

Tokenization and NFT

1) Technical summary

NFT is an acronym that stands for **Not Fungible Token**. A fungible asset is the 2 Euro coin because the value of one coin is equal to the value of another 2 Euro coin. A non-fungible good is a painter's tempera painting.

NFTs are **cryptographic digital tokens**, each one different from the other, that is unique and indivisible.

NFTs are created, managed and transferred using Blockchain technology and, in particular, using Smart Contracts, Standards and Open Source.

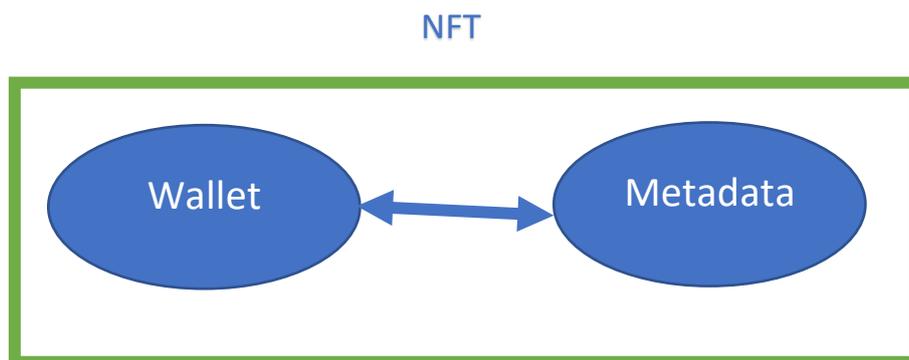
In **Ethereum**, the currently most mature technology for Token management, the Smart Contract Standard for the production and transfer of NFC is the **ERC721**. The one for fungible tokens is **ERC20**.

In ERC 721, the single NFT is a record with several fields. Let's see the main ones:

- the Address of the Wallet owner of the record / NFT
- the ID of the record / NFT, or Token ID
- The value in Ether (Cryptocurrency of the Ethereum Blockchain) of the record / NFT
- the Metadata Hash or the link to a repository that holds the Metadata

In the NFT there are also other data but for what is the purpose of this document, the 4 fields listed above are the essential ones.

By virtue of the characteristics of the Blockchain - an environment that stores every type of Smart Contract and that executes it - and the way the ERC 721 is built, the NFT can create and incorporate a unique link between Wallet and Representative metadata, the latter, of a digital or material asset.



NFTs are used in applications that require unique and verifiable Digital Assets. If the Metadata is a digital creation (video, graphics, photos, etc.), the NFT represents the link between the Wallet and the digital creation. The NFT also represents the link between the Wallet and the digital representation (digital twin, alias, etc.) of goods.

Having described 'what' an NFT essentially is, we analyze the two phases of production and transfer of the NFT. To create NFT, an Address (Wallet) - through a specific transaction (request) - use the ERC 721 to configure the various essential fields including those listed above.

Once created, the single NFT can be either kept by the Wallet that created it, or it can be put up for sale (auction, fixed price, etc.) by the Wallet at a certain value. In the second case, the NFT can be purchased from another Wallet generating, subsequently and in fact, a secondary market.

These NFT creation and transfer operations are managed in a certified manner by ERC 721 which every time it takes action must be remunerated with a cryptocurrency fee to repay the Blockchain for its execution. This is a fee that the Buyer must add to the purchase price of the NFT

The NFT is therefore unique, each different from the other, indivisible and **can be exchanged** from one owner to another against a payment in cryptocurrency and the link between the Wallet and the Metadata, a link incorporated in an NFT, is inseparable because registered in the Smart Contract ERC721.

The conclusions we read from various parts derive from what has been described. The NFT should represent in a secure and verifiable way the 'ownership' of the Metadata (not of the work or asset) by a Wallet. There may be many copies of the Metadata on the internet but the 'proprietary' Wallet is only the one that owns the related NFT. Many people or companies purchase NFTs to be able to claim and communicate that they own the original of a Metadata embedded in an NFT.

To fully describe why NFT is important and disruptive, let's go back to talking about the fact that various types of Metadata can be associated with NFT. These Metadata are digital and can be a video, a photo, a graphic creation; in short, any digital content or even an aggregation of them. In this case it is better to call this entity Digital Asset.

This creation of single associations between Digital Asset and Wallet in a single, verifiable and transferable NFT on the Blockchain falls within a broad scope that can be defined as Tokenization. Going one step further in the description, we add that if we associate a digital twin with a Material Asset containing a whole series of Data that characterize the Material Asset, we can technically speak of tokenization and NFT also for Material Assets.

2) Current risks and points of attention for NFTs

In the following, we do not intend to deepen the aspects related to the US or European legislation concerning Copyright and aspects such as, for example, the proof of the Right and the types of Rights. For more information on these issues, I recommend reading <https://42lf.it/42lf-guida-pratica-agli-nft/>

The summary that is described below is based instead on the analysis of the current state of the art in technology and applications.

The situation has important weaknesses and areas that absolutely need to be improved to avoid that the gaps outlined below do not hinder a real development of 'tokenization' or even lead to its failure after the current hype.

Let's start by stating that the technological and process level must be, by design, such as to constitute an infrastructure equipped with all the technological fundamentals necessary for the satisfaction of compliance from various points of view: Consumer protection, AML / KYC, Protection from counterfeiting, intellectual property, financial regulation, tax and fiscal law.

The weaknesses and the lack of measures that the analysis is presenting so far concern, in summary, the following technical / processive aspects.

a) Lack of a real and effective process of registration and authentication of the various stakeholders (KYC)

On the main platforms, to date, registration and authentication in the technologically classic sense of the definitions are not necessary to create and exchange NFTs. Moreover, today even the owner of the Wallet is anonymous. In many areas of potential use, this can be an obstacle to the adoption of the NFT because there is a lack of a fundamental process for the necessary compliance regarding the above-mentioned issues.

b) Poor information content of the NFT metadata

The metadata associated with the NFT relates to a single digital document (video, photos, music ..). In many applications, the Asset needs to have more defined and certified digital contents that characterize and describe it.

c) Risk for the uniqueness of the Wallet-Metadata link and / or risk for the uniqueness of the Metadata owned

Let's analyze the following two examples.

Two different Wallets create two different NFTs for the same Metadata

The same Metadata, available on the web, can be associated with different NFTs created by different Accounts on different platforms in different parts of the world. This means that it becomes particularly difficult to certify who is the owner of the NFT Metadata Wallet. Consider this simple scheme to see a logical scheme.

Wallet 1 --- NFT 1 ---- Beta metadata

Wallet 2 --- NFT 2 ---- Beta metadata

The same Wallet produces two NFTs for the same Metadata

The same platform account can create multiple NFTs associated with the same metadata without explicitly declaring it.

Wallet 1 --- NFT 1 ---- Beta metadata

Wallet 1 --- NFT 2 ---- Beta metadata

3) An environment to build Compliance and address current Risks. The Bloki solution

Bloki (<https://www.bloki-chain.com/index.php/bloki-blockchain-ita/>) is the platform that allows you to manage the **Decentralized Digital Identity**.

This Digital Identity, which identifies who is the person who created it and 'uses' it, can **create** and **manage underlying Digital Assets** and, at this point, and can document the Assets with multiple contents of any format (MP3, MP4, PNG , PDF etc).

Bloki then allows you to profile the reading accessibility of the Asset (visibility), to certify the original contents of the Asset.

It also allows you to associate to the Asset, at this point identifiable as a certified collection of non-replicable Metadata and no longer as a single Metadata that can be replicated many times, an NFT that can also be exchanged through other platforms.

Due to its characteristics, Bloki actually represents the measure to avoid the risks indicated above by creating an environment to build procedures that guarantee the Authors, Buyers and compliance with legacy

regulations (AML / KYC, Copyright, Taxation, etc.). It is an environment enabled for NFT Marketplace (Opensea, Rareble ..) which gives the possibility to create compliance for the various areas.

While referring to appropriate insights, let's see in synthesis the value brought by Bloki and the implementation of these measures at the service of the NFT phenomenon.

The PID Advanced, Decentralized Digital Identity uniquely corresponding to the individual owner, resolves the KYC issue, allowing you to know who is the owner of the Asset, the Wallet and, therefore, the NFT.

The DAigital Asset contains a sequenced and certified original (non-replicable) collection of even multiple documents (Metadata). Therefore, multiple Metadata are tokenized in an aggregate way (Asset) and it is impossible for the same aggregated Metadata (Asset) to be associated with multiple NFTs.

Whoever is the legitimate owner of the Asset is assigned and whoever copies the Asset and duplicates the tokenization is traceable, effectively stealing the link.