Kosmik Hukum

Fakultas Hukum
Universitas Muhammadiyah Purwokerto
Vol. 24 No. 1 (2024)

This work is licensed under a Creative Commons Attribution 4.0 International License (cc-by)

Enforcement of Copyright Law on Non-Fungible Token (NFT) Through Smart Contracts

Deslaely Putranti[1]✉, **Uni Tsulasi Putri**[2]
[1,2] Faculty of Law, Universitas Ahmad Dahlan, Indonesia

Corresponding: deslaely.putranti@law.uad.ac.id

Article Process

Submitted:
14-07-2023

Reviewed:
04-08-2023

Accepted:
12-10-2023

Published:
18-01-2024

Abstract

The emergence of the Non-Fungible Token (NFT) was driven by the transformation of the digital world. NFT is now an investment option for the majority of investors. NFT is a digital asset that defines original artworks, such as a painting, drawing, piece of music, or in-game item, and is maintained in a blockchain-based ledger where the purchasing and selling process is conducted using cryptocurrency. As a form of copyright protection, the presence of NFT as a digital asset is fraught with complications. The existing laws and regulations are yet to govern the ownership of NFTs that infringe the copyrights of others; thus, a solution is required, one of which is by the use of smart contracts. This is normative-juridical research, namely study undertaken by reviewing library resources or secondary sources. The findings from this research are, first, digitizing an artwork that is subsequently converted to NFT infringes the original creator's copyright since someone may produce a digital version of another's work without their consent; second, with the present state of technology, smart contracts cannot identify Copyright mistakes that are translated to NFT. This study came into the conclusion that through human intervention, the blockchain network requires the addition of new applications.

Keywords: Non-Fungible Token, Copyright, Smart Contract

Abstrak

Berkembangnya dunia digital menginisiasi lahirnya Non-Fungible Token (NFT). NFT saat ini menjadi alternatif investasi bagi sebagian besar orang. NFT sendiri ialah aset digital yang menggambarkan obyek asli seperti karya seni baik lukisan, gambar, musik, atau item dalam game yang tersimpan dalam ledger dalam blockchain dimana proses jual belinya menggunakan mata uang crypto. Keberadaan NFT sebagai aset digital diiringi dengan permasalahan yang timbul terutama kaitannya dengan perlindungan hak cipta. Peraturan Perundang-undangan yang berlaku belum mengatur mengenai kepemilikan NFT yang melanggar hak cipta milik orang lain, sehingga diperlukan adanya solusi dalam memecahkan permasalahan ini salah satunya melalui smart contract. Penelitian ini adalah Penelitian Yuridis-Normatif yaitu penelitian yang dilakukan dengan cara meneliti bahan Pustaka atau bahan sekunder. Hasil penelitian menunjukkan bahwa digitalisasi karya seni yang kemudian dikonversi sebagai NFT berpotensi melanggar hak cipta dari seorang Pencipta karya yang asli karena seseorang dapat membuat versi digital sebuah karya milik orang lain menjadi NFT miliknya tanpa sepengetahuan dari pencipta aslinya, Kedua, dengan teknologi saat ini, Smart contract belum dapat mendeteksi adanya pelanggaran Hak Cipta yang dikonversi menjadi NFT. Dibutuhkan program tambahan pada jaringan blockchain dengan melibatkan intervensi manusia pada prosesnya.

Kata kunci: *Non-Fungible Token, Hak Cipta, Smart Contract.*

I. Introduction

In an auction at Christie's, an NFT by digital artist Beeple titled, "Everydays: The First 5000 Days" was sold for 69 Million United States Dollars.[1] In Indonesia, an NFT work called, "Ghozali

[1] Jacob Kastrenakes, "Beeple Sold an NFT for $69 Million," *The Verge*, last modified 2021, accessed May 23, 2023, https://www.theverge.com/2021/3/11/22325054/beeple-christies-nft-sale-cost-everydays-69-million.

everyday" on the Opensea platform has been sold for billions of rupiah.[2] The emergence of various NFT marketplace platforms such as the Nift Gateway[3], Rarible[4], SupeRare[5], and OpenSea[6] has made significantly eased the content creators to undertake sale and purchase transactions for their artworks. The digitization of artworks into NFT raises the issue of potential infringement of intellectual property, particularly the copyright. During the minting process of a digital work into an NFT, there is no mechanism to verify that the work is the original work of the NFT creator. It is very much possible for NFT creators to turn the works that are not theirs into NFTs and gain commercial benefits from such action. Furthermore, the Law of the Republic of Indonesia number 28 of 2014 on Copyright (Undang-Undang Hak Cipta, "UUHC") neglects to regulate the existence of NFTs, hence in event of a copyright infringement on NFTs in Indonesia, legal remedies cannot be pursued. Conceptually, one's ownership of an NFT does not mean that the person is entitled to owning its copyright. But a copyrighted work can be converted into an NFT. In practice, the transfer of copyright ownership of NFTs can be carried out by the owner of the NFT to the recipient of the NFT which is to be stated in a smart contract in the blockchain system. Essentially, a blockchain smart contract allows a series of clauses that are converted into a programming language to be executed automatically. Several research has been discussed the topics of copyright infringements in NFT digitization[7,8,9]. However, research discussing copyright protection to the creator of original work converted to NFT with a smart contract mechanism is inadequate so far. This article aimed to identify and to analyze the verification mechanisms related to the enforcement of copyright law on NFTs through smart contracts.

II. Research Problems

This research aims to answer the research problems as follows; 1) How is Copyright Infringement in NFT take place? and 2) How is the enforcement towards Copyright in Indonesia can be done through smart contract?

III. Research Methods

The present study is normative-juridical research which employs an examination on the library materials or the secondary materials. This research examines the problem of protection and enforcement of copyright law on NFTs in Indonesia. While the conceptual approach was used in this study to disclose the concept of the enforcement of copyright law toward author and/or copyright holder using smart contract. After the data has been collected, the data were analyzed by means of the qualitative data analysis. Qualitative data analysis is applied to discover and describe the problems in the field or structures and processes in routines and practices. The ultimate goal is to create a generalization by comparing various materials, texts or several cases. Thus, the presentation of this article can be comprehended as a sequence that is coherent, logical, and connected from one section to the next.

---

2 Lidya S Julita, "5 Foto NFT Termahal Di Dunia, Ghozali Everyday Cuma Recehan.," *CNBC Indonesia*, last modified 2022, accessed April 23, 2023, https://www.cnbcindonesia.com/tech/20220123154402-37-309704/5-foto-nft-termahal-di-dunia-ghozali-everyday-cuma-recehan.

3 "Nifty Gateways," n.d., https://www.niftygateway.com/.

4 "Rarible" (n.d.), https://rarible.com/.

5 "SuperRare," https://superrare.com/.

6 "OpenSea," n.d., https://opensea.io/.

7 Mark Conrad, "Non-Fungible Tokens, Sports, and Intellectual Property Law Issues: A Case Study Applying Copyright, Trademark, and Right of Publicity Law to a Non-Traditional Ownership Vehicle," *Journal of Legal Aspects of Sport 32* (2022): 132–152, http://advancesinsocialwork.iupui.edu/index.php/jlas/article/view/26091.

8 Angelia Ashyira, "Legal Protection for Artists Whose Digital Works Are Issued Without Permission In The Form of Non-Fungible Token (NFT) (Juridical Review on Law of The Republic of Indonesia Number 28 of 2014 on Copyrights)," *SSRN Electronic Journal* (2022), https://www.ssrn.com/abstract=4084550.

9 Felipe Marquette de Sousa, "Token-Art System and the New International Art Market: The Impacts of NFT Technology and the Legal Aspects Involved," *Journal of Law, Market & Innovation* 1, no. 1 (2022), https://ojs.unito.it/index.php/JLMI/article/view/6674.

Kosmik Hukum Vol. 24 No. 1 (2024): 40-51
E-ISSN: 2655-9242 | P-ISSN: 1411-9781
DOI: 10.30595/kosmikhukum.v24i1.18476

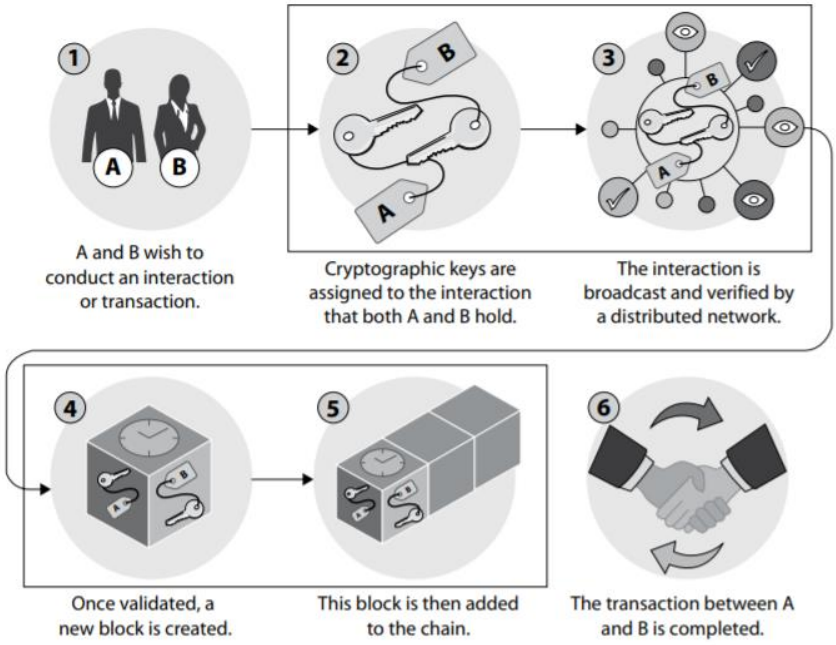
IV. Result and Discussion

The birth of blockchain technology gave rise to several the digital asset phenomena marked by the emergence of cryptocurrencies, security tokens, to Non-Fungible Tokens (NFTs). NFT is a digital asset that depicts the original objects such as works of art, be it paintings, pictures, music, or in-game items stored in ledgers on the blockchain where the sale and purchase process utilises the cryptocurrency.[10] The Merriam-Webster dictionary defines NFT as, "a unique digital identifier that cannot be copied, substituted or subdivided, that is recorded in a blockchain, and that is used to certify authenticity and ownership (as of a specific digital asset and specific rights relating to it)".[11] From this understanding it is conclusive that NFT is a unique digital identity which has value and thus unable to be exchanged.

1. Blockchain Technology and Smart Contract

To put it simply, blockchain can be described as a decentralized ledger and computing platform capable of storing data in a block chain from the very 1st transaction to the N-th transaction. Every transaction added to the block will be validated by all networks that are members of the blockchain and can then be added to a new block. This process continues until the N-th transaction.[12] The basis of blockchain processing consists of the steps illustrated in Figure 1 below:

Figure 1.The Transaction Flow in Public Blockchain



Source: Joseph J., and Paul R. Allen. Bambara, *"Blockchain: A Practical Guide to Developing Business, Law and Technology Solutions. Mc Graw Hill Education.," New York: Mc Graw Hill Education 20* (2018)

[10] Muddasar Ali and Sikha Bagui, "Introduction to NFTs: The Future of Digital Collectibles," *International Journal of Advanced Computer Science and Applications* 12, no. 10 (2021).

[11] "Non-Fungible Token," n.d.

[12] Joseph J., and Paul R. Allen. Bambara, "Blockchain: A Practical Guide to Developing Business, Law and Technology Solutions. Mc Graw Hill Education.," *New York: Mc Graw Hill Education* 20 (2018); Aishath Muneeza and Zakariya Mustapha, "Blockchain and Its Shariah Compliant Structure," in *Halal Cryptocurrency Management*, 2019; Uni Tsulasi Putri and Nikmah Mentari, "The Legal Perspective of Blockchain's Potential Use For Sharia Banking Institutions In Indonesia," *Hang Tuah Law Journal* 6, no. 1 (2022); Burcu Sakız and Ayşen Hiç Gencer, "Blockchain Beyond Cryptocurrency: Non-Fungible Tokens," in *International Conference on Eurasian Economies 2021*, 2021.

In blockchain transactions, every transaction interaction between parties in the blockchain network is immutable in a way that the transaction cannot be deleted or modified. In the blockchain network, each transaction can only be added or viewed. The scheme for adding blocks in the blockchain network is as depicted in Figure 5 above. Each transaction that will be added to the blockchain ledger will be verified using the cryptographic keys owned by each of the parties to the transaction (number 2). The verified transaction will be distributed throughout the network that is part of the blockchain network chain to be validated (number 3). After the network is validated, a new block containing the transaction information will be formed (number 4) and will be added to the network (number 5).[13]

The abovementioned scheme is the most fundamental flow of the blockchain technology. According to the current developments, blockchain is experiencing very rapid progress in its utilization. Melanie Swan, as quoted by Burcu Sakız and Ayşen Hiç Gencer, divides the blockchain revolution into three categories of stages: [14]

Year	Blockchain revolutions
Blockchain 1.0	Currency (digital payments, deployment of cryptocurrencies into applications related to cash payments such as currency transfers, remittances)
Blockchain 2.0	Contracts (all matters related to the economics, markets, financial applications)
Blockchain 3.0	Applications (other than currency, finance and markets – especially for government, healthcare, science, literacy, arts and culture)

The development of the blockchain cannot be separated from the development of blockchain networks that alters the way humans view blockchain on its own, which is by the emergence of the Ethereum blockchain developed by Vitalik Buterin. The Ethereum blockchain enables the development of various industrial sectors that utilize the blockchain outside of the cryptocurrencies realm, subsequently by developing smart contracts. One of the blockchain developments that utilizes smart contracts is related to the art industry, namely the introduction of non-fungible tokens (NFT). Nearly all NFTs are part of the Ethereum blockchain.[15]

2. Ethereum Blockchain, Smart Contract and NFT

The Ethereum blockchain which was built by Vitalik Buterin in 2015 has been equipped with an essential difference as opposed to the bitcoin blockchain. As one of the startups that also issues a cryptocurrency called Ether, Ethereum offers the huge distinction by offering the possibility for developers to create, manage, and implement programs on top of the Ethereum network through smart contracts that lead to the decentralized Applications (dApps).[16] Essentially, a smart contract is a series of programming languages that contains the rights and obligations of each party as outlined in the blockchain network to automatically execute the transactions for these parties. Smart contracts are an important key for the programs developed to be executed automatically in the Ethereum network when the specified conditions are met. Execution and verification of transactions in Ethereum are fees that are paid in the Ether currency (ETH). However, the uniqueness of Ethereum is that any person can create their own unique token on top of the Ethereum blockchain network.[17]

---

13 Bambara, "Blockchain: A Practical Guide to Developing Business, Law and Technology Solutions. Mc Graw Hill Education."

14 Melanie Swan, *Blockchain: Blueprint for a New Economy*, *Climate Change 2013 - The Physical Science Basis*, 2015.

15 Sakız and Gencer, "Blockchain Beyond Cryptocurrency: Non-Fungible Tokens."

16 *Ibid.*

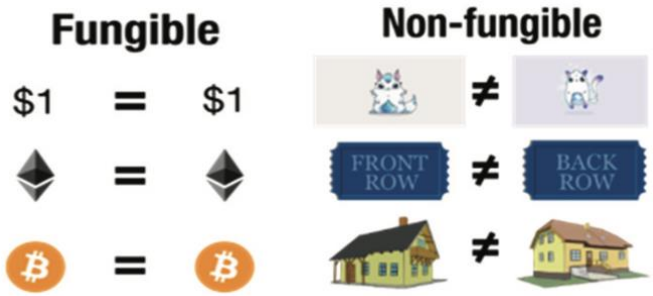
17 *Ibid.*

Kosmik Hukum Vol. 24 No. 1 (2024): 40-51
E-ISSN: 2655-9242 | P-ISSN: 1411-9781
DOI: 10.30595/kosmikhukum.v24i1.18476

In the Etherium network, there have been several standard tokens, such as ERC-20, ERC-721, ERC-777 dan ERC-1155.[18] ERC (Ethereum Request for Comment) is a standard application in the Ethereum network where there are several types of ERC accepted in the transactions as follows:

1. Standard Token ERC-20 : This is the most commonly used token and hence the most common token standard. This token is a standard token that can be exchanged, which means that each token has the same type and value as other tokens. Examples of these tokens are Bitcoins on the Bitcoin blockchain or Ether on the Ethereum blockchain.[19]
2. Standard Non-Fungible Token ERC-721 : in ERC-721, each token is different and non-fungible, which enables this to be used in tracking unique assets. Wherein each asset has individual ownership.[20]
3. Standard Token ERC-777 :tThis type of ERC provides advanced functionality for interaction with tokens while maintaining compatibility with ERC-20.[21]
4. Standard Multi Tokens ERC-1155 : this type of token combines both fungible and non-fungible tokens which can be managed in a single contract in this token standard.[22]

Figure 2. Comparisons between Fungible and Non-Fungible



Source: Cheong Ghil Kim, *"A Study on Technology to Counter Copyright Infringement According to NFT Transaction Types," Journal of the Semiconductor & Display Technology 20,* (2021)

As one of the cryptocurrencies of the Ethereum Smart Contract, ERC-721 (NFT) has unique and rare properties. However, it should be understood that NFTs merely consist of metadata, not the artwork itself. NFTs record data on the creation and ownership of an asset that can be in the form of an artwork. An NFT owner bears a smart contract that describes and operates the functions of an NFT. Smart contracts create registration entries on the blockchain which represent proof of ownership of the assets associated with the NFT, which can be accompanied by a link to the original work,[23] be it artworks, real estate in the metaverse,[24] or other digital assets.

[18] Monika Di Angelo and Gernot Salzer, "Tokens, Types, and Standards: Identification and Utilization in Ethereum," in *Proceedings - 2020 IEEE International Conference on Decentralized Applications and Infrastructures, DAPPS 2020*, 2020.
[19] Fabian, and Vitalik Buterin. Vogelsteller, "EIP-20: Token Standard.," *Ethereum Improvement Proposals* (2015).
[20] William, Dieter Shirley, Jacob Evans, and Nastassia Sachs Entriken, "EIP-721: Non-Fungible Token Standard," *Ethereum Improvement Proposals* (2018).
[21] Jacques Dafflon, Jordi Baylina, and Thomas Shababi, "EIP-777: ERC-777 Token Standard," *Ethereum Improvement Proposals*.
[22] R. Witek et al., "Eip-1155: Erc-1155 Multitoken Standard," *Ethereum Improvement Protocol, EIP-1155* (2018).
[23] Andres Guadamuz, "Non-Fungible Tokens (NFTs) and Copyright," *WIPO Magazine*, 2021.
[24] "Decentraland," n.d.

Figure 3. Metadata of NFT

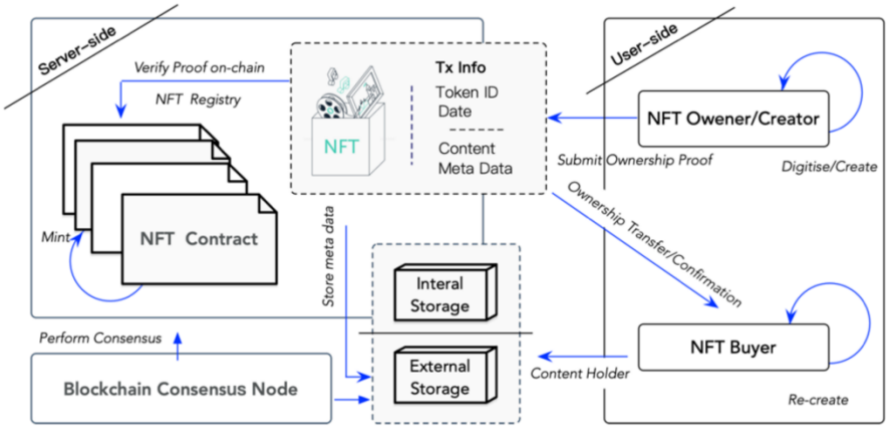
Item Metadata	
Contract Address	**Token Metadata**
0x8c5aCF6dBD24c66e6FD44d4A4C3d7a2 D955AA ad2	{ "symbol": "Mintable Gasless store", "image": "https://d1czm3wxxz9zd.cloudfontnet/ 613b908d 0000000000/861932402826187638543675501608353605 31676033165 "animation_url":"". "royalty_amount":true, "address": "0x8c5aCF6dBD24c66e6FD44d4A4C37a2D955AAad2", "tokened" "861932402826187638543675016083536053 16760331 "resellable": true, "original_creator": "0xBe8Fa52a0A28AFE9507186A817813eDC1 "edition_number":1, "description": " A beautiful bovine in the summer sun "auctionLength": 43200, "title": "The Clearest Light is the Most Blinding", "url": "https://metadata.mintable.app/mintable_gasless/86193 240 "file_key":"", "apiURL": "mintable_gasless/", "name": "The Clearest Light is the Most Blinding", "auctionType": "Auction", "category": "Art", "edition_total": 1, "gasless": true }
Token ID	
861932402826187638543675 01	
60835360531676033165180834 5700	
084608326762837402898	
Token Name	
The Clearest Light is the Most Blinding	
Original Image	
https://d1iczm3wxxz9zd.cloudfront.net/6 13b908d-19ad-41b1-8bfa0e0016820739c/ 0000000000000000/861932402 826188763854367501608353605 3 167603316518083457000846083267 6 2837402898/ITEM_PREVIEW1.jpg	
Original Creator	
0xBe8Fa52a0A28AFE9507186A817813eD C14 54E004	

Source: Andres Guadamuz, "Non-Fungible Tokens (NFTs) and Copyright," WIPO Magazine, (2021)

3. Mechanism for Converting Artworks into NFTs

In practice, converting an artwork into an NFT is not by any means difficult. Users only need to create the digital works then convert them to NFTs. In the NFT protocol, there are two main roles that must exist, namely Buyers and Sellers. The system in NFT can be described as follows:[25]

Figure 4. Work flow in the NFT system



[25] Kristin Cornelius, "Betraying Blockchain: Accountability, Transparency and Document Standards for Non-fungible Tokens (Nfts)," *Information (Switzerland)* 12, no. 9 (2021); Cheong Ghil Kim, "A Study on Technology to Counter Copyright Infringement According to NFT Transaction Types," *Journal of the Semiconductor & Display Technology* 20, no. 4 (2021); Qin Wang et al., "Non-Fungible Token (NFT): Overview, Evaluation, Opportunities and Challenges," last modified 2021, accessed May 23, 2023, https://arxiv-export-lb.library.cornell.edu/abs/2105.07447?context=cs.

Kosmik Hukum Vol. 24 No. 1 (2024): 40-51
E-ISSN: 2655-9242 | P-ISSN: 1411-9781
DOI: 10.30595/kosmikhukum.v24i1.18476

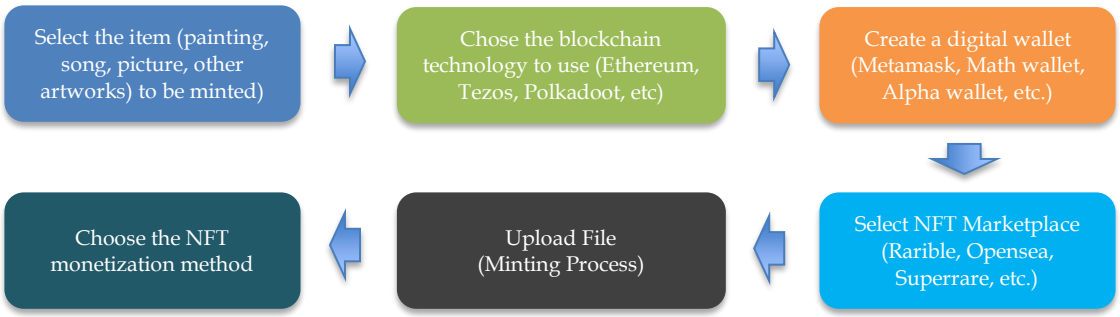
Source: Kristin Cornelius, *"Betraying Blockchain: Accountability, Transparency and Document Standards for Non -fungible Tokens (Nfts),"* (2021); Qin Wang et al., *"Non-Fungible Token (NFT): Overview, Evaluation, Opportunities and Challenges,"* (2021)

1. NFT Digitize: the owner of the NFT verifies that the NFT files, titles, and descriptions are correct, and digitizes the raw data into the appropriate form.
2. NFT Store: the owner of the NFT stores the raw data in a database outside of the blockchain.
3. NFT Sign: the owner of the NFT signs the transaction including the NFT data hash and sends it to the Smart Contract.
4. Mint and Trade (ERC-721 or ERC-1155) : When the smart contract receives a transaction containing the NFT data, the process of minting (printing/issuing) and trading the NFT begins.
5. NFT Confirm: When a transaction is confirmed, the minting process is complete and at this point, the NFT records the transaction in a unique blockchain address as permanent, irreversible proof.

The NFT protocol, as mentioned above, is a general step that is implemented in every NFT platform. When a buyer purchases an NFT of tokenized digital assets, it does not mean that the buyer gets the sole ownership of the artwork as when someone purchases a painting at an art gallery and takes it home. Purchasing an NFT means that a person gets single access in the form of a private key to control the NFT smart contract stating that a person becomes the registered owner of the NFT and the artwork connected to that NFT.(Murray, 2022) Ownership of the underlying assets listed in the NFT is the primary reason for buying NFTs. However, it must be understood that not all NFTs are equipped with underlying assets. It is necessary to reconfirm at the time of purchasing the NFT whether the physical work in the NFT is part of the sale or is only limited to providing support or a form of protection of cultural property.[26]

As for the steps in establishing the NFT can be described in the flowchart as follows:

Figure 5. Flowchart of the Establishment of an NFT



At the NFT establishment stage, the digital artwork can be divided into 3 (three) types, namely as follows:[27]

[26] Osman Can Yerebakan, "Museum of Fine Arts, Boston Selling NFTs of Rarely-Exhibited French Impressionist Pastels to Raise Funds for Conservation," *The Art Newspaper*, 2022, accessed May 23, 2023, https://www.theartnewspaper.com/2022/06/28/mfa-boston-nfts-conservation-french-impressionist-pastels-degas.

[27] Boruem Kim and Hoseong Yong, "Issues and Perspective on the NFT Art Market," *Journal of Digital Art Engineering and Multimedia* 8, no. 3 (2021).

1) Conversion type. This type of NFT work is entirely a conversion of an original work into a digital work. For instance, a painting that is converted into its digital version. In this case, the original work remain exists. However, there have also been circumstances wherein the original creator of the work discards or destroys their original work as happened on the YouTube account "BurntBanksy"" who made an NFT from a video where he burned a painting of his own entitled "Morons". The work was sold for 380,000 United States Dollars.
2) Additional type. This type of NFT work is an original work which later in the digitization process is given additions. The original work is usually in the form of a sketch which is then refined with the help of technology for it to become a digital work.
3) Creative Type. NFT work of this type has been made into the digital form since its inception. Hence in this artistic work, the digital version is the original version of the work.

4. NFT from the Copyright Perspective: Copyright Protection of NFT (NFT commercialization)

The existence of the internet has led to an alteration in the format of creation from the conventional one to a digital form. As previously described in a sub-chapter above, NFT is not an artwork, consequently, NFT is not a work protected by copyright. However, considering that the NFT process involves a creation in the form of a work of art, it can be said that NFT is a way to commercialize an artwork.[28] It should be underlined that the ownership of an NFT necessarily confers copyright on any digital asset represented by the token. Creators can sell NFTs that represent their work and are allowed to create as many NFTs from the same work. It can be interpreted that the NFT is merely proof of ownership separate from copyright, unless the copyright in the work underlying an NFT has been explicitly stated to be transferred. Thus, if an NFT that is sold is not accompanied by a valid license to use or publish a copyrighted work, then the Creator/Copyright Owner can take action to restrain or prohibit the use or publication of their work, in fact, the Creator/Copyright Owner can demand royalties on all profits derived from the use or publication of works related to the NFT.[29]

In the event that an NFT work is a conversion type work or an additional type, the potential for Copyright infringement on the work is even greater. Moreover, if the creator is abroad which would then cause the difficulties in proofing the copyright infringement.

Copyright is a right that is bestowed to creators for the works of their intellectual creations which contain personal aspects in the form of moral rights and economic rights. For this personal aspect, copyright provides protection for the work of the creator which is the embodiment of the creative ideas of the creator (*jus is re intellectuali*). In addition, the law provides legitimacy to the creator to defend their rights as the original creator, to prevent third parties from misusing their creation, and gives the creator the power to make the most of their creation, including to make profit.

Issues in NFTs that are closely related to copyright are in regards to the originality of the works. Traditionally, the recognition of copyright is born after the work is created. The originality of creation also means that a copyrighted work belongs to the creator regardless of whether the work has a novelty value or not. In the context of NFTs, originality is judged by who created the first NFT work and recorded it on the blockchain. With that being said, there is a gap in the NFT creation process on whether the NFT creator has the copyright for the work that they own.

Copyright infringement can occur since the process of digitizing the works. Where the process of conversion and the process of adding to works is easily possible to be carried out by the offenders. Starting from giving the title; information on the work which consists of identity of the creator, year of production, and a description of the work itself which potentially violate the personal rights of the Author in the form of moral rights (distortion, mutilation and

[28] Ifeanyi E. Okonkwo, "NFT, Copyright; and Intellectual Property Commercialisation," *SSRN Electronic Journal* (2021).
[29] "Covenant Chambers."

Kosmik Hukum Vol. 24 No. 1 (2024): 40-51
E-ISSN: 2655-9242 | P-ISSN: 1411-9781
DOI: 10.30595/kosmikhukum.v24i1.18476

modification). At the minting and trading stages, there can be a violation of economic rights in the form of transmission rights and distribution rights to the work.

The laws and regulations in Indonesia, especially the UUHC, neglects to regulate the existence of NFTs. UUHC is limited to providing protection for a work which is then digitized (digital work)/digital artworks. Jacqus de Werra stated that there are three approaches to copyright protection for digital works, namely: first, copyright protection through conventional copyright provisions; second, copyright protection through technical protection/security technology, third, copyright protection through legal protection for technical protection/security technology.[30]

The non-clarity of rules regarding NFTs in international jurisdictions contributes to the difficulties in the enforcement copyright law on NFTs. Even though international agreements such as the Berne Convention exists, the fact that there are differences in copyright protection practices in each country causes the NFT phenomenon yet to find a uniform point of agreement. In Indonesia, for example, sale and purchase of NFT on the NFT platform has the potentials to cause several issues such as the ban on the use of cryptocurrency to legal compliance issues where Indonesia establishes regulations through the Government Regulation Number 80 of 2019 on Trading with Electronic Systems which obliges foreign companies who conduct business involving consumers from Indonesia to obtain a company establishment permit which poses an impact on paying taxes.

The first NFT copyright infringement case to be resolved before the court occurred in China in April 2022. Where there is an image of a tiger getting a vaccine injection which is one of the many popular works of art from the cartoon series "Fat Tiger" published by an artist on Weibo, a social media platform in China.[31] A lawsuit was filed by Shenzen Qice Diechu Cultural Creativity Co., owner of the Copyright for "Fat Tiger" against Hangzhou Yuanyuzhou Technology Co. Ltd. Which operates the Bigverse NFT marketplace, a platform for buying and selling digital works. Within the Bigverse, the plaintiffs found users creating and selling digital artwork identical to the plaintiff's work, which even in the NFT contained watermarks from Weibo artists. The plaintiff then filed a lawsuit at the Hangzhou Internet Court for infringement of the contributor's copyright. The Hangzhou Internet Court ruled that the defendant contributively violated the plaintiff's rights and ordered the defendant to delete the NFT digital work in question and pay compensation to the plaintiff in the amount of US$600 for the economic loss suffered by the plaintiff. In its ruling, the Hangzhou Court affirmed that NFT platforms can be held liable for copyright infringement under China's Copyright Law. As an internet service provider, the NFT marketplace must implement an intellectual property review mechanism and conduct initial checks on the ownership of digital works on its platform. The court noted that even without receiving notification from the copyright owner, platforms generally must assess the possibility that an NFT infringes on someone else's copyright and must take the necessary action.[32]

One example of Copyright protection for NFTs can be undertaken by including the conditions in regards to the originality of ownership in the terms and conditions stated on the NFT marketplace platform.

For instances, the terms of services provided by Opensea platform (https://opensea.io/tos) which stipulated ownership statement from the creator must have obtained all rights related to the content created in Opensea and that the creator does not infringe any form of intellectual property owned by other parties. Opensea, will take down the content when there is an infringement or claims related to such IP infringement and if the creator found to a repeat infringer, Opensea will terminate the creator's access to the account. Other example is Rarible (https://rarible.com), other popular NFT marketplace that also provide service to its

---

30 Budi Agus Riswandi, *Doktrin Perlindungan Hak Cipta Di Era Digital* (Yogyakarta: FH UII Press, 2016); Khwarizmi Maulana Simatupang, "Tinjauan Yuridis Perlindungan Hak Cipta Dalam Ranah Digital," *Jurnal Ilmiah Kebijakan Hukum* 15, no. 1 (2021).

31 Lang Yue, "The First NFT Copyright Infringement Decision Handed down in China," *Allen & Overy*, 2022.

32 *Ibid.*

users' items and works from NFT artists. The provision related to IP ownership also gives limitation that only content which granted permission from the owner otherwise the creator is the owner of the works. The results from such infringement will be a removal of the content or block the content when necessary. Both Opensea and Rarible also support their services with mechanism for infringed party to make any report regarding this matter.

However, the inclusion of a clarification of ownership in the terms and conditions alone is not enough to provide copyright protection for the original creator of the NFT because this may still be violated by the creator of the NFT. Moreover, due to the anonymity in the blockchain technology, it will rise problems when the original creator of works minted as NFT wants to take legal step for such violation. This is inseparable from the copyright mechanism which adheres to the declarative principle, as well as, against violations of copyright in various media, it requires the original creator of a work to submit a complaint claim for the infringement. Thus, the opportunity for copyright infringement on the NFT platform is gigantic, moreover considering the absence of mechanism to conduct individual check of whether a work is genuinely owned by a person. In contrast to the protection given to trademarks or patents, which must pass through a series of substantive examinations before someone is declared the owner and/or holder of the rights to a trademark or patent. The copyright protection mechanism in the NFT platform must be carried out by adding human intervention so as to minimize the risk of loss to the owner of an original work that is converted into NFT.

The NFT platform plays the significant role in building an ecosystem that can control the digital works and has the ability to monitor the uploaded works on the platform by implementing security technology, one of which is through smart contracts.

Intellectual Property Rights in NFTs can be regulated through smart contracts wherein it is possible for several technologies to be applied, such as content verification technology, which includes original verification technology to determine the authenticity of original documents; technology to verify the integrity of the content; technology to verify the original creator; technology to prevent content leakage that may occur when uploading works; and secure archiving technology. In the case of shared content, the shared content verification service and the shared content license verification service determine whether the content violates copyright or not.[33]

5. Automatization vs Human Intervention in Smart Contracts

NFTs that are recorded on the blockchain network and transacted by using the smart contracts are inseparable from the possibility of disputes in the future. NFT recording of other people's copyrighted works is very likely to occur hence it subjects to violation of the provisions regarding copyright. Nonetheless, what needs to be underlined is that an NFT is essentially the metadata or recording of a copyrighted work, the NFT creator will automatically be called a creator by the system on the blcockhain network, and everyone can undertake the minting process of an NFT into the blockchain system. Therefore, it is very possible that the work requested by a person turns out to be the work of another person thus can lead to a copyright infringement.

The minting process of NFT and NFT transactions which relies on smart contracts that are developed by certain group people who understand the programming language, generally the developers. The parties who make transactions on NFT works do not necessarily understand the contents of the smart contract, they may not even be informed whether the smart contract contains a dispute resolution clause, for example the work of the transacted NFT is actually the work of someone else. Other problems can also arise when the series of codes in the smart contract contains errors.[34]

In a smart contract, a programming language can be formulated that allows a party or parties to press a "pause" button to cease the automatic transactions temporarily when the party

[33] Kim, "A Study on Technology to Counter Copyright Infringement According to NFT Transaction Types."
[34] Amy J. Schmitz, "Resolving NFT and Smart Contract Disputes," *SSRN Electronic Journal* (2022).

or parties identifies a problem in the NFT transaction. For example, when one party receives a report that the work printed by the NFT is the work of another person, the said party can press the "pause" button so that the NFT will not be automatically sent to the other party and vice versa, no financial transactions will take place when there is a temporary stop in the transaction. Amy J. Schmitz suggested that this process could trigger or lead to an Online Dispute Resolution. This is due to the reason that the emergence of disputes over NFTs and smart contracts occurs across countries, hence will be difficult to determine which jurisdictions and laws apply.[35]

Another issue to be noted is how a person can realize or prove that the work printed by the NFT is the work of someone else. For certain, this requires keenness of the creators of the artworks themselves to protect their creations. Essentially, copyright protection is given to creators from the time the work is created, thus it poses a grand challenge for the creators of artworks to protect and keep all the evidence of their own copyrighted works. With that being said, in a repressive manner, should there be a copyright infringement on the NFT, the parties may carry out a resolution process using the mechanism as described above.

V. Conclusion

NFT serves as an in dismissible evidence of the rapid digital development. Artworks that are created can be traded freely and are of high value through valuable digital platforms. Everyone can mint an artwork into NFTs on the blockchain network. These NFTs can be traded by using the smart contracts. However, this process cannot be separated from the possibility of copyright infringement because of the absence of certain mechanism that can identify the authenticity or originality of works printed as an NFT by the NFT creators. In simpler terms, there is no specific mechanism that can determine whether an NFT creator is the original creator of a work printed as the said NFT. Thus far, the foreseeable steps include the need for human intervention in both the minting process and the NFT transactions through smart contracts. This human intervention can be included in a series of smart contracts that require a verification process by the parties. In the event of copyright infringement, the parties can press a certain sign that would call for the temporary suspension of the transaction or even to resolve the dispute in an online dispute resolution mechanism.

References

Ali, Muddasar, and Sikha Bagui. "Introduction to NFTs: The Future of Digital Collectibles." *International Journal of Advanced Computer Science and Applications* 12, no. 10 (2021).

Di Angelo, Monika, and Gernot Salzer. "Tokens, Types, and Standards: Identification and Utilization in Ethereum." In *Proceedings - 2020 IEEE International Conference on Decentralized Applications and Infrastructures, DAPPS 2020*, 2020.

Ashyira, Angelia. "Legal Protection for Artists Whose Digital Works Are Issued Without Permission In The Form of Non-Fungible Token (NFT) (Juridical Review on Law of The Republic of Indonesia Number 28 of 2014 on Copyrights)." *SSRN Electronic Journal* (2022). https://www.ssrn.com/abstract=4084550.

Bambara, Joseph J., and Paul R. Allen. "Blockchain: A Practical Guide to Developing Business, Law and Technology Solutions. Mc Graw Hill Education." *New York: Mc Graw Hill Education* 20 (2018).

Conrad, Mark. "Non-Fungible Tokens, Sports, and Intellectual Property Law Issues: A Case Study Applying Copyright, Trademark, and Right of Publicity Law to a Non-Traditional Ownership Vehicle." *Journal of Legal Aspects of Sport 32* (2022): 132–152. http://advancesinsocialwork.iupui.edu/index.php/jlas/article/view/26091.

[35] *Ibid.*

Cornelius, Kristin. "Betraying Blockchain: Accountability, Transparency and Document Standards for Non-fungible Tokens (Nfts)." *Information (Switzerland)* 12, no. 9 (2021).

Dafflon, Jacques, Jordi Baylina, and Thomas Shababi. "EIP-777: ERC-777 Token Standard." *Ethereum Improvement Proposals*.

Entriken, William, Dieter Shirley, Jacob Evans, and Nastassia Sachs. "EIP-721: Non-Fungible Token Standard." *Ethereum Improvement Proposals* (2018).

Guadamuz, Andres. "Non-Fungible Tokens (NFTs) and Copyright." *WIPO Magazine*, 2021.

Jacob Kastrenakes. "Beeple Sold an NFT for $69 Million." *The Verge*. Last modified 2021. Accessed May 23, 2023. https://www.theverge.com/2021/3/11/22325054/beeple-christies-nft-sale-cost-everydays-69-million.

Julita, Lidya S. "5 Foto NFT Termahal Di Dunia, Ghozali Everyday Cuma Recehan." *CNBC Indonesia*. Last modified 2022. Accessed April 23, 2023. https://www.cnbcindonesia.com/tech/20220123154402-37-309704/5-foto-nft-termahal-di-dunia-ghozali-everyday-cuma-recehan.

Kim, Boruem, and Hoseong Yong. "Issues and Perspective on the NFT Art Market." *Journal of Digital Art Engineering and Multimedia* 8, no. 3 (2021).

Kim, Cheong Ghil. "A Study on Technology to Counter Copyright Infringement According to NFT Transaction Types." *Journal of the Semiconductor & Display Technology* 20, no. 4 (2021).

Muneeza, Aishath, and Zakariya Mustapha. "Blockchain and Its Shariah Compliant Structure." In *Halal Cryptocurrency Management*, 2019.

Okonkwo, Ifeanyi E. "NFT, Copyright; and Intellectual Property Commercialisation." *SSRN Electronic Journal* (2021).

Putri, Uni Tsulasi, and Nikmah Mentari. "The Legal Perspective of Blockchain's Potential Use For Sharia Banking Institutions In Indonesia." *Hang Tuah Law Journal* 6, no. 1 (2022).

Riswandi, Budi Agus. *Doktrin Perlindungan Hak Cipta Di Era Digital*. Yogyakarta: FH UII Press, 2016.

Sakız, Burcu, and Ayşen Hiç Gencer. "Blockchain Beyond Cryptocurrency: Non-Fungible Tokens." In *International Conference on Eurasian Economies 2021*, 2021.

Schmitz, Amy J. "Resolving NFT and Smart Contract Disputes." *SSRN Electronic Journal* (2022).

Simatupang, Khwarizmi Maulana. "Tinjauan Yuridis Perlindungan Hak Cipta Dalam Ranah Digital." *Jurnal Ilmiah Kebijakan Hukum* 15, no. 1 (2021).

Sousa, Felipe Marquette de. "Token-Art System and the New International Art Market: The Impacts of NFT Technology and the Legal Aspects Involved." *Journal of Law, Market & Innovation* 1, no. 1 (2022). https://ojs.unito.it/index.php/JLMI/article/view/6674.

Swan, Melanie. *Blockchain: Blueprint for a New Economy*. *Climate Change 2013 - The Physical Science Basis*, 2015.

Vogelsteller, Fabian, and Vitalik Buterin. "EIP-20: Token Standard." *Ethereum Improvement Proposals* (2015).

Wang, Qin, Rujia Li, Qi Wang, and Shiping Chen. "Non-Fungible Token (NFT): Overview, Evaluation, Opportunities and Challenges." Last modified 2021. Accessed May 23, 2023. https://arxiv-export-lb.library.cornell.edu/abs/2105.07447?context=cs.

Witek, R., C. Andrew, J Philippe, C., T. Ames, B. Eric, and S. Ronan. "Eip-1155: Erc-1155 Multitoken Standard." *Ethereum Improvement Protocol, EIP-1155* (2018).

Yerebakan, Osman Can. "Museum of Fine Arts, Boston Selling NFTs of Rarely-Exhibited French

Impressionist Pastels to Raise Funds for Conservation." *The Art Newspaper*, 2022. Accessed May 23, 2023. https://www.theartnewspaper.com/2022/06/28/mfa-boston-nfts-conservation-french-impressionist-pastels-degas.

Yue, Lang. "The First NFT Copyright Infringement Decision Handed down in China." *Allen & Overy*, 2022.