



An NFT, or Non-Fungible Token, is a unit of account that creates a digital impression of any unique item.

It can be: paintings, photos, videos, music, gifs - in a word, any content that claims to be at least some kind of uniqueness.

It might be said that NFT is a recipe for happiness for contemporary artists. Just add an NFT to an art object, and the creator will receive not only the recognition of crypto fans, but also the money from the sale and royalties.

Digital art objects are of great value among collectors and art lovers, and they are bought and sold through auctions.

NFTs are ideal for the gaming industry. Gamers can use NFTs to verify earnings and secure their video game winnings. And, since NFT objects in games can have varying degrees of rarity, NFTs make it easier to trade, which can also add value.

However, NFT has much more potential as it is an ideal verification method.

Blockchain-integrated NFTs will enable a single digital verification experience for the Internet of the future. Such decentralized identification will be useful for all areas of human life where verification of validity is required: transactions, medical records, licensing, logistics, education, etc.

The reliability of NFT is ensured by the blockchain in which the token is stored. Blockchain is a huge chain of blocks, each of which contains information. Unlike, for example, servers, where data is stored in one place, these blocks can be located on many devices in various parts of the world.

A token is just a record in one of the blocks, and, as a rule, there can be a lot of such records of the same type. For example, each individual DeenAiR is an exact copy of another of the same DeenAiR, which makes it possible to compare them with a currency.

To understand what a token is, one should clearly understand how blockchain technology works. In most transactions, the process of verifying the purchase and sale and money transfers is centralized - we trust banks to do this. Employees and algorithms check our account data and decide whether our current balance allows us to make this or that transaction.

The decision on the transaction is made by a legal entity - a bank, which directly carries out the transaction on our behalf. Blockchain technology excludes banking structures from this chain - the load on money transfer calculations is transferred to hundreds of thousands of computing systems scattered around the world, but included in a single network.

Each of these computers registers transactions and publishes transaction data in the public domain. Absolutely every person can enter the network and, knowing the buyer's data, trace the entire history of his transactions from the moment of registration in the network.

But what if you need to create a unique token that has no analogues? The answer is NFTs. To understand how it works, you should literally spell out the NFT abbreviation. NF stands for "non-fungible" or "non-interchangeable". The word Fungible in English is used as a specific economic term for goods that are absolutely indistinguishable from each other, which means that they or their parts can be painlessly replaced.

NFT stands for non-fungible token. Non-fungible is an economic term that you can use to describe things like your furniture, your song file, or your computer. These items are not interchangeable with other items because they have unique properties.

Total transparency and publication of data on all transactions without exception provides an increased value of NFT. You declare your "acquisition" of the same gif with a cat to the whole world and, once published, this information cannot be changed in any way.

Thus, NFTs can perform several functions at once: a means for claiming rights to a digital object or work, an object of exchange and speculative trade, as well as a kind of virtual exhibit - a digital token, due to its properties, store data about an artwork indefinitely and acquire additional value over time.

For a long time, the \$70 million record was held by the work of digital artist Mike Winkelmann, who made a composite which contains 5,000 of his daily paintings to create his most famous NFT.

The uniqueness of the NFT is ensured by the file, to which token is linked, and the wallet itself. By creating its own account in the system, the user automatically generates an individual key, which will be subsequently used as a signature on all tokens that will be placed there or pass through it. This is exactly signature keys that allows the system to track all the NFT owners without exception and from the very moment they appear.

NFT allows you to claim indisputable rights to a specific digital object and track the entire history of its ownership of a particular asset.

By itself, the token does not equate to the object that you wish to sell. This is only a certificate confirming the unique rights of the owner associated with a particular product.

Obviously, in the foreseeable future, we will be able to see how the scope of NFT expands and covers the lives of ordinary people running their own business. NFT has the potential to simplify the use of various services and make transactions more transparent, especially when it comes to the physical ownership of real estate, artworks, ideas, concepts and etc.

Minting NFT through the marketplace

Usually, to create and subsequently sell your own token, you need at least three things: the "transaction object" itself, an online wallet in the necessary cryptocurrency, and an intermediary service.

The "subject of the transaction" may be a digital file in JPEG, MP3, GIF or PNG format. It is important to remember that the asset must be market compatible and uncopyrighted.

For minting, you have to connect a digital wallet where you can hold cryptocurrency (for example, MetaMask).

As an intermediary service, you must select one of the NFT marketplaces. At the same time, you should find out if the blockchain and the marketplace are compatible. Thus, the OpenSea marketplace is compatible with Ethereum blockchain technologies.

After choosing a marketplace, you have to link a wallet to it and replenish your account with cryptocurrency, since the marketplace will charge a fee for publishing NFTs.

Then you should to upload the selected digital asset to the marketplace and create a smart contract by setting the NFT parameters.

After that, the metadata will be published to the blockchain, and the token will be considered minted. At this stage, the NFT might be put up for sale on the marketplace.

The most popular blockchain containing the largest NFT projects in terms of size and trading volume is currently Ethereum. However, due to blockchain congestion, the cost of minting NFTs has been rapidly growth.

NFT implementation in DeenAiR

DeenAiR's goal is to make NFTs easier to work with, both for those who create them and for everyone else who interacts with NFTs.

In the DeenAiR blockchain, we simplified the scheme by removing the intermediary service from the chain.



Content creators submit their work straight to DeenAiR blockchain

We have abandoned the use of intermediaries and smart contracts to create NFTs for the following reasons:

1. Smart contracts are extremely vulnerable, since they allow the substitution of the owner of smart contracts, tokens, which might cause direct monetary damage.
2. Smart contracts usage requires the participation of qualified developers, despite the fact that the token creation operation itself is elementary.
3. Platforms that use smart contracts to create and publish tokens do not guarantee the safety and privacy of the user data. If these services are irresponsible, access to data will be lost.

4. NFT marketplaces offers limited settings for each NFT listing (for example, allow only 10% maximum royalties on secondary market trades with no upside potential plus charges own).
5. Sites charges high fees for their services and forcefully include site beneficiaries as royalty recipients.

The above arguments confirms the inexpediency of using intermediary services and smart contracts to create NFTs. Also the operations have to be simple enough to allow wide range of people to create their own collections or just sell their works.

To provide clear understanding for any buyer (primary or after re-sell) to have a clear understanding of the NFT and its owner, creator, the necessary information about the token have to be transmitted in the transaction:

- a metadata that may contain data on royalties for subsequent resale;
- public key of the collection;
- owner;
- a signature confirming the legitimacy and integrity of the transmitted data.

Thus, algorithmically, without intermediaries, with the protection and confirmation of property rights, thanks to reliable ECDSA technology, direct interaction between content makers and the DeenAiR blockchain is implemented.

Let's walk through the process of how to create an NFT using Pythod-DeenAiR-sdk

First, you have to install and initialize the client that will allow you to create the NFT

Installation is done through the pip package manager.

```
pip install python-deenair-sdk
```

Initialize the client for further work

```
from python_dennair_sdk import Client

client = Client("http://mainnet.deenair.network")
```

Each NFT has a link (location) to a media file (image, animation, video), 3 properties are declared that affect the rarity of the copy and therefore its value, and 2 addresses that will receive shares in the specified percentage of the proceeds after the resale of this NFT amount. Let's represent the metadata of the token. In the form of a data structure such as a dictionary, for convenience, performance and transparency:

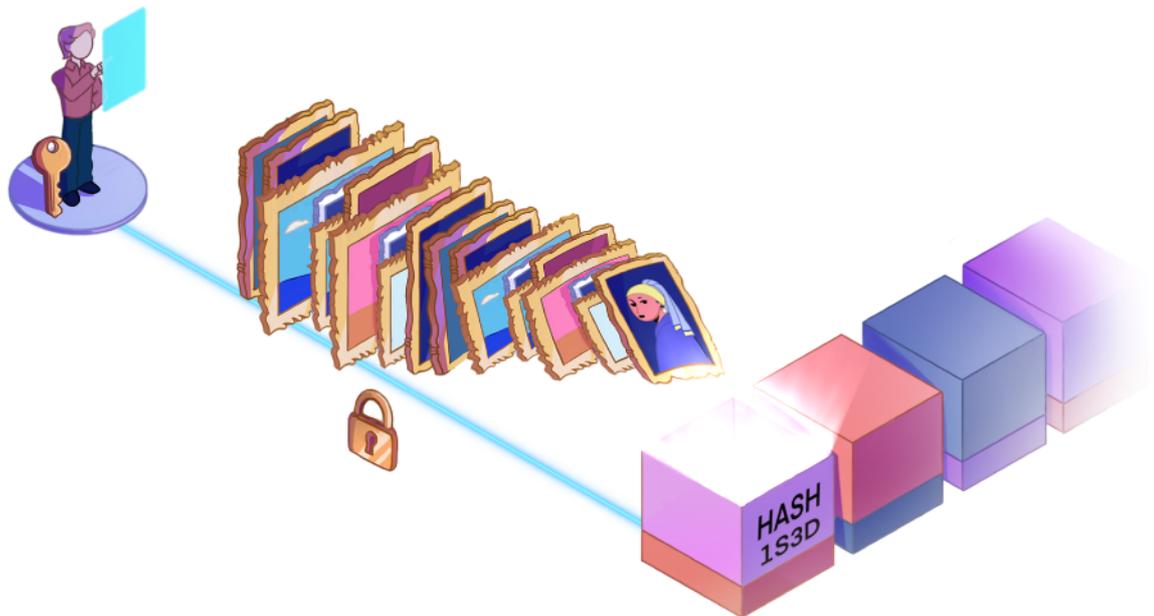
```
nft_meta = {
    "location": "https://path/to/your/mediaprofile",
    "trait_1": "trait_1_value",
    "trait_2": "trait_2_value",
    "trait_3": "trait_3_value",
    "royalty": {
        "royalty_1_address": "10",
        "royalty_2_address": "10"
    }
}
```

To confirm the integrity of the collection and its the legitimacy of issuing new tokens to this collection, you have to create a special key pair.

```
collection_secret_data = client.generate_keypair()
collection_seed_phrase = collection_secret_data["seed_phrase"]
collection_private_key = collection_secret_data["priv_key"]
collection_public_key = collection_secret_data["publ_key"]
```

In the future, this operation does not need to be repeated for the same collection, now let's move on to creating an NFT.

To do this, a single method is called in which you pass the metadata (parameter **nft_meta** - data type string), the private key of the collection (parameter **collection_secret** with data type string), the future owner of this token (parameter **minter_pub** with data type string), and the private key of that who pays the fee (**fee_payer_secret** parameter with string data type).



The result is information about transaction ID

```
create_nft_result = client.create_nft(nft_meta,  
collection_secret=collection_private_key,  
minter_pub="owner_address",  
fee_payer_secret="fee_payer_secret"  
)
```

The result (**create_nft_result**) is information about the transaction ID.

Fee will be calculated according to the following formula, like any transaction in the DeenAiR blockchain and it's very low:

$$\text{FEE} = (\text{Length of transaction binary message} * 10) + 10000 *$$

* Fee is calculated in Solidius (10^7 Solidius = 1 DEEN)

Transaction is sent to the blockchain, deserialized and validated, the nodes and the blockchain must make sure that the sender of the transaction really has the privileges to publish new items to the collection, that the token is really unique and its one of a kind, that the one who pays the fee has the necessary amount of funds.

If everything went well - token is transferred into blockchain, information is stored separately about its current owner, which thus makes it truly immutable unlike other blockchains. Ownership information is confirmed by reliable algorithms using elliptic curve technology, keeping fees extremely low.

Minting NFT on DeenAiR being a common user (using DeenAiR Wallet App).

So, to create an NFT on DeenAiR, you only need an “object” and a wallet.

Just in a few clicks, you will receive NFT without much effort and cost:

- Open the NFT tab in your account, click the "Add New Collection" button.
- Select two addresses: the account where to mint and the account from which the fee will be charged.
- Enter a name for the collection.
- Insert a link to a digital asset.
- Add a description for the collection.
- Add properties if necessary.
- Add royalties with a link to your address and enter an interest rate.
- Enter a password.

Your NFT is ready. You can verify this by checking the result in the NFT tab. As long as you can see, NFT minting takes minutes and does not require high costs and special knowledge.

Creating an NFT on DeenAiR is as simple as transferring money. Availability, transparency and low fees are the main advantages of our blockchain.

So far, smart contracts are roaming to the big Internet and makes life difficult for ordinary content creators. We figured out how to simplify it for creative people which are not ready to delve into the basics of programming in synthetic languages. There is no need to look for errors in smart contracts for graphic/musical/any other content. You don't have to worry about any malicious actions either.

You able to publish a new NFT collection directly from your wallet without resorting to the services of programmers. In few clicks. Also, your collection might be easily supplemented without the headache of rewriting smart contracts. Information is stored directly in the blockchain, which confirms ownership. There is no need to rely on the smart contract developer. All royalties are laid by the minter itself.

Everything is validated by the blockchain core and is performed transparently as common operations. That keeps any NFT interaction costs low. At the same time, providing high speed on any counts and very low latency.