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# Legal Protection for Heirs with Non-Fungible Token Heritage Objects

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**Abstract:** The development of digital technology has introduced Non-Fungible Tokens (NFT) as a form of digital asset that has its own economic value and uniqueness. This opens up the potential for NFTs as objects of inheritance, however the traditional inheritance law system in Indonesia has not fully accommodated non-physical entities such as NFTs, especially due to unclear regulations regarding the transfer of rights to these assets after the death of the owner. This article discusses legal protection for heirs with NFT inheritance objects. This research uses normative or doctrinaire research methods using secondary data and a comparative legal approach, which involves analysis of relevant laws and regulations and NFT practices in several jurisdictions that have recognized the existence of NFTs. Based on the research results, NFTs can be inherited through a general will made by a notary, olographic, or private. However, the main challenge is access to digital wallets that store NFTs and are at risk of being lost if there is not sufficient technical information regarding access. To overcome this, inheritance planning with a dead's man switch mechanism in smart contracts can enable the automatic transfer of NFTs to heirs. However, legal recognition of this mechanism is still limited. This research highlights the need for clearer regulations and legal updates in Indonesia regarding digital asset inheritance, to provide legal certainty for owners and heirs as technology develops. It is hoped that the results of this research can contribute to the formulation of clearer regulations and provide adequate legal protection for heirs and heirs who own digital assets in Indonesia.

**Keyword:** Non-Fungible Tokens, Inheritance, Smart Contracts.

## INTRODUCTION

Regulation of inheritance rights in Indonesia is an essential part of civil law which plays an important role in the transfer of property ownership from one generation to the next. Every individual, as a legal subject, will eventually face a legal event in the form of death, which then triggers the transfer of rights to his or her property. According to Wirjono Prodjodikoro, who uses the term "inheritance", he believes that inheritance is a question of whether and how the various rights and obligations regarding a person's wealth will be transferred to living people when they die. The Civil Code, hereinafter referred to as the Civil Code, functions as the legal basis for inheritance matters. Arrangements such as the rights and obligations of heirs as well

as procedures for dividing inherited assets, as well as what assets can be categorized as inheritance objects (Natania & Lesmana, 2024).

Technological advances in the digital era have had a significant impact on various aspects of positive law in Indonesia, including inheritance law. This change presents new implications that demand adaptive and responsive legal innovation. One obvious example is the emergence of digital assets as new objects in legacy systems. Initially, assets were only considered tangible objects such as money, machinery, buildings, land, and livestock, as well as intangible objects such as intellectual property, copyrights, patents, and trademarks. However, with the digital revolution of the late 20th century, the perception of assets has expanded to include intangible entities such as digital assets.

In relation to digital assets, whose existence relies on blockchain technology as a foundation to ensure transparency and security in buying and selling transactions, a popular implementation today is digital tokens. Digital tokens are divided into two types: Fungible Tokens (tokens that can be exchanged with the same value) and Non-Fungible Tokens (NFT), which are unique and cannot be exchanged. NFTs were first proposed in Ethereum Improvement Proposal (EIP)-721 and then further developed in EIP-1155. NFTs, as digital representations of real-world objects, have become a global phenomenon since 2021, with forms such as digital art, virtual trading cards, and even real estate that can be “tokenized” and traded within blockchain markets (Lesmana & Andarsyah, 2022).

When discussing inheritance, people are usually limited to physical assets such as land, property, or cash that they use for daily needs. However, civilization has brought humans into the digital era which makes the internet a daily necessity. A person's use of the internet is triggered by various reasons, from making work easier, maintaining credit cards and bank accounts to as a tool for communicating with each other, even posting words of wisdom on platforms like X or just uploading photos on Instagram. Writings, images and all files uploaded on these internet sites can be categorized as digital assets. Overall, digital assets owned by a person form that individual's digital property, including NFT digital assets.

In contrast to physical assets, ownership of digital assets such as NFTs is regulated through an account protected by a password or unique key (private key), which gives the owner full control over the digital asset, while limiting access from other parties. Therefore, only the individual who holds those keys can access and manage those assets. However, this can raise important issues related to managing digital assets that are locked behind usernames and passwords when their owners pass away without disclosing their access information. This issue is increasingly relevant with the development of the digital world, where digital assets, including NFTs, have significant economic value. If someone dies without providing instructions or access regarding their digital account information, difficulties will arise in the process of inheriting or managing these digital assets. This situation encourages the author to explore legal and technical solutions that can ensure the management of digital assets after the death of their owner, as well as the need for clearer regulations regarding the inheritance of digital assets in Indonesia.

This situation prompted the author to research more deeply into the validity of NFTs as heritage objects, as well as the potential legal implications that arise if the NFT owner dies without providing information regarding access to the NFT. This research will focus on two main issues: first, what is the legal view in Indonesia regarding the status of NFTs as objects that can be inherited, and second, what is the legal protection for heirs regarding NFTs as objects of inheritance.

## **METHOD**

This article discusses legal protection for heirs with NFT inheritance objects. This research uses normative or doctrinaire research methods using secondary data and a

comparative legal approach, which involves analysis of relevant laws and regulations and NFT practices in several jurisdictions that have recognized the existence of NFTs.

## **RESULTS AND DISCUSSION**

### **NFTs in General and Their Relation to Copyright**

Non-Fungible Tokens or NFTs have emerged as a new form of digital asset that offers unique ownership of virtual objects using blockchain technology. Digital assets are defined as something that is digital and has intrinsic value or acquisition value, so that it can provide benefits to its owner. There is also an opinion from an estate planning lawyer and creator of the Digital Estate Planning Blog, Nathan Dosch, formulating the definition of "digital assets" by referring to the words "digital" and "assets" from the Webster Dictionary. According to him, digital assets are every file on a computer, in a storage drive, or website, as well as every online account or membership. Examples of digital assets include documents created through Microsoft Office programs such as Word, Excel, or PowerPoint, digital photos, digital videos, and music in iTunes. As technology advances, digital assets have covered broader things such as digital channels, customer data, even virtual currency such as Cryptocurrency or what is commonly called crypto currency (Herman et al., 2024).

Information Technology Expert at Sebelas Maret University (UNS) Surakarta, Winarno, S.Si., M.Eng., in his interview with uns.ac.id, outlined the definition of NFT as a token that functions to validate digital information through blockchain technology. This token acts as encryption that ensures the existence and authenticity of a digital work of art. In this context, NFT functions like an official stamp on a physical document, where the stamp provides validity to a document or certificate. Likewise, NFTs establish legitimacy to the digital artwork they represent (Humas UNS, 2022).

The Wall Street Journal explains that NFTs function as virtual deeds that transfer ownership of a digital asset. Each NFT is uploaded into a digital ledger that records various information, such as the date of creation, time of sale transaction, price amount, and the identity of the parties involved in the transaction.

Michael Dowling in his article explains that NFTs can be various types of digital assets. The most common types include items in virtual worlds, collectibles, works of art, as well as digital characters originating from the world of sports, mass media, and games. The process of creating an NFT begins when ownership of a digital asset is recorded on the blockchain. Furthermore, these digital assets can be transferred by buying and selling, where every change in ownership and payment transaction uses cryptocurrency recorded on the blockchain. Blockchain itself is a ledger that records transactions across computer networks in a distributed ledger and decentralized manner, making this technology capable of expanding access to financial services, speeding up transaction processes using real-time systems, and reduce the risk of downtime, that is, if the service is not working (Department Hukum Bank Indonesia, 2019).

Generally, NFTs are purchased using the Ethereum cryptocurrency. In an NFT transaction, the seller, who is the creator, must first convert his original work into virtual property through the blockchain system and then convert it into a token. This activity is also called minting through related marketplaces such as Opensea. The minting process is the process of storing works on the blockchain. After the work is saved and automatically uploaded, unique codes or what are called tokens will be attached as a representation of the related asset to differentiate the asset from other assets. Once entered into the blockchain system, the virtual property in the form of tokens is permanent and cannot be changed.

Every digital work can be converted into an NFT, even physical items can be represented in digital form such as photos, videos or scans. The first release of NFTs on the Ethereum blockchain was a series of pixel images of characters called cryptopunks, released in June 2017. A similar type of NFT was released in October 2017, involving tokens representing a cat

collection game called Cryptokitties (Guadamuz, 2021). The process of purchasing NFT works can be likened to buying goods online, where sellers and buyers meet on a digital market platform. Likewise with NFTs, which can be obtained through various NFT provider marketplaces such as Opensea, Rarible, Tokomall, Foundation, Enjin Marketplace, and so on. Before making a transaction on the marketplace, prospective buyers need to prepare the following things:

### 1. Crypto Wallet

Crypto Wallet is a digital wallet that functions to store and manage cryptocurrency. Several types of Crypto Wallet that are widely used include Metamask, WalletConnect, Coinbase, MyEtherWallet, and Fortmatic. Apart from being a place to store crypto currency, this digital wallet also functions to store various crypto assets, including NFTs. By having a Crypto Wallet, buyers can store the NFTs they have purchased and move them between other wallets if necessary.

### 2. Cryptocurrency

Cryptocurrency or cryptocurrency is a means of payment used in NFT purchase transactions. The cryptocurrency most often used in NFT transactions is Ethereum (ETH). Buyers can obtain Ethereum through various crypto exchange platforms such as Indodax, Pintu, Coinbase, and other applications that provide crypto purchasing and exchange services.

After preparing these two things, potential buyers can access the marketplace that provides NFT works. When making a transaction, buyers are required to connect their Crypto Wallet account to the chosen marketplace so that the purchasing and asset transfer process can take place smoothly.

To be able to retrieve, transfer, and trade NFTs, a person must have a private key or seed phrase, which is a random set of words (usually consisting of 12, 18, or 24 words) that allows the owner to recover the wallet containing the NFT. Apart from that, the private key or seed phrase also functions as the sole control tool for the owner to access and manage these digital assets. This private key is a unique code combination as a password to access the owner's digital wallet and cannot be recovered if lost. Meanwhile, this seed phrase can be a series of words such as "warlock implode lawyer drink love close cactus river street double water most." These words are linked to private keys through a complex computational process. Therefore, the seed phrase must be stored securely at all times, because anyone who knows the seed phrase can access the NFT. If the digital wallet is stored on a commercial platform, the NFT can be accessed by someone who knows the username, password, answers to security questions, and can fulfill other verification steps (Beyer, 2024).

Ownership of the NFT is determined by a smart contract. The general steps of the smart contract concept are that the user writes programming code that specifies the terms of the desired agreement or transaction. This code will be executed automatically when the specified condition is reached. Then the implementation on the blockchain of the smart contract is uploaded to the blockchain, becoming part of a decentralized recorded transaction. This ensures the security and reliability of the code. Then the parties involved in the transaction agree to use the smart contract as the basis of their agreement. This is done by confirming transactions through the blockchain network. When the conditions specified in the smart contract are met, the code will be executed automatically. This can be a transfer of funds, delivery of goods, or other actions according to the agreement. After execution, the results are recorded in the blockchain. This information is permanent, transparent, and verifiable by all parties involved (Muko, 2024).

An NFT is basically just a record or representation of ownership of that asset. NFTs do not directly store intellectual property rights themselves, or make them directly the owner of a particular work, but only refer to the rights (Birnbbaum, 2024). It is important to understand that NFTs are not works of art themselves and will not be the original work of art, but rather function as a tool to record the existence and ownership of works of art on the blockchain. Overall,

buying an NFT is like buying a digital certificate of ownership that shows that someone has access or rights to a particular digital work. However, they do not purchase the copyright or rights to reproduce the work. An NFT owner simply holds proof of ownership of the NFT in the form of a digital token registered on the blockchain. The token generally contains a URL that leads directly to the purchased artwork as well as a hash of the artwork's files. In this way, an NFT can represent ownership rights to a work of digital art.

Based on the explanation above, the author can conclude that NFTs have a close relationship with copyright. In the provisions of Article 1 paragraph (3) of Law Number 28 of 2014 concerning Copyright ("Copyright Law") states that creation is any copyrighted work in the fields of science, art and literature produced by inspiration, ability, thought, imagination, dexterity, skill, or expertise expressed in tangible form. A work that is used as an NFT can be categorized as a creation if examined based on this understanding. With the automatic birth of creation based on the declarative principle in Article 1 paragraph 1 of the Copyright Law, the creator of the NFT and everyone who buys the NFT will have exclusive rights to the creation (Marcelino, 2023).

Based on the provisions of Article 4 of the Copyright Law, the exclusive rights owned by a creator are divided into 2 (two) types, namely moral rights and economic rights. Article 5 of the same Law explains that moral rights are rights that cannot be separated from the creator and are inherent to him as an individual. This right gives the creator the authority to recognize and defend himself as the owner of the work and regulate the use of his work according to his wishes. Apart from that, moral rights also allow creators to prevent the use of works that conflict with the values they adhere to. Moral rights stand apart from economic rights (H. T. Wijaya, 2003), Moral rights remain with the creator even though the economic rights to the work have been transferred to another party.

Economic rights, as regulated in Article 8 of the Copyright Law, are the exclusive rights of the Creator or Copyright Holder to obtain economic benefits from the Creation. Based on Article 9 paragraph 1 of the Copyright Law, this economic right includes publishing, duplicating, translating, adapting, distributing, performing, announcing, communicating and renting works.

In NFT buying and selling transactions, the rights transferred to the buyer are generally limited to the economic rights to the token. This means the buyer acquires ownership of the digital token itself, allowing them to transfer or sell it to another party. However, ownership of an NFT does not automatically include ownership of the copyright of the work represented by the token. Meanwhile, moral rights such as the right to have one's name included in a work and the creator's right to prohibit other people from composing his work, including the title or subtitle of the work (Soelistyo, 2011). Therefore, NFTs cannot be protected by copyright. Copyright protection applies to original works only.

### **Validity of NFT as an Inheritance Object**

The object of inheritance is an inheritance in the form of assets left behind by the heir in the form of assets and liabilities. By definition, inheritance is property left by a person who has died (the heir) to be given to his heirs (Oemarsalim, 1986), objects, whether tangible or intangible, movable or immovable, which have economic or aesthetic value, which are recognized and protected by law and whose ownership can be transferred to another person (Butarbutar, 2012).

The term "object" is a translation of the word *zaak* in Dutch. Objects can also be interpreted as anything that can be used as an object of law, which is directly the opposite of a legal subject. Legal objects themselves refer to everything that has benefits for legal subjects, both individuals and legal entities, and which can be used as the center of legal relations because of their nature which can be controlled by legal subjects.

The definition of objects is stated in the provisions of Article 499 of the Civil Code that objects (zaak) are every item and every right, which is controlled by property rights. On the other hand, the term property law comes from the Dutch term zakenrecht, which in civil law (privatrecht) refers to absolute property law. In the perspective of absolute property law, object law is often referred to as material law which focuses on the legal relationship between a person and an object. This relationship results in material rights (zakelijk recht), which give the owner direct authority to control an object, regardless of who holds the object. According to Titik Tri Wulan Tutik, property law includes provisions governing property rights, including tangible and intangible (immaterial) goods.

According to Subekti, an object can be classified as movable or immovable because of its nature and if it has been determined by law. An object that moves by its nature is an object that is not connected to the ground or is intended to follow the land or building so that the object can move or be moved. Meanwhile, immovable objects are objects that are impossible to move or anything that is not permanently attached to the land or building for quite a long time (Subekti, 2005). Tangible objects include assets that have a physical form, such as land and property, while intangible objects include intellectual property rights that have economic value and legal ownership rights and are a form of recognition or appreciation for a creation, which include copyright, patent rights, trademark rights, geographical indications, industrial designs, integrated circuit layout designs, trade secrets and plant variety protection. So if we examine it based on the definition and classification of objects above, the elements of something that can be said to be an object are 1) owned by someone; 2) tangible or intangible; 3) can be transferred, and 4) has economic value.

NFT is known as a digital asset which is also identified as property in a blockchain-based computer system. Its existence is completely dependent on computer technology, making NFTs virtual. In the Big Indonesian Dictionary (KBBI), the term "virtual" is defined as something that has the characteristics of an object but whose existence can only be accessed through a computer system, so it is not real (virtual). Everything that is in it and has economic value regardless of its unreal existence is called virtual property. Indonesian legislation does not yet regulate virtual property, but several legal experts have put forward a definition. One of them is legal expert Joshua A. T. Farfield who said that virtual property is a code created using computer systems and the internet in the cyber world, formed in such a way and treated the same as objects in the real world (Astuti, 2024).

NFT can be said to be virtual property based on its nature. Farfield explained that virtual property has 3 (three) characteristics, including (Blazer, 2006):

a. Rivalrousness

This means it cannot be accessed by anyone other than the owner. In contrast to physical assets in general, NFT ownership is regulated through an account that has a password or unique key (private key) which gives the owner full control over a digital asset to limit access from other users, so that only the individual who holds the key can access it and manage it. This private key is a unique code combination as a password to access the owner's digital wallet and is difficult to recover if you don't remember the code.

b. Persistence

This means fixed, where virtual goods will remain there and will not change.

c. Interconnectivity

This means they are connected to each other. In the real world, all objects in the real world are naturally connected to each other. Objects in the real world can influence each other. Likewise, objects in the virtual world or cyber world can also influence each other, in other words they are connected to each other.

Based on the explanation above, it can be concluded that the elements of virtual property include: 1) are objects; 2) part of assets; 3) can be owned; 4) objects that are not real (virtual) or intangible; 5) its existence depends on computers. Therefore, NFT is a virtual property and

is included in the category of objects based on Article 529 of the Civil Code, namely that it can be controlled by humans, and is a movable object and an intangible object based on the elements mentioned above and based on the Civil Code, namely:

- a. This includes movable objects because based on Article 509 of the Civil Code, objects are movable because they can move or be moved. NFTs can be transferred by buying and selling, where the results of the transaction will go into a digital wallet (wallet) which can be transferred from one wallet to another.
- b. Including intangible objects under Article 503 of the Civil Code, because NFTs do not exist physically but depend on a computer system in the form of a unique code.

In relation to inheritance law, NFTs are part of wealth, because NFTs themselves are objects that can be left behind and can be moved or transferred. NFTs also have value, which can be assessed based on buying and selling practices that show people's interest in placing monetary value on these objects. For example, in December 2021, Indonesian singer Syahrini sold her 17,800 NFTs on the Binance exchange and sold them for 20 Binance or Rp. 278,000 per NFT. The product sold by Syahrini is an animated photo of her wearing a hijab. Not only that, the Governor of West Java, Ridwan Kamil also enlivened the NFT market by launching his first NFT with the theme "Pandemic Self Portrait" and sold for 45.9 million on the OpenSea platform (Setyowati, 2021). In January 2021, Ghazali, a student at Dian Nuswantoro University (UDINUS) Semarang, also shocked the NFT market by selling his personal portrait which was sold for a total of IDR 1.5 billion (Antara, 2022).

Then in several jurisdictions, NFTs have been recognized as property and there have been regulations, for example the case in England between *National Provincial Bank Ltd v Ainsworth*, on appeal concluded that crypto assets such as Bitcoin and NFTs are a type of property.

Then in another case involving Janesh Rajkumar, a Singapore court recognized NFTs as property under the law. Janesh applied to obtain a court order to reclaim the Bored Ape Yacht Club (BAYC) NFTs he used as collateral for a loan from chefpierre, an NFT collector. Judge Lee Seiu Kin emphasized that NFTs meet legal standards as property due to their uniqueness and identifiable ownership. This ruling sets a precedent in treating NFTs as property, especially in cases involving collateral and financial transactions (Erdine, 2022).

Then the High Court of England and Wales recognized NFTs as property in a fraud case brought by Laviniah Deborah Osbourne. He sought legal action after his NFT from the Boss Beauties collection was illegally taken. The court issued an injunction and supported the argument that NFTs can be treated as property for legal purposes, in line with the treatment of other digital assets such as cryptocurrencies.

On the other hand, shoe company Nike has patented a system that utilizes NFTs to protect shoes from counterfeiting, so that future buyers of high-end sneakers can be sure of the authenticity of the shoes they buy. Additionally, there is speculation that NFTs could serve as a highly secure method for transferring ownership rights to real estate properties as well as storing electronic wills and other estate planning documents (Erdine, 2022).

If linked to the concept of copyright, NFTs can be used as fiduciary collateral with several provisions, one of which is that they must be registered with the Commodity Futures Supervisory Agency. This is in accordance with the provisions of the Minister of Communication and Information Technology Regulation Number 5 of 2020 concerning Electronic System Operators in the Private Sector which regulates that every Indonesian and foreign person and/or entity that provides, manages and/or operates electronic systems is required to register as an electronic system operator. . These requirements apply to all electronic platforms (websites and applications) that carry out activities in Indonesia, regardless of server location or the location of the entity itself. Therefore, NFT transaction organizers and/or marketplaces may be required to register their electronic systems with the relevant authorities (Law.asia, 2021).

Crypto assets including NFTs can be called commodities, namely goods or products that can be traded so they can be exchanged without paying attention to who produces them. The Ministry of Trade of the Republic of Indonesia regulates crypto assets as commodities that can be traded through Minister of Trade Regulation Number 99 of 2018 concerning General Policy for Implementing Crypto Asset Futures Trading.

Based on the current crypto asset regulatory landscape, NFTs are not yet explicitly regulated in Indonesian law. The regulations governing NFTs only cover aspects of NFT buying and selling transactions, as stated in CoFTRA Regulation No. 7 of 2020 concerning Determining the List of Crypto Assets that Can Be Traded on the Physical Crypto Asset Market.

Based on the explanation above, the author can conclude that NFTs can be used as objects of inheritance because they fulfill the classification as objects, provided that the NFT must be registered as a commodity first, just as crypto assets have been categorized as futures commodities. Apart from that, it is necessary to expand legal updates related to NFTs considering that NFTs are a new phenomenon, comprehensive legal updates are needed to accommodate the existence of NFTs in a clearer legal framework and not only discuss buying and selling transactions.

### **Legal Protection for Heirs with Non-Fungible Token Inheritance Objects**

Based on the explanation above, legal protection for NFT inheritance objects needs to be considered, especially regarding wallets attached to NFT ownership. Wallet is one of the assets that the heir can leave behind. The wallet is a safe or digital storage place that allows the owner to store, manage and transfer NFTs. The wallet contains cryptocurrencies or tokens whose ownership can be transferred through mechanisms such as sales, exchange or gifts. To guarantee protection, there are several methods to guarantee legal protection for NFT inheritance objects, including:

#### **a. Through a Will**

Article 874 of the Civil Code states that all assets inherited from a person who has died become the rights of his heirs in accordance with the law, as long as the person has not established other legal provisions. This legal provision refers to Article 875 of the Civil Code, which defines a will or testament as a deed containing a person's statement regarding his wishes regarding what will happen to his property after he dies, and which can still be changed at any time while he is alive. In fact, many heirs do not make wills while they are alive, so that when they die, the distribution of assets that include digital assets often creates problems. Based on the provisions mentioned above, if there is no valid will, then the inherited assets become the property of the heirs, and the distribution will be carried out based on applicable law, whether inheritance law as regulated in the Civil Code, Islamic inheritance law, or customary inheritance law.

In general, digital assets can be inherited through a will. A will is known as a statement of a person's will regarding what will be done with his assets after he dies (Suparman, 2007). In terms of wills, there are three types of wills regulated in the Civil Code, namely:

1. General Will as regulated in Article 938 and Article 939 of the Civil Code, namely a will made by a Notary. In relation to digital inheritance, people who will leave an inheritance in the form of crypto assets can go to a notary and express their wishes.
2. Olographic Will as regulated in Article 932 of the Civil Code, namely a will written by the hand of the person who will leave the inheritance himself / *eigenhandig*. The writing is then given to a notary to be kept. This will requires a deed called a deposit deed which is signed by the will maker, a notary, and 2 (two) witnesses who are present. This gift can be done openly or closed in an envelope or folder, and if it is closed then the opening is carried out by the Heritage Center (BHP).
3. A closed or secret Will as regulated in Article 940 and Article 941 of the Civil Code. Making deeds related to inheritance is the authority of the Notary.



Apart from that, the Notary also has the authority to make a Deed of Certificate of Inheritance Rights (SKHW). According to Hartono, SKHW is a form of proof from the heir regarding the truth that the person is the right person and has the right to inherit from the heir, which in its contents explains the position of the heir and the relationship with the heir. This Inheritance Rights Certificate functions as a form of proof of who is the legal heir to the digital asset and what share each heir has in the inheritance.

Ownership of these NFTs can be inherited similar to how ownership of other objects is inherited. The best step a digital asset owner can take is to create an estate plan which requires an executor or trustee with technical knowledge. So the beneficiary no longer needs to take affirmative action and only needs to have a wallet that will receive and store the tokens. Estate planning long before the owner's death becomes an important aspect in every process of transferring digital assets such as NFTs.

However, when considering digital assets such as NFTs after their owner dies, inheritance issues become more complex compared to physical assets. NFTs, which are classified as intangible objects, have unique characteristics and have not been explicitly regulated in Indonesian laws and regulations, including existing traditional inheritance laws.

In Indonesian law, if the owner of an asset dies, the legal heir has the right to gain access to the asset based on Article 833 of the Civil Code, which states that the heir directly has the rights to all goods, rights and receivables from the heir. However, due to the absence of technical information regarding access to private keys, digital assets such as NFTs are at risk of becoming dead wallets or even lost permanently.

To overcome these obstacles, asset owners can choose physical storage methods, such as placing private keys and recovery phrases in a safe or storing them in banking institutions that offer safe deposit box services. This storage is protected by Law Number 10 of 1998 concerning Banking, which regulates that customers have the right to guarantee confidentiality and security when storing goods at the bank. However, this method requires a legal process so that heirs can access information after the heir dies, which requires court approval or a valid order in accordance with the provisions of Article 833 of the Civil Code.

The existence of NFT itself is based on a decentralized ledger and is regulated by smart contracts in relation to transactions. Smart contracts are self-executing code to perform actions automatically when certain conditions are met. One innovative approach to handling NFT ownership after death is through implementing a dead's man switch mechanism in smart contracts. This mechanism can facilitate the automatic transfer of ownership to designated heirs or beneficiaries if the owner dies without leaving a will. By embedding this functionality into NFT smart contracts, the complexity of transferring assets through traditional legal processes can be minimized, allowing for an easier transfer of ownership.

This process begins with the NFT owner creating a smart contract that regulates the transferability of the NFT. These smart contracts include periodic interaction provisions, often referred to as heartbeat transactions, where the owner signals his or her presence on the blockchain. This interaction can take the form of signing a simple transaction using a private key or sending a small amount of cryptocurrency to a specific address. If the owner fails to interact with the smart contract within the specified time period, the contract deems the owner no longer able to manage the asset, possibly due to death. The smart contract then automatically performs the function to transfer the NFT to the beneficiary's wallet address predetermined by the owner. The automation inherent in smart contracts ensures an efficient and transparent transfer process. The conditions governing inheritance are immutable and accessible on the blockchain, reducing the possibility of manipulation or misuse.

Despite its great potential, this approach also presents a number of challenges. Legal recognition of blockchain-based inheritance mechanisms varies widely. Many legal systems still rely on traditional methods for estate planning and may not recognize the validity of smart contract-based asset transfers. Based on Bank Indonesia Regulation Number 19/12/PBI/2017

of 2017 concerning the Implementation of Financial Technology, the use of blockchain is considered legal and is a form of implementing financial technology in the payment system. Its functions involve authorization, clearing, final settlement, and settlement of payments. Through this automatic process, smart contracts can use standard contracts or standard agreements. In addition, the use of blockchain smart contracts can be carried out as long as it complies with applicable legal regulations and follows the technology neutral principles contained in Law Number 11 of 2008 concerning Electronic Information and Transactions (UU ITE). The implementation of this blockchain-smart contract uses the theory of will which operates automatically. This is in line with the Acceptance Theory (*ontvangstheorie*) which is also implemented in Article 20 of the ITE Law which states that: "states that electronic transactions occur when the transaction offer sent by the sender is accepted and approved recipient. Such approval must be carried out by means of an electronic statement of acceptance."

Even though it is automatic, blockchain technology in smart contracts can be considered an electronic agent according to the definition in Article 1 Number 8 of the ITE Law, namely a device in an electronic system that is created to carry out actions on electronic information automatically (Dethan & Irianto, 2024).

Smart Contracts generally have five types with different applications and functions, namely: (1) Basic Token Contract, namely a contract that contains a map of account addresses and balances determined by the contract maker. A token contract uses a balance or collateral in representing a physical object as well as other monetary value; (2) Crowd Sale Contract, namely a contract that manages tokens en masse which acts as a means of payment agreed upon in the contract; (3) Mintable Contract, namely a contract that carries out an NFT or non-fungible token sale and purchase agreement representing objects that exist in the real world such as music, in-game items, or works of art; (4) Refundable Contract, namely an additional contract in carrying out a crypto sale and purchase agreement that guarantees the return of assets from the investor if there is a failure to carry out the agreement; (5) Terminable Contract is a contract used in online buying and selling agreements and executing blockchain programs in the financial services sector.

Some smart contracts can be designed with a fallback or backup mechanism, which will trigger an alternative procedure if the heir's wallet address is not listed in the contract. For example, if the heir's wallet address is not found, the contract can direct him to the address specified in the will document or to a pre-agreed digital asset manager. This mechanism ensures that assets can still be transferred even if there is an error in preparing the smart contract.

Apart from using smart contracts, there is also the use of data escrow or smart contract wallets on the Ethereum network providing additional options that secure assets with a multisig feature, where only the owner and certain representatives can access the wallet through mutual verification. This approach is in accordance with the provisions in Government Regulation Number 82 of 2012 concerning the Implementation of Electronic Systems and Transactions, which requires that electronic systems have adequate security mechanisms to protect data and transactions.

Then if we talk about NFTs being considered a commodity, like other crypto assets, then someone who owns an NFT can also store their private key via a crypto exchange platform. Owners can create crypto wallets through crypto exchanges. In the future, if the investor dies, the heirs can claim ownership of the crypto assets by proving their status as legal heirs to the relevant crypto exchange. This can be done by providing official documents that comply with the regulations set by the crypto exchange, such as a death certificate, will (if any), identity card that can be clearly verified (D. A. Wijaya, 2016).

With the legal vacuum regarding NFTs in Indonesian legislation, it is important to anticipate potential legal conflicts in the future. Therefore, there is a need for a review and the possibility of formulating regulations that specifically regulate NFTs as a commodity to provide

legal certainty and protection for asset owners and heirs in accordance with technological developments and the dynamics of digital transactions.

## CONCLUSION

NFTs can be used as objects of inheritance because they meet the criteria as objects that can be owned, transferred and have economic value, even though their existence is virtual. As a digital asset that is categorized as virtual property, NFT fulfills the elements of movable and intangible objects according to the Civil Code. NFTs have been recognized as property in some jurisdictions and can be treated as legal objects in inheritance law. However, in Indonesia, regulations regarding NFTs are still limited to buying and selling transactions. Therefore, the development of digital assets such as NFTs requires adaptation in the inheritance law system in Indonesia, where digital assets are not only recognized as objects of personal ownership but also as part of assets that can be inherited. Based on the law in force in Indonesia, digital assets can be inherited through a will, either general, olographic or closed, which is made with the help of a notary. However, the main issue in inheriting digital assets is access to private keys and wallet management, which often becomes an obstacle for heirs. To overcome this problem, digital asset owners can use legacy planning methods such as smart contracts or secure physical storage. Implementing smart contracts with automatic mechanisms can simplify the process of transferring NFT ownership, although legal recognition of this method is still limited. Therefore, it is important to develop more specific regulations regarding NFTs, in order to provide clear legal protection for future owners and heirs.

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