciled”. The outcome of the case is a restraining order on the accounts of OpenSea's host Ozone Networks to freeze the NFTs, as well as a disclosure from Bankers Trust “compelling [OpenSea] to provide information about the two account holders currently holding the NFTs.”⁶⁶

In the recent past, there have been repeated NFT thefts in which savvy hackers have exploited loopholes and poor security skills to capture high-profile NFTs.⁶⁷ Due to the fact that the NFT market is unregulated and decentralized, there has been little ability to track down the hackers and trace the stolen NFTs.

This ruling could remove the uncertainty that property of NFTs, as tokens composed of code, must be distinct from the thing they represent (e.g., a digital work of art). The High Court's decision would also allow victims of NFT theft to seek court injunctions against individuals whose cryptocurrency has been identified as carrying a stolen NFT, as well as against the NFT marketplace itself on which the stolen asset is sold.⁶⁸

⁶⁰ Kaulartz, Markus; Schmid, Alexander, Rechtliche Aspekte sogenannter Non-Fungible Tokens (NFTs), CB 2021, 298, 299f.

⁶¹ Ibid. p. 300.

⁶² *Osbourne v Persons Unknown* [2022] EWHC 1021 (Comm).

⁶³ <https://www.artnews.com/art-news/news/are-nfts-property-stolen-opensea-uk-case-1234627040/>.

⁶⁴ *AA v Persons Unknown, Re Bitcoin* [2019] EWHC 3556 (Comm).

⁶⁵ *AA v Persons Unknown, Re Bitcoin* [2019] EWHC 3556, para. 61.

⁶⁶ <https://www.cryptotimes.io/uk-high-court-recognizes-nfts-as-legal-property/>.

⁶⁷ See as an example: <https://www.theguardian.com/technology/2022/apr/26/bored-ape-yacht-club-nft-hack-theft-art-simian-oblivion>.

⁶⁸ <https://www.artnews.com/art-news/news/are-nfts-property-stolen-opensea-uk-case-1234627040/>.

Also, the Singapore High Court took a step towards recognising NFTs as a digital asset in a judgement rendered on May 13th 2022⁶⁹. The claimant demanded an injunction on a sale and ownership transfer of an NFT. The NFT concerned was a rare so-called Bored Ape Yacht Club (BAYC) NFT, more specifically the BAYC no. 2162. The claimant used the NFT as a collateral to finance cryptocurrency loans. Each loan, however, included the claim that the loan provider should not use the "foreclose" option in order to become owner of the NFT in case the repayment was not made on time. The loan provider nonetheless foreclosed on the NFT and put it up for sale on OpenSea. The Singapore High Court issued the requested injunction blocking the sale and transfer of ownership. With this decision the court followed the line of the recent UK High Court case, recognizing NFTs as digital assets.

As according to the general principle of private international law and the rules of conflicts of laws applying to property law (mostly *the lex rei sitae rule*, so the law of the country where an asset is located) it is impossible to distinguish which national law should apply to NFTs, it should be considered to provide for a special rule of private international law according to which the applicable law to NFTs in particular or Crypto-Assets in general should be the place where the person or company who owns the token is domiciled – in line with the UK High Court decision on *Science Ltd v Persons Unknown and others*⁷⁰.

2.4.6 Does an NFT grant any exploitation rights or other rights under copyright law?

Whether the buyer of an NFT acquires any rights to use the work represented by the NFT depends on what was agreed upon.

If nothing specific was agreed upon, the buyer of an NFT does not acquire any rights going beyond what is provided for in exceptions for private use based on Article 5 Nr. 2 b) Directive 2001/29/EC on the harmonisation of certain aspects of copyright and related rights in the information society (hereinafter: InfoSoc Directive).

Nevertheless, either the smart contract, the purchase terms of an NFT or the terms and conditions used on the marketplace, where the NFT is acquired, can lead to the NFT owner being granted certain rights (see the examples of the NBA top shots and Cryptokitties mentioned further below under Section 3.4.3). However, the exact interpretation of the respective declarations of intent might differ, depending on the rules of the applicable national copyright contract law, an area of law which is not fully harmonized yet.

2.5 What does the transaction of an art NFT look like?

The following screenshots show the purchase of an NFT on the marketplace OpenSea.

⁶⁹ <https://sea.mashable.com/tech/20355/singapore-high-court-recognizes-a-rare-nft-as-digital-asset-in-landmark-ruling>; <https://insightplus.bakermckenzie.com/bm/data-technology/singapore-the-high-court-issues-injunction-to-block-potential-sale-and-transfer-of-nft>.

⁷⁰ *Science Ltd v Persons Unknown and others* [2020] EWHC 3556 (Comm).

Figure 1: The NFT to be purchased

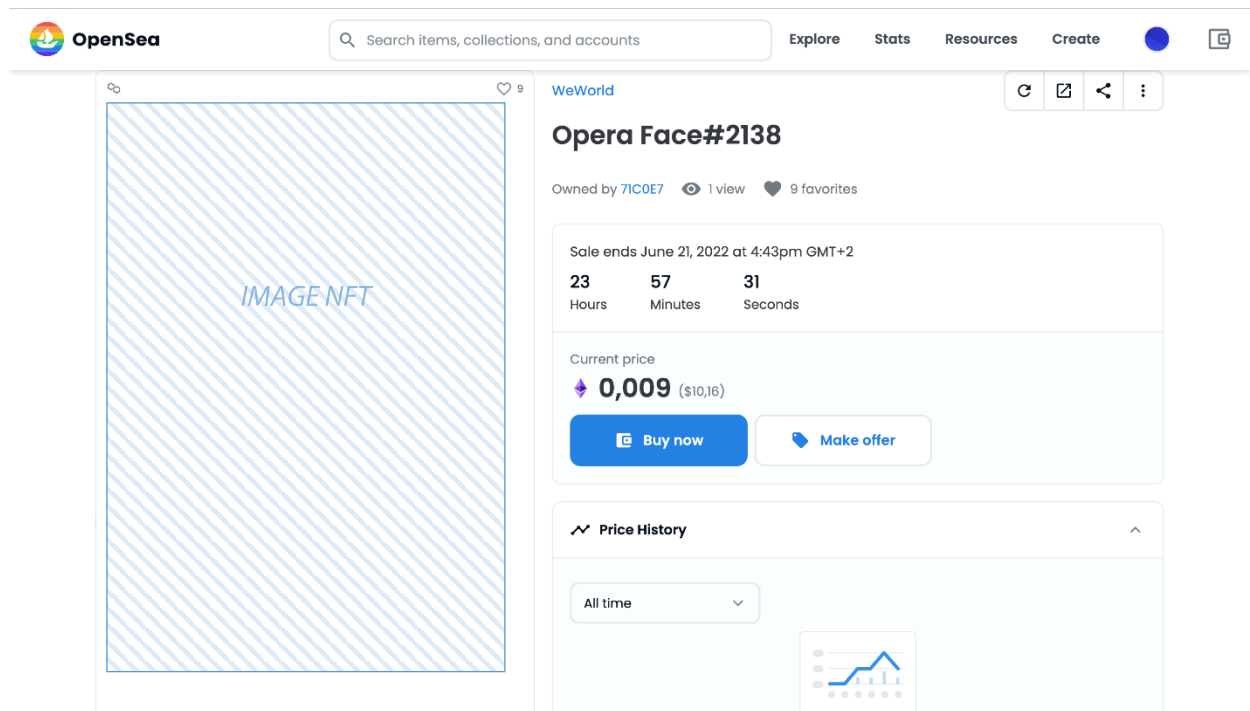


Figure 2: The checkout process

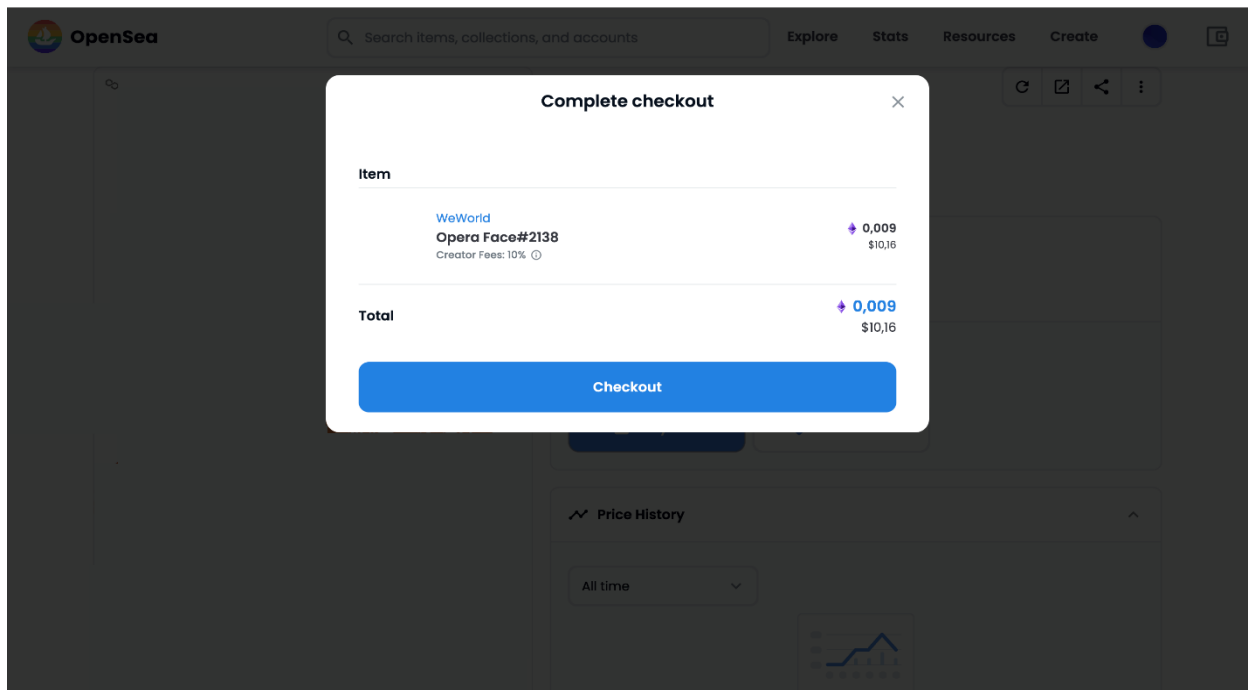


Figure 3: Approving the transfer in your wallet

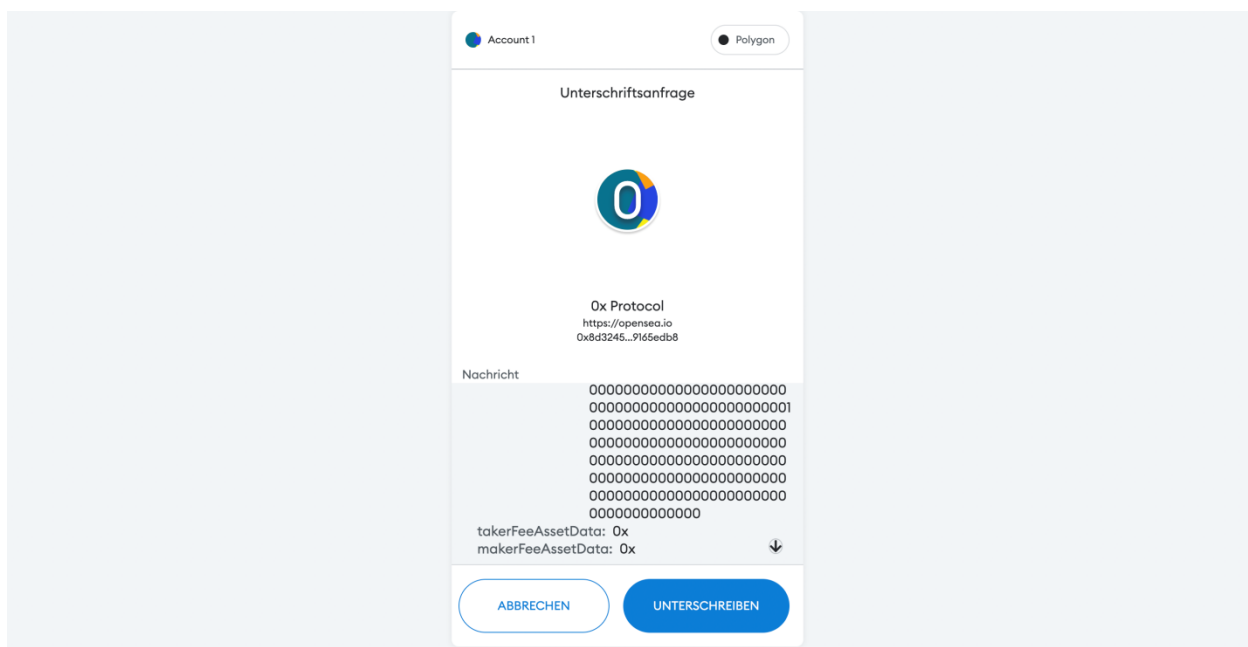


Figure 4: Processing the purchase after approval in the wallet

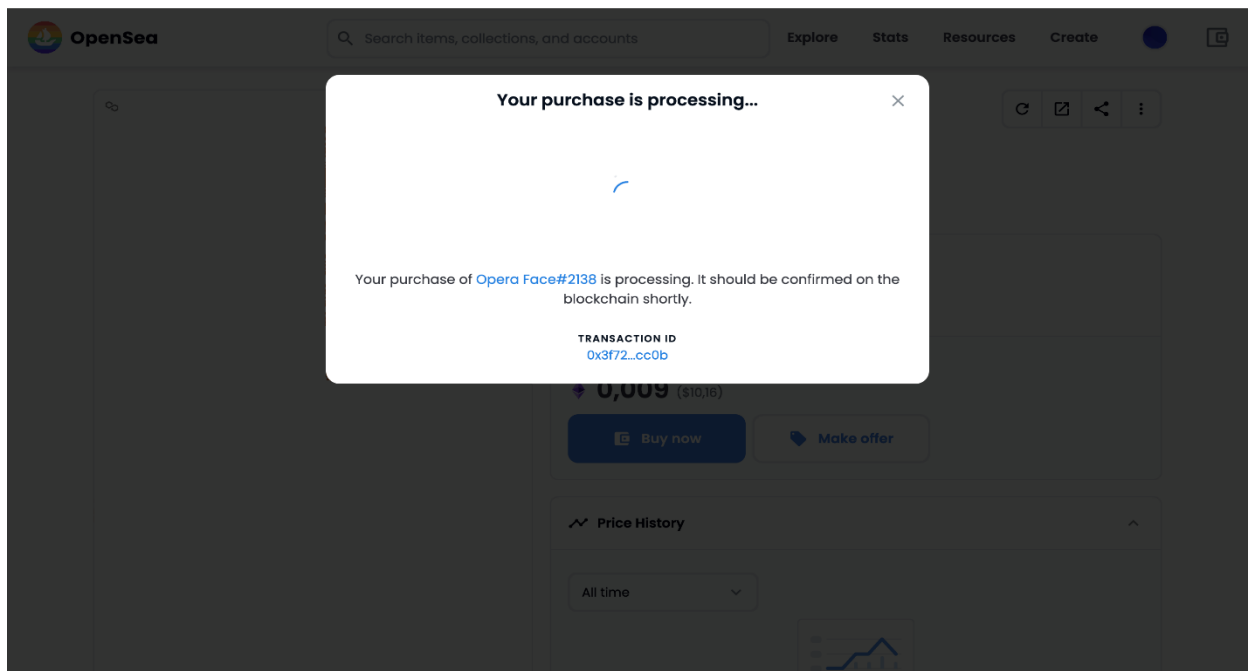


Figure 5: Purchase completed

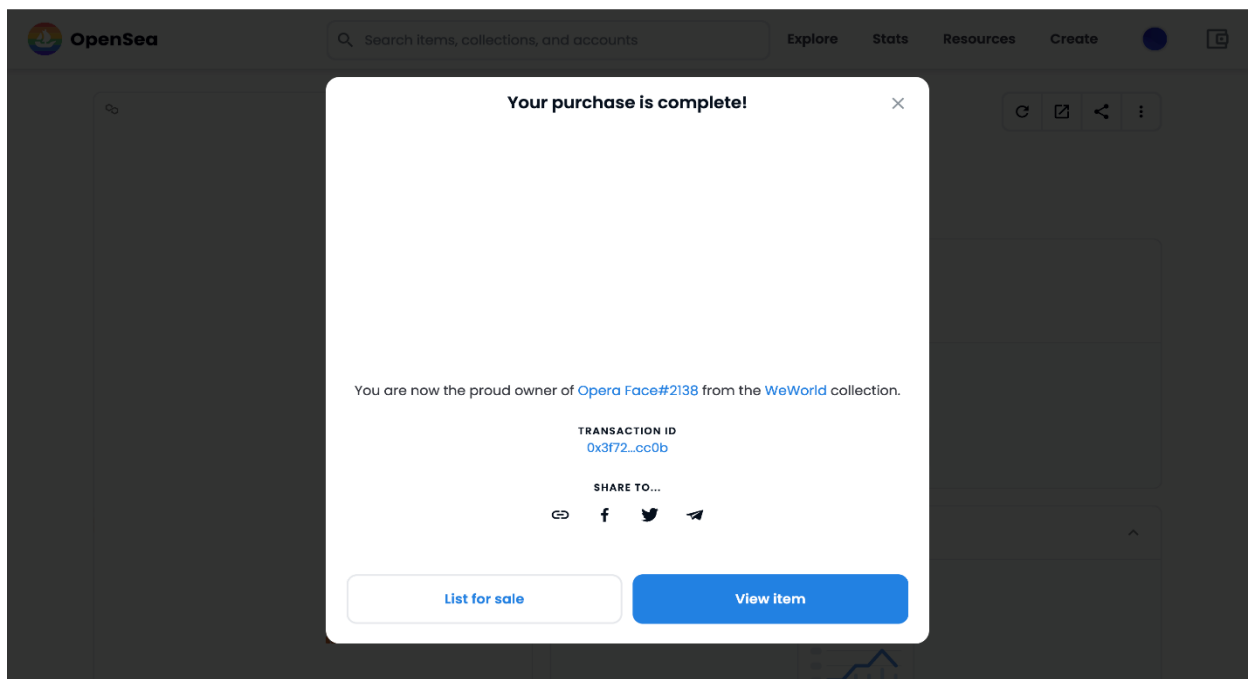


Figure 6: The NFT is now owned by the purchaser

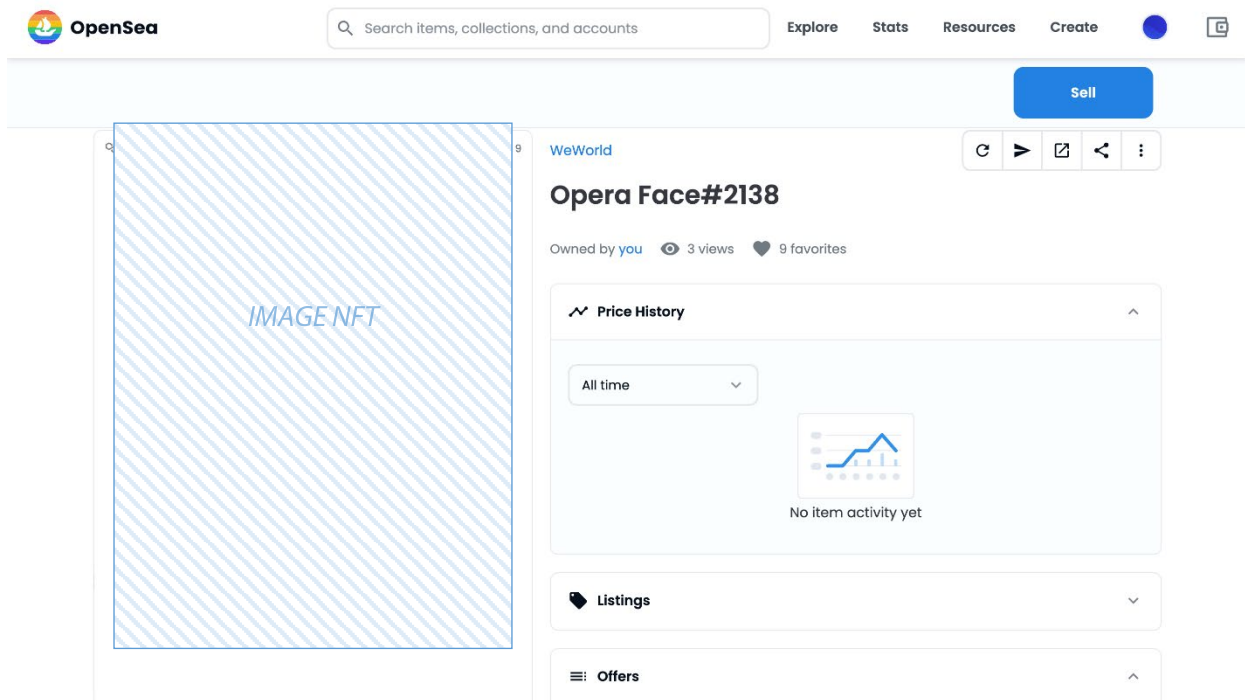
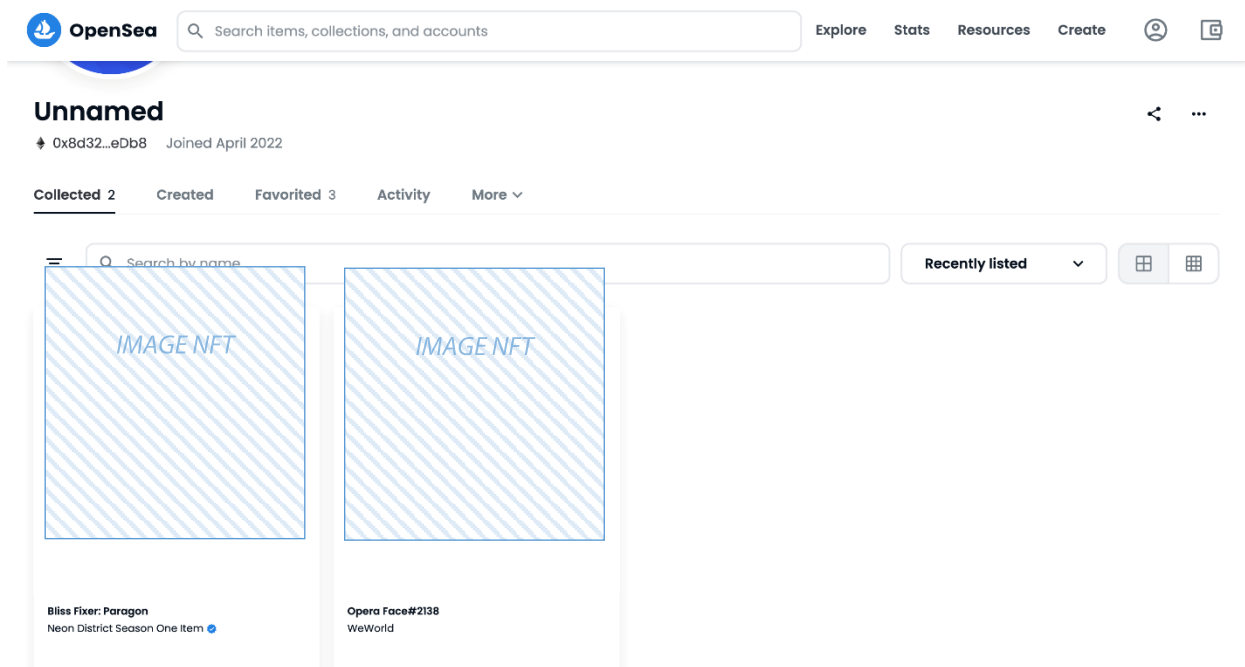


Figure 7: The NFT as part of the wallet



3. IPR REGIME AND NFTS

3.1 Copyright perspective on NFTs

3.1.1 Background and Examples of copyright cases in the context of NFTs

Blockchain applications relating to the art market, in particular NFTs, raise partly new, partly common copyright issues. Several litigations are pending in different countries.

Some practical examples of the relevancy of copyright law in the context of NFTs:

In late 2021, the film director Quentin Tarantino announced that he will mint seven scenes of the iconic film “Pulp Fiction” as NFTs.⁷¹ Each NFT consists of digitised chapters from the original handwritten script, as well as unpublished scenes and a personalised audio commentary from Quentin Tarantino.⁷² Shortly after, the film studio Miramax, to whom Tarantino had granted and assigned “broad rights” to “Pulp Fiction” in 1993, filed a suit against Tarantino.⁷³ However, the director retained some rights to the film, including “soundtrack album, music publishing, live performance, print publication (including, without limitation, screenplay publication, ‘making of’ books, comic books and novelization, in audio and electronic formats as well, as applicable), interactive media, theatrical and television sequel and remake rights, and television series and spinoff rights.” Tarantino argues that he was acting within his contractually reserved rights, in particular the right to publish the screenplay. Without any doubt, NFTs were something studios or filmmakers have not been thinking about until recently.⁷⁴ So it will be interesting how this will impact the interpretation of the reserved rights clause. Miramax claims that it is in discussion about minting NFTs based on its film library and that Tarantino’s project might devalue such efforts.⁷⁵ Consumers could be confused into believing that Miramax was associated with Tarantino’s NFTs.⁷⁶ Despite the pending lawsuit, Tarantino announced the auction of the NFTs in January 2022.⁷⁷ The first scene and screenplay NFT “Royale with Cheese” was sold for more than € 1 million.⁷⁸

Another example of the type of copyright issues arising in connection with NFTs is the offer of an NFT representing the ownership of the work “Free Comb with Pagoda (1986)” by the artist Jean-Michel Basquiat on the NFT marketplace OpenSea. The winning bidder should, in addition to the NFT, get the option to destroy the physical work, making the NFT “the only surviving unique work”.⁷⁹ The physical artwork was last offered for sale at auction at Heritage Auctions in Texas in 2012, but remained unsold.⁸⁰ In 2015 it was sold privately by a gallery in Philadelphia, Pennsylvania for an undisclosed sum.⁸¹ In addition to the certificate of authenticity, issued by the Jean-Michel Basquiat Estate, all reproduction rights should also be passed on with the NFT, something that is possible under Anglo-Saxon copyright

⁷¹ <https://news.artnet.com/art-world/quentin-tarantino-is-minting-seven-pulp-fiction-scenes-as-nfts-that-will-reveal-secrets-about-his-vision-for-the-film-2029816>.

⁷² <https://tarantinonfts.com/>.

⁷³ <https://www.nytimes.com/2021/11/17/business/miramax-tarantino-nft-pulp-fiction.html>.

⁷⁴ <https://www.hollywoodreporter.com/movies/movie-news/quentin-tarantino-sued-pulp-fiction-nft-1235048725/>.

⁷⁵ <https://www.hollywoodreporter.com/movies/movie-news/quentin-tarantino-sued-pulp-fiction-nft-1235048725/>.

⁷⁶ <https://www.nytimes.com/2021/11/17/business/miramax-tarantino-nft-pulp-fiction.html>.

⁷⁷ <https://www.nytimes.com/2022/01/05/business/quentin-tarantino-pulp-fiction-nft.html>.

⁷⁸ <https://tarantinonfts.com/>.

⁷⁹ <https://www.apollo-magazine.com/basquiat-nft-intellectual-property-copyright/>.

⁸⁰ <https://www.artmagazine.cc/content115211.html>.

⁸¹ <https://www.theartnewspaper.com/2021/04/28/basquiat-nft-withdrawn-from-auction-after-artists-estate-intervenes>.

law in certain cases, though legally complicated.⁸² However, according to copyright law in the European Union, the sale of the copyright as such is impossible.

The NFT sale of Jean-Michel Basquiat's Free Comb with Pagoda was – due to a notice given through the notice and take down functionality of the NFT marketplace - withdrawn from OpenSea after the Basquiat Estate clarified that it owns the copyright in the artwork referenced and that no licence or rights were conveyed to the seller.”⁸³

The case highlights two problems:

Firstly, the creation of the NFT without the consent of the holder of the copyright of an artwork still under copyright protection constitutes a copyright infringement.

Secondly, post-mortem personal rights might further complicate the right of the owner of an underlying physical artwork represented by an NFT to damage or destroy a work of art.⁸⁴ The destruction of the underlying physical artwork, which is meant to enhance the meaning and the uniqueness of a token entails major legal risks, as potentially violating moral rights, which are not harmonized.

A further case that highlights copyright aspects is the launch of 10 700 photographs from the archive of the famous photographer August Sander as NFTs on the marketplace OpenSea by August Sander's great grandson Julian Sanders. The NFTs were offered for free – the respective buyer only had to bear the minting fees in order to own the digital version of the particular photograph⁸⁵. The purpose of this NFT drop was to make the entire archive of photographs of August Sander available as NFTs.

After the launch of the project, the NFT project was taken down several days later: The reason for this was that SK Stiftung Kultur had made a copyright claim, claiming that Julian Sanders does not own the copyright of the photographs concerned. Gerd Sander, Julian Sander's father and son of August Sander, had much earlier sold the entire archive to SK Stiftung Kultur, a non-profit foundation focusing on culture and based in Cologne. According to that sale, the foundation is responsible for the preservation and also the distribution of the 10 700 original negatives and over 6000 vintage prints, and claims to be the only legitimate representative of the estate of August Sander⁸⁶. Based on this, SK Stiftung Kultur claims that the copyright will stay with SK Stiftung Kultur until its expiration in 2034.

Julian Sanders claims, on the other hand, that the SK Stiftung Kultur is not responsible for the sales of the works in question on a global level since it is a non-profit organisation, allowing Julian Sanders to use the images in a commercial setting. He claimed that the NFT drop was covered by the fair-use doctrine⁸⁷.

The case is before the court and a decision has not yet been made.

These few examples show that NFTs can raise very different kinds of copyright issues, most of which are well-known from the online context.

⁸² <https://www.artmagazine.cc/content115211.html>.

⁸³ <https://www.theartnewspaper.com/2021/04/28/basquiat-nft-withdrawn-from-auction-after-artists-estate-intervenes>.

⁸⁴ <https://www.apollo-magazine.com/basquiat-nft-intellectual-property-copyright/>.

⁸⁵ <https://www.theartnewspaper.com/2022/05/06/major-court-battle-looms-over-nft-launch-of-august-sander-photographs>.

⁸⁶ <https://www.photographie-sk-kultur.de/august-sander/august-sander/>.

⁸⁷ <https://www.theartnewspaper.com/2022/05/06/major-court-battle-looms-over-nft-launch-of-august-sander-photographs>.

3.1.2 NFT-specific scope of copyright related questions discussed in this study

As the examples laid out under Section 3.1.1 show, all kinds of prior known copyright issues can occur in the context of NFTs: Those can range from “ordinary” infringement cases due to unauthorized use of contents, questions relating to the protection of generative art works, questions of moral rights due to lack of attribution etc. and are not necessarily related to the use of DLT.

In the following Sections we therefore focus on specific copyright issues relating to NFTs which are inherent to DLT.

There are several copyright questions to be raised:

The question arises if different operations in the life-cycle of an NFT are acts that are relevant from a copyright perspective, e.g. an act that fulfils the conditions of one of the exploitation rights (in particular the reproduction right and making available right).

If this is the case, the consequence would be that the rightsholder of a work protected by copyright law to which the NFT refers could claim injunctive relief and, if necessary, damages, in case the rightsholder is not identical with the person minting or offering the NFT and has not given a permission to that person.

In principle, only the author is permitted to mint an NFT representing his work. This is because the upload of an image, which is necessarily required in order to offer an NFT on most NFT marketplaces constitutes a “reproduction” in the sense of Article 2 InfoSoc Directive, which in principle only the author is entitled to do, unless the author has previously granted rights to a third party.

But also, the preparatory steps leading to the creation of the NFT (i.e. the minting), might constitute a reproduction within the meaning of Article 2 InfoSoc Directive. This is the case if, for example, the protected content is reproduced in full or at least in part in the smart contract.⁸⁸

In more detail:

From a technical perspective, minting an NFT involves several steps. Essentially, these are: Firstly, creating the source, secondly, creating the metadata, thirdly the actual minting of the token. Only after all these steps are fulfilled, an NFT can be offered for sale on a public marketplace.

Each of these steps could interfere with the rights of the author according to Article 2 InfoSoc Directive (reproduction right) and/or Article 3 InfoSoc Directive (communication to the public).

3.1.2.1 Minting of NFTs from a copyright perspective

One can technically distinguish between NFTs, the creative content of which is registered on the blockchain as such (On-Chain NFTs), which are very rare due to the high costs involved⁸⁹, as opposed to the common type of NFTs, the blockchain entry of which simply refers to the creative content by way of a link (Off-Chain NFTs), as further explained above (2.1.3). The connection between the NFT and the underlying artwork is different, depending on whether an On-Chain or an Off-Chain NFT is minted. The different steps of the minting have to be explained for both types of NFTs in order to assess whether the process of the minting as such is relevant from a copyright perspective and thus requires the consent of the author of the underlying artwork.

⁸⁸ Guadamuz, The Treachery of Images: Non-fungible tokens and copyright, 2021, p. 18; Rauer/Bibi, Non-fungible Tokens – Was können sie wirklich? ZUM 2022, 20, 26.

⁸⁹ Rauer/Bibi, Non-fungible Tokens – Was können sie wirklich? ZUM 2022, 20, 26.

By minting, this study understands the process of the creation of an NFT until it is ready to be offered on an NFT sales marketplace.

3.1.2.1.1 Minting of an Off-Chain NFT

➤ Creating the source

The technical process of minting an Off-Chain NFT starts with the creation of the source. That is, uploading an asset to a so-called online (or digital) repository. An online repository is an off-chain online storage (a database).

During that process the author's work is being uploaded to such online storage. Such upload is clearly an act of reproduction according to Article 2 InfoSoc Directive. The right of reproduction is an exclusive author's right, which means unauthorized minting infringes that exclusive right.

In addition, the creation of a source could also affect the author's right of communication to the public, Article 3 InfoSoc Directive.

Article 3 InfoSoc Directive does not define the scope or meaning of "communication to the public". However, the concept consists of two cumulatively applied requirements. An "act of communication" of a work and the communication of such to the "public". It is uncertain whether creating a source fulfils the second criteria of communication to the public. According to the case law of the CJEU the concept of "public" refers to an indeterminate number of potential recipients and implies, moreover, a fairly large number of persons⁹⁰. There must therefore be no external circumstances that significantly limit the number of people who have access to the work.

It is thus crucial, whether uploading a work to an online repository will reach a "public" according to Article 3 InfoSoc Directive.

When uploading a work to an online repository, a URL is created, which allows the person who uploaded the work to access it on the repository. The URL that is created is very long and not at all self-explanatory. One has to have the exact URL (about 80 character), in order to retrieve the uploaded file. So, it is rather unlikely that a Court within the EU or a European Court would classify this technical procedure as a "making available to the public". Especially in regard to the fact that Article 3 InfoSoc Directive contains a certain minimum threshold and excludes an excessively small or even an insignificant number of persons⁹¹.

Even in view of the *GS Media* case⁹², which has created the possibility that linking constitutes a communication to the public, the requirements comprised by Article 3 InfoSoc Directive are not fulfilled, as the link in the metadata of the NFT does not reach a public. The accessibility of the link is limited to the buyer of the NFT and thereby does not reach an indeterminate number of potential viewers and, moreover, does not imply a fairly large number of people.

➤ Creating the Metadata

Uploading files to the blockchain is very expensive due to their size. Consequently, the creator of an NFT has an interest in using a small file to minimize the expenses. This is done by creating a link to an

⁹⁰ *Land Nordrhein-Westfalen and Dirck Renckhoff*, Case C-161/17, ECLI:EU:C:2018:634, para. 22 and the case law cited.

⁹¹ *Lautsprecherfotos*, BGH Case IZR 119/20, para. 14.

⁹² *GS Media BV v Sanoma Media Netherlands BV, Playboy Enterprises International Inc., Britt Geertruida Dekker*, C-160/15, ECLI:EU:C:2016:644.

excel like sheet that stores the information of the NFT (the metadata) in so called « JSON format »⁹³. That information includes the name of the author, the name of the asset, a short description and the source (the URL to the work). The metadata is written in code and thereby not easily accessible but instead will require intermediate steps to be translated in order to be read.

The creation of the metadata is not an act of reproduction of the work in accordance to Article 2 InfoSoc Directive. The work itself is not being reproduced but only the link to it.

Furthermore, the creation of the metadata is not a communication to the public: Firstly, similar to step one of the minting process, the metadata is uploaded on an online repository and therefore also has an URL of about 80 characters, which is not readily discoverable for the broad public.

Secondly, the metadata is expressed in JSON format. That means, it is written in code and will have to be translated into readable content by a web browser.

As shown above, “public” refers to an indeterminate number of potential recipients and implies, moreover, a fairly large number of persons. That kind of public is neither reached through the very specific and long URL nor by the fact that only a person with a certain educational background is able to gain information from the in JSON format saved metadata. According to jurisprudence, in order to fulfil a communication to the public, there must not be any intermediate steps in order to access the work⁹⁴.

Taking all of the above into account it seems likely that the act of creating the metadata is not a copyright relevant act.

➤ Minting (creating) the Token

The last step in the minting process is to create the actual token on the blockchain. This step involves to stamp the metadata and the contract address onto the token with its unique token ID, which is then deployed onto the blockchain.

Similar as in the second step, since the work itself is not being reproduced, the minting of the token as such is not an act of reproduction according to Article 2 InfoSoc Directive.

Article 3 InfoSoc Directive, i.e. communication to the public, is only affected if there is a communication to the *public*. That means that the token needs to be accessible to an indeterminate number of potential recipients. Such is the case if you can find the token online through search engines etc. However, simply deploying a token on a blockchain without publishing it on an NFT marketplace does not make it accessible for the public, unless the creator of such token uses another way of publishing it. If no further steps are taken, the token is not searchable through a search engine and therefore only a chosen amount of people with the knowledge of the tokenID and the contract address can find the work.

➤ Conclusion as to the copyright relevancy of the minting of an Off-Chain NFT

As seen above, the technical process of minting an Off-Chain NFT consists of several steps. However, only the first part of the process is copyright relevant: the creation of the source. If the person minting the NFT is not the rightsholder of such source or has not been given a permission, the step of creating

⁹³ JSON (JavaScript Object Notation) is a lightweight data-interchange format. It is easy for humans to read and write. It is easy for machines to parse and generate. It is based on a subset of the JavaScript Programming Language Standard ECMA-262 3rd Edition - December 1999. <https://www.json.org/json-en.html>.

⁹⁴ OLG Zweibrücken Case 4 U 45/16, para. 31.

the source is very likely to lead to infringement. The consequence would be that the rightsholder could claim injunctive relief and, if necessary, damages.

3.1.2.1.2 Minting of an On-Chain NFT

The minting process for On-Chain NFTs differs from the one for Off-Chain NFTs in that with an On-Chain NFT, the metadata and the file with the work itself, instead of being stored on an IPFS, are being stored directly on the blockchain. Such storage on the blockchain cannot be regarded as communication to the public in the sense of Article 3 of the InfoSoc Directive for the same reasons as with Off-Chain NFTs.

However, it can obviously be regarded as a reproduction in the sense of Article 2 of the InfoSoc Directive since the work in the minting process is directly copied onto the blockchain. Therefore, the consent of the author is also necessary for the minting of an On-Chain NFT.⁹⁵

3.1.2.2 Conclusion of Section 3.1.2.1. (minting of NFTs)

As a general rule, both, in the case of On-Chain and Off-Chain NFTs, the creation of the NFT requires the consent of the author of the work the NFT is referring to.

Although there are very good arguments that the minting as such does not constitute a communication to the public in the sense of Article 3 InfoSoc Directive, the minting in most cases involves a reproduction in the sense of Article 2 InfoSoc Directive : Whether the work the NFT refers to is uploaded to an only repository and then pointed to by the smart contract or whether the smart contract contains the entire work represented by the NFT, such act constitutes a reproduction for which the consent of the author of the work to which the NFT refers is required.⁹⁶

3.1.2.3 Copyright related questions concerning the first transaction of an NFT

➤ Offering the NFT on an NFT marketplace

Offering and selling the NFT on an NFT marketplace with the intention of a subsequent sale of the token involves a) an initial upload of the source/minting of the NFT (see above 3.1.2.1.), b) the presentation of the image the NFT represents on the NFT marketplace, and c) the actual transaction.

All of these steps may be relevant from a copyright perspective.

In order to offer an NFT on a marketplace, it is necessary to also show an image of the work which is represented by the NFT.

From a copyright point of view, such display involves a "reproduction" of the work according to Article 2 of the InfoSoc Directive, as well as a "making available to the public" according to Article 3 of the InfoSoc Directive, if the display takes place on an NFT marketplace open to the public. However, Article 5 (3) lit. j) of the InfoSoc Directive might provide for an exemption when offering an NFT on a market place.

Article 5 (3) lit. j) of the InfoSoc Directive states that Member States may provide for exceptions or limitations to the rights provided for in Articles 2 and 3 for the "use for the purpose of advertising the public exhibition or sale of artistic works, to the extent necessary to promote the event, excluding any other commercial use". First, this exemption is not mandatory for Member States to implement and

⁹⁵ Examples for On-chain NFTs are the LarvaLab Cryptopunks, who started off-chain and now are on-chain the Ethereum blockchain. OnChain Monkey (OCM) claims to be the first NFT collection of profile pictures to be generated on-chain.

⁹⁶ The only scenario in which this might be different depending on the technical details, is the scenario in which the smart contract is merely linked to a pre-existing source.

second, it is not yet clear whether this rule – if a member state’s copyright law provides for it, actually applies: On the one hand, selling an NFT via a marketplace could be compared to a sale from a gallery or through an auction. In both cases an image is being showcased through a catalogue for advertising reasons in order for costumers to understand what is being offered. Also, NFT marketplaces need to show an image of the work represented by the NFT so that potential buyers are able to identify the work of art they would like to purchase.

Nevertheless, as we have shown before, the “NFT” and the “work” are not identical. While an NFT represents information about the owner of the work, much like a certificate, the work itself is not necessarily being transferred when the NFT referring to a work is transferred. This separation between the NFT and the work is an argument against the application of this exemption. If the work represented by the NFT is not necessarily being sold when an NFT is transferred, the use of an image of the work represented by the NFT in order to offer the NFT could be seen as “other commercial use” according to the wording of Article 5 (3) lit. j) in the sense that the NFT (and not the work) is being advertised and such image is not being used for the sole purpose of advertising the sale of an artistic works, but for the sale of an NFT. If this is the case, this means that even in member states providing for an exception for advertising of a sale of a work, the consent of the author would have to be obtained before offering the NFT in order to be sure to not infringe any rights deriving from Article 2 of the InfoSoc Directive.

This might be different, if the token concerned represents rights in a physical artwork. In such case, the image has the purpose to advertise a sale of a share in a physical artwork, which might – depending on the national copyright act and its interpretation – be covered by the exception based on Article 5 (3) lit. j).

To conclude, the offering of an NFT most likely requires the consent of the author.

➤ Transacting the NFT

The registration of a new owner of the NFT through the sale of the NFT as such does not lead to a communication to the public of the work, as it only happens in the respective wallets of the seller and the buyer. The change of the “owner” also does not cause any further reproduction (in the case of an On-chain NFT) or linking (in the case of an off-chain NFT). A simple change of the owner therefore does not lead to a “new audience”⁹⁷ being reached, since the work linked to the NFT was already made publicly accessible to everyone in the course of being offered with an image to the public.⁹⁸

Lastly, the question arises whether the transaction of the NFT is an act of “distribution” according to Article 4 (1) of the InfoSoc Directive. Article 4 (1) of the InfoSoc Directive provides that the author shall have the exclusive right, in respect of the original of his work or copies thereof, to authorise or prohibit distribution of its work to the public in any form by sale or otherwise. Due to the fact that the sale of an NFT does not mean the sale of the underlying work itself, the sale does not fall under the distribution right. The distribution right – including its exhaustion – within European Law is linked to a tangible object. The exception to that is the argument of digital exhaustion in software as made by the CJEU in the Tom Kabinet case.⁹⁹ However, there is nothing to suggest that NFTs could be defined as software.¹⁰⁰

⁹⁷ According to the CJEU, reaching a new audience is precisely a prerequisite of Article 3 InfoSoc Directive, cf. EuGH MMR 2014, 260, Rn. 25 ff. m. Anm. Dietrich – Svensson.

⁹⁸ Heine/Stang, Weiterverkauf digitaler Werke mittels Non-Fungible-Token aus urheberrechtlicher Sicht, MMR 2021, 755, 758.

⁹⁹ Nederlands Uitgeversverbond, Groep Algemene Uitgevers v Tom Kabinet et al., C-263/18, ECLI:EU:C:2019:1111.

¹⁰⁰ <http://copyrightblog.kluweriplaw.com/2021/04/22/the-rise-of-non-fungible-tokens-nfts-and-the-role-of-copyright-law-part-ii/>.

Therefore, as a general rule, the sale of an NFT does not fall within the field of application of the distribution right.

Even in case the sale of an NFT is connected to the transfer of an original work as a tangible object, one would have to distinguish: The sale of the NFT itself is also in such case still not subject to Article 4 (1) of the InfoSoc Directive. But the triggered transition of ownership of the work is no different from the usual transfer of a work and thereby subject to the right of distribution.

➤ Conclusion

Offering an NFT on an NFT marketplace with the intention of a subsequent sale of the token is relevant from a copyright perspective, provided that the work linked to the NFT meets the requirements of an "original work". The process would, if not licensed by the author, infringe the authors right of reproduction according to Article 2 of the InfoSoc Directive. The exemption of Article 5 (3) lit. j) of the InfoSoc Directive applies potentially to NFTs, if the token concerned represents rights in a physical artwork. That, however, is not yet clarified.

3.1.2.4 Rights granted to the acquirer of an NFT

When a physical artwork is acquired in the real world, the buyer of such artwork becomes the owner. At the same time, unless otherwise agreed upon, the author of the work remains the owner of the copyright.

In terms of copyright, the same applies when an NFT is acquired: The buyer of an NFT does not acquire any rights in the work represented by the NFT. What they acquires is merely the right to hold the NFT in his wallet as well as to sell it.

However, like with the purchase of a physical artwork in the real world, the granting of rights of use is also possible in case of the purchase of an NFT through an agreement. Such an agreement can be part of the smart contract of the NFT or can be contained in the general terms of use of the sales marketplace, if the author using such marketplace validly agreed to such terms.

3.1.2.4.1 Terms and conditions of NFT marketplaces

An explicit - and according to some national copyright laws even a written - agreement is needed in order to acquire exclusive rights to a content. This also applies to the file that is linked to the NFT and embodies the content, if such file is protected by copyright law.¹⁰¹

What the buyer of an NFT acquires, therefore also depends on an eventual licence agreement, that can either be provided for in the smart contract or in the terms and conditions of the specific NFT project, in the terms and conditions of the NFT sales marketplace or consist of an individual agreement between the creator of the artwork that constitutes the underlying asset and the owner of the NFT.

OpenSea and Rarible are currently the most commonly used NFT marketplaces for art NFTs. They provide a market place to sell and buy NFTs with services to easily mint new NFTs. OpenSea's terms and conditions (as of the version from December 31, 2021, still in place on 13.08.2022)¹⁰² and Rarible's terms and conditions (as of the version from October 10, 2020, still in place on 13.08.2022)¹⁰³, govern the access to and use of their software, tools, and functionalities provided on or in connection with

¹⁰¹ Heine/Stang, Weiterverkauf digitaler Werke mittels Non-Fungible-Token aus urheberrechtlicher Sicht, MMR 2021, 755, 757.

¹⁰² <https://opensea.io/tos>.

¹⁰³ <https://static.rarible.com/terms.pdf>.

their services, including the services to view, explore and create NFTs and use the tools to purchase, sell, or transfer NFTs on public blockchains.

However, both marketplaces OpenSea and Rarible make clear that they only provide marketplace services, they are not party to any agreement between users. They do not make any representations or warranties about third-party content visible on the marketplace, including any content associated with NFTs displayed on the marketplace, in particular about their identity, legitimacy, functionality, and authenticity. Users of OpenSea and Rarible have to represent and warrant to comply with all applicable laws when using the services. In addition, users are also specifically prohibited to use the marketplaces to infringe or violate intellectual property rights or any other rights of others. Therefore, creators of NFTs on OpenSea have to represent and warrant that they have, or have obtained, all rights, licenses, consents, permissions, power or authority necessary to grant the rights granted for any content created, promoted or displayed through OpenSea. In fact, users, who offer an NFT via OpenSea, and thereby use the marketplaces compatibility with the metadata of the NFT, allowing e.g. the display of the digital file or art linked to the NFT, grant OpenSea a “worldwide, non-exclusive, sublicensable, royalty-free license to use, copy, modify, and display any content, including but not limited to text, materials, images, files, communications, comments, feedback, suggestions, ideas, concepts, questions, data”.¹⁰⁴ On the other hand, Rarible explicitly states that there is no “guarantee or assurance of the uniqueness, originality or quality” of any work associated with the NFT or its metadata.¹⁰⁵ Rarible further states that due to the absence of an express legal agreement between the creator of the work associated with the NFT and the purchasers, “there cannot be any guarantee or assurance that the purchase or holding” of the work associated with the NFT “confers any license to or ownership of” the metadata or “other intellectual property associated with” the work associated with the NFT “or any other right or entitlement, notwithstanding that” the user may rightfully own or possess the NFT.¹⁰⁶ OpenSea explicitly does not guarantee that any NFTs visible on OpenSea will always remain visible or available to be bought, sold or transferred.¹⁰⁷

OpenSea points out, that each NFT may also be associated with individual purchase terms governing the use of the NFT. These purchase terms are in particular relevant to determine which rights the buyer purchases with an NFT, beside of the ownership right in the token itself. By contrast, Rarible does not refer to such purchase terms, though such terms would apply anyway in the absence of a separate provision.

Other NFT marketplaces, such as Foundation¹⁰⁸, however clearly state that the buyer “receives a cryptographic token representing the Creator’s Art Content as a piece of property, but does not own the Art Content itself or any intellectual property rights therein”.¹⁰⁹ The buyer “may display and share the Art Content, but the [buyer] does not have any legal ownership, right, or title to any copyrights, trademarks, or other intellectual property rights to the Art Content, except the limited license to the Art Content granted by these Terms”.¹¹⁰ This limited license include “a limited, worldwide, non-assignable and non-transferable (except [upon sale or transfer to another buyer]), non-sublicensable,

¹⁰⁴ Paragraph 7: <https://opensea.io/tos>.

¹⁰⁵ Paragraph 1.1.(b)(iii): <https://static.rarible.com/terms.pdf>.

¹⁰⁶ Paragraph 1.1.(b)(iii): <https://static.rarible.com/terms.pdf>.

¹⁰⁷ Paragraph 5: <https://opensea.io/tos>.

¹⁰⁸ <https://foundation.app/>.

¹⁰⁹ Paragraph 5(c)i): <https://foundation.app/terms>.

¹¹⁰ Paragraph 5(c)i): <https://foundation.app/terms>.

royalty-free license to display the Art Content underlying such Digital Artwork solely for the [buyer's] non-commercial purposes".¹¹¹

Therefore, as a general rule, it can be said that the buyer of an NFT normally does not acquire any licence in the work that is the underlying asset of the NFT.

3.1.2.4.2 Terms and conditions of specific NFT projects

But there are exceptions to the rule that the buyer of an NFT normally does not acquire any licence in the work that is the underlying asset. The rights acquired by the buyer can be determined by the specific terms and conditions of the specific NFT or NFT project in question. As an example, the NFT project of the Austrian Belvedere Museum relating to Gustav Klimt's famous painting "the Kiss" had the following terms:¹¹²

The rights acquired when purchasing such a "Kiss" NFT consist of an "exclusive, worldwide, indefinite, irrevocable, non-sublicensable and transferable license to use the „The Kiss NFT(s)“ purchased".¹¹³ Due to the specific character of NFTs the rights especially include the right to make the NFT available "in your wallet, to show it in metaverse galleries, download it or print it".¹¹⁴ Further, the certificate that Belvedere will provide when purchasing a "Kiss" NFT can be printed out.

However, in purchasing "The Kiss NFT(s)" one will not obtain any rights to the analogue version of the work.

As long as one owns a "The Kiss NFT" the aforementioned rights are owned. The transfer of the ownership of the NFT by resale, gift, inheritance etc. entails the transfer of the License to the successor. The successor will have the same rights as the initial purchaser.

Another example is the licence published by the author of the NFT project CryptoKitties.¹¹⁵ That licence provides that the buyer of the NFT receives a right to use the artwork associated with the NFT for merchandising purposes, provided that the annual turnover does not exceed US\$ 100.000.

Yet another example is the NFT project "NBA Top Shot", through which recordings from the American basketball league NBA (so called "Moments") can be purchased and the terms of the marketplace determine for which purposes the recordings may be used.¹¹⁶ With the purchase of a "Moment" does not only acquire the right to swap, sell or give the NFT away, but also the purchaser receives a worldwide, non-exclusive, non-transferable, royalty-free license to use, copy, and display the NFT only for own non-commercial use, within a marketplace, a third party website or application within the limits that it is ensured that the user is cryptographically verified as the actual owner of the NFT.¹¹⁷

3.1.2.4.3 Smart Contract content

The granting of rights of use is also possible via the smart contract of the NFT. According to the prevailing opinion, smart contracts do not constitute contracts in the legal sense, but at most execute contracts as automated computer programs.¹¹⁸

¹¹¹ Paragraph 5(c)ii): <https://foundation.app/terms>

¹¹² <https://thekiss.art/s/TOS.html>

¹¹³ <https://thekiss.art/s/TOS.html> Section 6.1.

¹¹⁴ Ibid.

¹¹⁵ <https://www.nftlicense.org/>.

¹¹⁶ <https://nbatopshot.com/terms>, section 4: ownership, license and ownership restrictions.

¹¹⁷ Ibid.

¹¹⁸ Guggenberger, in: Hoeren/Sieber/Holznagel, Hdb. Multimediarecht, 55. EL Februar 2021, Teil 13.7 Rn. 4 mwN.

However, the consent of the right holder in the form of a (simple) consent can be considered. This legal concept has so far played a role in the digital context, especially in connection with the display of thumbnails by search engines. Simple consent differs from the transfer of rights of use and the permission under the law of obligations in that it leads to the lawfulness of the act as permission, but the recipient of consent acquires neither a right in rem nor a claim under the law of obligations or any other right enforceable against the will of the right holder.¹¹⁹

In connection with the display of images by image search engines, the German Federal Court of Justice (BGH) derived simple consent from the fact that images were placed on the internet without appropriate security measures against being found by image search engines (by programming the robots.txt file in the source code of an internet page).¹²⁰ This interpretation can be transferred to the programming of NFT without further difficulty.

Examples:

The decisive factor for the assumption of (simple) consent should be that smart contracts in connection with NFT can be programmed in such a way that a resale is not possible after the first sale.

Furthermore, the smart contract can be programmed in such a way that the creator of the NFT automatically participates with a certain percentage in the resale amount in the event of a resale.

If the creator of an NFT does not make use of the possibility to secure the NFT against resale by programming it accordingly, it can be assumed that the creator has (simply) consented to the resale. This applies even more to the case of programming an automatic revenue sharing, which only makes sense in the case of a resale possibility.¹²¹

It should be noted that it is not guaranteed that the creator of the NFT is actually the author of the work of art or has the necessary rights to grant rights of use. Since *a bona fide acquisition* of rights of use under copyright law is not possible, the buyer is left empty-handed and must try to hold the seller harmless, provided that they can personally identify them.

3.1.2.5 Copyright related Questions concerning the secondary market with NFTs

3.1.2.5.1 Automated royalty payments in the smart contract

Most smart contracts provide for automated "royalty payment" to the creator of the NFT for any future sale of the NFT. In most cases, thus, a resale royalty payment based on copyright law is economically not necessary.

However, the recipient of such royalty payment is usually the creator of the NFT, who is not necessarily identical with the author of the work the NFT refers to. Thus, if an NFT is infringing a third party's right, such rights are – economically – again infringed, when the NFT is sold on the secondary market.

3.1.2.5.2 Resale Royalties according to the Resale Rights Directive

Article 1 (1) of the Resale Rights Directive¹²² provides for the benefit of the author of an original work of art, a resale right, to be defined as an inalienable right, which cannot be waived, even in advance, to receive a royalty based on the sale price obtained for any resale of the work, subsequent to the first

¹¹⁹ BGH MMR 2010, 475, Rn. 34 m. Anm. Rössel – Vorschaubilder.

¹²⁰ BGH MMR 2010, 475, Rn. 34 m. Anm. Rössel – Vorschaubilder.

¹²¹ Heine/Stang, Weiterverkauf digitaler Werke mittels Non-Fungible-Token aus urheberrechtlicher Sicht, MMR 2021, 755, 759.

¹²² Directive 2001/84/EC of the European Parliament and of the Council of 27 September 2001 on the resale right for the benefit of the author of an original work of art.

transfer of the work by the author. Accordingly, the author participates in the sale proceeds when reselling originals of a work of fine art. In principle, digital art can also fall within the scope of application of the resale right. NFTs are designed to create "digital unique pieces" that can be traded similarly to originals and thus could enforce a resale right.

However, the applicability of the resale right in the case of the sale of an NFT must, according to the opinion of the authors of this study, be denied.

Recital 2 of the Resale Rights Directive defines the subject matter of the resale right as the "physical work", namely the medium in which the protected work is incorporated. A prerequisite for the creation of the resale right is therefore that the digital work of art is stored on a physical data carrier. Such an embodiment on a fixed data carrier does not take place when an NFT is mined and (re)sold. Moreover, the sale of an NFT does not involve the sale of an "original" work, but only the NFT as a digital data set.

The application of the resale right to the sale of NFTs is ultimately unnecessary, as stated above. Every author can ensure a percentage participation in the resale proceeds of an NFT by programming the smart contract accordingly and thus initiate a kind of resale right - in comparison to the legal regulation - in any amount and without possible difficulties in enforcement.

It remains open how to proceed if the work of art linked to the NFT is handed over on a data carrier or additionally as a physical token. In this case, a resale right is granted and the author cannot waive the claim to a resale right remuneration in advance according to Article 1 (1) of the Resale Rights Directive. It seems possible to automatically fix and enforce the resale right by means of smart contract programming. In cases where the royalty thus fixed reaches the minimum values of 0.25% to 4% laid down in the law, there should therefore be no room for an additional application of the resale right.

To sum it up, due to the clear wording of the law which requires a physical piece, the actual resale of an NFT is generally not an act of use relevant to copyright.

This can, however, be different where the file linked to the NFT is handed over on a physical data carrier (as this was the case with the auctioned work by Beepl) or where physical works are sold as add-ons (see the Fidenza example above).

3.1.2.6 Miscellaneous copyright issues according to the respective national copyright laws / copyright licensing contractual laws

Despite copyright law being governed by many EU directives, there are certain areas which are still subject to differences according to the respective national laws: As an example, according to certain national copyright laws (e.g. German copyright law), minting could be seen as an "unknown type of use", but could nevertheless, in certain cases, fall under existing license agreements. This could in particular be the case, if a comprehensive grant of rights of use (buy-out contract) has been granted by the author. In such a case, the right to mint would - supposed that minting is an action relevant from a copyright perspective, which could well be the case for On-chain NFTs - no longer belong to the author, but to the rightsholder/buyer of such rights, if the author does not reject such use during a certain deadline after having been notified.¹²³

3.2 NFTs From a Trademark Law perspective

NFTs can also raise trademark law issues.

¹²³ § 31 a UrhG (German Copyright Act).

If an NFT contains a protected trademark and such used is not authorized by the owner of the trademark, this might constitute a trademark infringement, depending on what the NFT represents.

There are several cases pending at US courts:

In January 2022, it was announced that French luxury company Hermès is suing a digital artist who goes by the names Mason Rothschild for selling unauthorised Birkin Bag NFTs, which were each sold for a five-figure amount.¹²⁴ Some of the 100 unique so-called “MetaBirkins”, are emblazoned with famous artworks like the *Salvator Mundi* attributed to Leonardo da Vinci. Hermès has requested an injunction to destroy all such NFTs and claims damages due to a trademark infringement. It argues that the brand “MetaBirkins” is similar to Hermès trademark “Birkin” and only has added the generic prefix “meta”.¹²⁵ After a first cease-and-desist letter in December 2021, OpenSea has removed the so-called “MetaBirkins” from its sales marketplace.¹²⁶

Nike sued StockX in February 2022 for selling NFTs with images of Nike sneakers without permission claiming that the NFTs infringed Nike's trademarks by confusing consumers.¹²⁷ Also, it was claimed that StockX's NFTs would interfere with Nike's own NFT plans. According to StockX, its NFTs are simply "claim tickets" for access to physical shoes that are stored in a "vault" after a buyer purchases them, and serve as proof of ownership and authenticity.¹²⁸ Nike claims that the NFTs are “virtual goods” and thus infringe Nike’s IP rights while SockX claims that it is not selling its NFTs as digital art, but instead using them as a means of selling the actual product pictured in the NFT.

These cases will help to define which measures actually constitute an infringement. Meanwhile, trademark owners who offer goods and services in the physical world should consider to extend their trademark protection to further classes in order to be protected in the so called Metaverse, where DLT based virtual products will be traded in the future. In order to protect their trademarks also in the area of virtual goods, it is advisable for trademark owners or for future applications to draft the list of goods and services that include uses in the virtual space or the metaverse. This is however a challenge: Whilst a trade mark protected virtual asset could be defined on the one hand as downloadable software which is covered by class 9 of the Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks (hereinafter: Nice Agreement)¹²⁹ it could on the other hand also be defined as service covered by either class 41 and 42 of the Nice Agreement.¹³⁰

In conclusion, also trademark protection is an area which is affected by the introduction of NFTs. A harmonized approach to the classification of virtual assets in the form of NFTs other is desirable.

¹²⁴ *Hermes International et al. v. Mason Rothschild*, case number 1:22-cv-00384, in the U.S. District Court for the Southern District of New York.

¹²⁵ <https://news.artnet.com/art-world/hermes-metabirkins-2063954>.

¹²⁶ <https://news.artnet.com/art-world/hermes-metabirkins-2063954>.

¹²⁷ <https://www.reuters.com/legal/litigation/stockx-strikes-back-nike-nft-lawsuit-2022-03-31/>.

¹²⁸ *Nike Inc. v. StockX LLC*, case number 1:22-cv-00983, in the U.S. District Court for the Southern District of New York.

¹²⁹ Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks, 1957, 11th Version of 31/05/2022.

¹³⁰ <https://www.cmshs-bloggt.de/gewerblicher-rechtsschutz/markenrecht/virtuelle-welten-und-virtuelle-gueter-markenschutz-fuer-digitale-produkte-im-metaverse/>.

3.3 Risks and opportunities relating to NFTs in particular and DLT in general from an IP perspective

3.3.1 Risk: Mass infringement

With the mass of minted NFTs, there is a risk of numerous violations of rights, which can affect both moral rights and exploitation rights. In fact, “fakes” have become an increasing problem on NFT marketplaces.¹³¹ Though new tools are trying to change that, e.g. by using AI to detect intellectual property infringements,¹³² “counterfeit” or “unauthorized” NFTs, which most of the time constitute a copyright infringement (e.g. non-authorized versions of “bored apes”, “crypto punks” or less well known NFTs), are a problem.¹³³

With the entering into force of the Digital Copyright Directive¹³⁴ and more specifically its Article 17, since 7 June 2021, “online content-sharing providers” are responsible to take the necessary steps to avoid unauthorised uploads – e.g. upload filters that automatically recognise infringing content. In its decision of April 26, 2022 the CJEU confirmed the controversial Article 17 and rejected Poland's complaint.¹³⁵ Poland alleged that point (b) and point (c) of Article 17 of the Digital Copyright Directive infringes the right to freedom of expression and information, guaranteed in Article 11 of the Charter of Fundamental Rights of the European Union. The CJEU rejected that complaint on the basis that when Member States transpose Directives into their national law it is their responsibility to implement an interpretation of the respective provision which allows for a fair balance between the various fundamental rights protected by the Charter.

Article 2 (6) Digital Copyright Directive defines “online-sharing provider” as a provider of an information society service of which the main or one of the main purposes is to store and give the public access to a large amount of copyright-protected works or other protected subject matter uploaded by its users, which it organises and promotes for profit-making purposes. In its second part, however, the definition explicitly excludes “online marketplaces”.

According to Recital 62 of the Digital Copyright Directive, the definition of an online content-sharing service provider should target only online services that play an important role on the online content market by competing with other online content services, such as online audio and video streaming services, for the same audiences (e.g. youtube), whereas the main activity of online marketplaces is online retail, not directly giving access to copyright-protected content. Despite the term “online retail”, which is used in Recital 62 of the Digital Copyright Directive to describe the main activity of marketplaces, the choice of the term “marketplace” suggests, that these are not limited to retailers selling own goods, but also covers intermediary platforms such as eBay.¹³⁶ This follows also the CJEU's case law on host provider privilege, which includes intermediary platforms.¹³⁷

The relevant question is, whether NFT trading marketplaces fall within the scope of Article 17 Digital Copyright Directive and thus have to introduce upload filters if the conditions are met. On the one

¹³¹ <https://www.theartnewspaper.com/2022/04/01/how-counterfeit-create-problems-for-nft-platforms>.

¹³² <https://www.theartnewspaper.com/2022/04/01/how-counterfeit-create-problems-for-nft-platforms>.

¹³³ See for example Yuga Labs Inc. v. Ripps et al., case number 2:22-cv-04355, in the U.S. District Court for the Central District of California.

¹³⁴ Directive (EU) 2019/790 of the European Parliament and of the Council of 17 April 2019 on copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC.

¹³⁵ Rs. C-401/19, Urt. v. 26. April 2022, ECLI:EU:C:2022:297.

¹³⁶ Peters/Schmidt, “Das Ringen um Upload-Filter geht in die 2. Runde”, GRUR Int. 2019, 1006; <https://www.jipitec.eu/issues/jipitec-10-2-2019/4914>.

¹³⁷ EuGH, GRUR Int. 2011, 839, Rdnr. 28, 31 – L'Oreal/eBay.

hand, they give the public access to token representing copyright-protected works that are uploaded by their users. On the other hand, they are ultimately a marketplace through which those interested in buying and those offering NFTs can find each other and enable sales. Although the NFT marketplaces' main purpose is the sales aspect, it also has a gallery purpose with which entire collections of a series can be viewed. Unlike on "normal" marketplace, where simply goods are sold (which can infringe copyright themselves or which images might infringe copyright), NFT marketplaces make digital copies of digital or physical art works visible to the public. This is not only done by serving as a promotion marketplace for sales but also by providing services to create, i.e. generate new NFTs. Despite the sales functions, the NFT marketplace does therefore, at first sight, appear much closer to potential copyright infringements than a typical "marketplace". Furthermore, the Digital Copyright Directive seeks a high level of protection suggesting that exceptions have to be understood narrowly in order to enable authors to have an improved negotiating position with as many platforms as possible. All this speaks for NFT trading marketplaces to fall within the scope of Article 17 of the Directive.

However, one has to bear in mind that NFT marketplaces offer tokens, not content. In most cases, the content, so the actual work, is only linked with the actual token. This rather speaks against the application of Article 17. At the same time, NFT marketplaces are well aware of the issue and most marketplaces provide for a guarantee of rightsholdership to be given by the user offering NFTs on the marketplace, as well for a notice and take down procedure which seems to be rather effective, as can be seen from the cases mentioned above (e.g. Sander case).

Nevertheless, the infringing token does still exist: Even if a takedown request is processed, the only effect is that the work associated with the NFT is no longer displayed for sale on the marketplace, hence no longer being made available to the public on that particular marketplace. The NFT still exists and might still be offered on other marketplaces or privately.

Claims for destruction based on copyright law or trademark law will in most cases probably not be enforceable for technical reasons: If an NFT was already minted, the marketplace may not be able to destroy or "burn" the NFT itself or recover it from the purchaser/its current owner. This is due to the fact that the entry on the blockchain is immutable, meaning it cannot be deleted or changed. In general, the access to the wallet of the purchaser/current owner of the NFT is under normal circumstances technically impossible and often the purchaser/current owner is anonymous, which makes legal proceedings difficult to say the least.

This phenomenon can however– at least partly and under certain circumstances - be tackled technically: There are technical possibilities to provide in the smart contract that the issuer of an NFT can, under certain circumstances, access the NFT in any wallet of any subsequent buyer of the NFT in order to move it to a "burn wallet".¹³⁸

As NFT marketplaces do have an interest not to sell unauthorized or infringing NFTs, it will be interesting to observe what kind of self-regulating mechanisms they will come up with and how effective they will be.

3.3.2 Potential Opportunity: DLT and Trade Secrets

Blockchain applications can, as another example, also be used in order to provide proof of the existence of trade secrets.

¹³⁸ For the technical background with legal base on the Digital Millennium Copyright Act: Levi/Neal/Oh, How the DMCA Applies to NFTs, Bloomberg Law, May 2022.

In 2018, the EUIPO conducted a feasibility study regarding a European deposit system for, among others, trade secrets.¹³⁹ However, in that study blockchain was not yet looked at as an option. Through blockchain technology, it would nowadays be possible to provide electronic proof of existence of a trade secret with a secured timestamp and at the same time also confidentially to store copies of the content certified: the blockchain registry platform could provide a time-stamped proof of existence but only indirectly and anonymously store the relevant content with the EUIPO. Such registry would provide a ledger for each individual trade secret, which would consist of a chain of confidential information, whereas only the hash and timestamp would be public in the registry. Meanwhile, private companies such as Bernstein.io offer possibilities to register trade secrets in the blockchain.

3.3.3 Potential opportunity: DLT and Rights Management

As we have shown above, DLT in principle allows for trading of copyright protected works without any intermediaries (or only an NFT marketplace as intermediary). That means that blockchain technology and the tool of smart contracts make it possible for artists to directly sell their works to the public on their own. Artists could get the possibility to authorize use, distribute their works and collect remuneration immediately through the sale (primary market and onward sales on the secondary market) and therefore would not need intermediaries. This applies in particular for receiving droit de suite (resale royalties) for any onward sale of their work.

However, there are several arguments as to why even with DLTs being available to authors, intermediaries will stay important in the field of trading with copyright protected works.

On the one hand, today's intermediaries control critical assets such as comprehensive rights management information¹⁴⁰. Even with the new technology and thereby a new market possibility for copyright protected works, the licenses that are in place today will not simply vanish because an author makes its work accessible through blockchain technology. It is much more likely that today's intermediaries will compete with new DLT specific intermediaries (such as platforms) that will emerge¹⁴¹.

Further, mapping smart contracts according to individual uses by the author might lead to certain rights not fully being considered. Copyright law is not harmonized throughout the world. An artist in Europe has different rights than an artist in the US. When selling their work, it is thereby important to take those different jurisdictions into account. There is not one global legal answer to the question which use of a work requires licensing. In order to secure the authors rights are being exploited legally within their limits, an intermediary is needed to manage those rights¹⁴².

Additionally, if artists were to map their rights individually on the blockchain through a smart contract, conflicts will most likely emerge between rights obtained through the smart contract and rights obtain through a 'traditional' license. That speaks for the fact that the same coordination entity should have the responsibility for both of those possibilities to license. Thereby making sure that all information is managed within one entity and avoiding a license chaos¹⁴³.

¹³⁹ https://euipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/observatory/documents/reports/Feasibility_Analysis/2018_Feasibility_Analysis_of_Digital_Deposit_System_en.pdf.

¹⁴⁰ Bodo, Balazs, Gervais, Daniel and Pedro Quintais, Joao, Blockchain and smart contracts: the missing link in copyright licensing? (2018) 26 International Journal of Law and Information Technology 311 (319).

¹⁴¹ Ibid.

¹⁴² Ibid. p. 333.

¹⁴³ Buzu, Irina, Blockchain, smart contracts and Copyright Management Disruption, available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3759260 (16.06.2022).

Through an intermediary it is also possible to create an authority as a centralised solution to bundle all information that is relevant for a registered IP right. The benefits deriving from such a centralisation are smoother IP rights audits as well as simplified due diligence exercises within the transaction of a work¹⁴⁴.

Already today, often intermediaries manage exploitation rights on behalf of authors. Using DLTs does not make the management of such rights easier for the authors themselves, but it could make it easier for intermediaries such as Collective Management Organisations (CMO) to collect and store the data that emerges throughout the life of a work. If such data is stored on the blockchain and thus accessible to everyone, this also creates a higher degree of transparency. For that to work smoothly, however, it is of essential importance that the initial entry into the blockchain of an IP is done correctly. That means first and foremost that only truthful, verified and valid information is being used¹⁴⁵. Especially the authorship of the work must correspond to the ownership of the NFT. While having that information, when being correct, stored on a blockchain can diminish the need of a third party that needs to verify authorship, it is of utmost importance to have a third party that verifies such data before the entry into the ledger. Once deployed it is not possible to change the initial data of the token.

DLT simplifies many processes especially for CMOs. Rights can be tokenized and will thereby be more easily transferable within their limits. The tokenization ensures that the work is only used within the respective included rights. On top of that, DLT could provide for a system that gives the public access to using a work for a purpose while simultaneously preserving the authors rights. For example: if one would like to include a part of a song in a video, DLT could give the possibility to buy certain rights to that part of a song and the smart contract that is in place will make sure that the song is in fact only used for such purpose on top of that automatically collecting royalties that can directly be transferred to the artist. Since those tokens can still be in the hands of CMOs their role is not losing in importance but instead DLT will give CMOs an easier and more direct way to handle rights.

Lastly, another benefit that derives from such a system would be that authors will have a better overview on what happens with their works. Especially when it comes to royalties and remuneration DLT pose the possibility to make the system more transparent for authors of copyright protected works¹⁴⁶.

3.3.4 Potential opportunity: DLT as a tool to authenticate virtual and physical assets and thus supporting the fight against piracy

In the so called metaverse, NFTs will be used to track and validate the sale and ownership of digital goods.¹⁴⁷

In addition, NFTs can also be used to verify the authenticity of physical assets.

The authentication of luxury goods with the help of NFT is a promising field of application and there are several Companies offering services in that field.¹⁴⁸

¹⁴⁴ Ibid.

¹⁴⁵ Ibid.

¹⁴⁶ Ibid.

¹⁴⁷ For a Briefing about the Metaverse see: European Parliament, [https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/733557/EPRS_BRI\(2022\)733557_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/733557/EPRS_BRI(2022)733557_EN.pdf).

¹⁴⁸ For more examples see: B. Lissner, Die Blockchain-Technologie im Einsatz gegen Produktpiraterie, DSRITB 2020, 847.

For instance, Breitling now issues a blockchain-based "passport" which is based on NFT technology to certify the authenticity of its luxury watches.¹⁴⁹

As far as artworks are concerned, the auction house Christie's, in partnership with Artory, offers to issue blockchain certificates for artworks sold through Christie's.¹⁵⁰

With certain tools, such as the "Virgo" tool, consumers can use an app on their smartphone to check the authenticity of the products they purchase, both online and in brick-and-mortar stores, and also create digital certificates of authenticity and ownership for each product themselves. They can store these securely in their wallet on the blockchain and present and transfer them in the event of a resale.¹⁵¹

"AURA," a platform that luxury goods group LVMH, together with ConsenSys and Microsoft, plans to launch, is also said to have similar functions. This system is also to be based on the Ethereum blockchain, but in the form of a consortium blockchain, in which basically every "luxury brand manufacturer" can become a member.¹⁵²

Through such systems, consumers can make sure that they have an original product in front of them and then prove this in case of resale. Through the technologies used, manufacturers can track their sales and distribution channels and the sales of their products in a particular level of detail.¹⁵³

3.3.5 Potential opportunity: DLT as a tool in the registration of IP rights

Also in the field of IP registration, there are several projects in place on an international level¹⁵⁴ taking advantage of the decentral, immutable nature of DLT. On an EU level, there is the project "SDR IP Register on Blockchain" of the EUIPO, the aim of which is to create new opportunities for interoperability with other organisations and institutions, increase data security and increase data quality, as well as to create synergies between the member states registration authorities in an economic sense.¹⁵⁵

3.4 Are DLT applications like NFTs supported by the Union IPR regime?

In order to support DLT applications like NFTs, the intellectual property law regime is not primarily the key, but – at least as far as certain types of NFTs are concerned – rather the legal regime related to banking regulation, tax regulation or, more specifically, crypto-regulation dealing with cryptocurrencies and other crypto assets. All such important questions are out of the scope of this study.

The question of intellectual property protection – or of intellectual property infringement – of a specific content that is tokenized, hence connected to a distributed ledger, although providing for new challenges, is legally very similar to the questions raised since the early times of the internet.

Despite the finding that, if someone tokenises a digital work that was created by someone else, copyright infringement will not be established for the tokenisation itself if an "off-chain" minting is concerned, in most cases the creation of the source which precedes the actual minting, will constitute

¹⁴⁹ <https://www.breitling.com/de-de/blockchain/>.

¹⁵⁰ <https://www.christies.com/about-us/press-archive/details?PressReleaseID=9160&lid=1>.

¹⁵¹ <https://www.virgo.tech/en/home/>.

¹⁵² <https://auraluxuryblockchain.com/>.

¹⁵³ B. Lissner, Die Blockchain-Technologie im Einsatz gegen Produktpiraterie, DSRITB 2020, 847.

¹⁵⁴ As an example: https://www.wipo.int/wipo_magazine_digital/en/2020/article_0002.html.

¹⁵⁵ https://euipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/contentPdfs/Strategic_Plan_2025/project_cards/SD3_IP_Register_on_Blockchain_PC_en.pdf.

a reproduction. In addition, the online display of the work as a token, even in thumbnail form, may constitute a copyright infringement, if the author did not give its prior consent. Therefore, as a conclusion, NFTs minted without the consent of the author of the underlying work, as a general rule, are violating the author's copyright, if the underlying falls under copyright law.

As a consequence, most NFT marketplaces pragmatically provide for a notice-and-take-down functionality.

In addition, copyright law provides for remedies.

Therefore, it can be said that despite some grey areas, the EU intellectual property regime as it stands does provide rightsholders with the material rights and claims to defend against infringements relating to NFT.

Nevertheless, one has to point out that the national laws of the EU member states are not fully harmonized. Due to that, IP issues relating to NFTs might slightly differ from one EU member state to another.

All in all, the biggest challenge for trademark and copyright holders is the detection and enforcement of infringements, for which the application of artificial intelligence/upload filters – if possible on a self-regulation, voluntary basis – might be useful. Without such tools, the detection of infringements would face serious obstacles.

In the area of enforcement, the decentralized nature of DLT provokes questions regarding the applicable law, jurisdiction and competent authorities. Also, from a practical point of view, enforcement is difficult in cases, in which the identity of the infringer is unknown. This is another argument for technical solutions preventing any infringement in the first place.

As shown above, even though NFTs open up the possibility for authors to sell their works directly to the public and to provide for further royalty payments in the smart contract, there will still be a need for CMO's. There is a potential that the CMO's work can be facilitated through DLT, if an initial instance on a European level verifies the true authorship to a work before its rights status can be written on the blockchain. Only if such initial instance is provided for, the advantages of distributed ledger technology regarding authenticity and immutability can be seriously used.

Also it is important to understand that the buyer of an NFT, identical to the purchase of an artwork in the real world, as a principle, does not acquire any copyright in the tokenised work on which the NFT is based, and will not be entitled to use the underlying work in any way other than the free uses/limitations to copyright law that are currently in place, without the permission of the copyright holders and without paying royalties.

As a conclusion, it can be said:

It is possible to apply the Union IPR Regime in the context of NFTs.

However, the fact that the Union IPR Regime is not fully harmonized, will likely lead to diverging situation in different member states in certain situations.

As far as enforcement is concerned, it is in the own interest of NFT marketplaces to provide for mechanisms that prevent the offering of infringing NFTs. It will be important for the European legislator to observe what kind of self-regulating mechanisms they will come up with and how effective they will be.

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This study, commissioned by the European Parliament's Policy Department for Citizens' Rights and Constitutional Affairs at the request of the JURI Committee, aims to provide an overview over Intellectual Property Rights and Distributed Ledger Technology with a focus on IP issues relating to art NFTs and tokenized physical art works.

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