

If you've been online in the past year, you may have heard some frantic buzz about Non-Fungible Tokens (NFTs). They have some people very excited – while most of the rest of us are left scratching our heads trying to understand what they are and what they do.

What is an NFT? Is it a cryptocurrency? Are they ruining the planet? And are they the future of art collection? Let's find out.

Fungible vs non-fungible

To understand NFTs, we first need to understand the difference between fungible and non-fungible assets. A **fungible** asset can be substituted or exchanged for another while holding the same value. One example of a fungible asset is money – you can exchange 50 one pound coins for five £10 notes or for one £50 note without altering the total value. Fungible assets can be physical (e.g. currency or gold), or digital (e.g. Bitcoin and Ethereum). One bitcoin will always be worth one bitcoin.

A **non-fungible** asset contains unique attributes, so it cannot be exchanged or substituted for others in that asset class. Physical non-fungible assets could be paintings, real estate, baseball cards, and other collectibles. Non-fungible assets do not have to be physical – trademarks and video game skins are examples of digital non-fungible assets. The worth of non-fungible assets is determined by what the buyer is willing to pay, like bidding for a Monet at an auction.

What is a Non-Fungible Token (NFT) and how does it work?

Non-fungible tokens (NFT) are an example of a non-fungible digital asset. Essentially, they are a digital certificate of authenticity. This proves originality and ownership of, really, anything digital – digital art, music, [even a tweet](#). They are a form of intellectual property, publicly verifiable, and authenticated by a blockchain.

[‘Minting’](#) an NFT is how a digital asset becomes part of a blockchain. For now, most NFTs are part of the Ethereum blockchain. Ethereum is a cryptocurrency whose blockchain supports storing the extra information required for an NFT, however, there is nothing stopping other blockchains from implementing their own types of NFTs – some already have.

The digital asset – art, audio, scan of your brain – is uploaded and ‘signed’. Like physically signing a piece of art, digitally signing links the NFT to a user of the blockchain. The record of the asset and the owner is then added to the public ledger, where it cannot be altered or tampered with. Now, the NFT can be bought, sold, and traded, and anyone can view the blockchain ledger to see the path of transactions and ownership.

Where are NFTs being used?

So far, so confusing. A digital record starts to make sense – we copyright songs, and poems, and other intangibles. But where are NFTs being used in practice?

Digital art

Most of the hype around NFTs is in the field of digital art. They are seen by artists and buyers alike as an evolution of fine art collecting, expanding it into the digital sphere. For digital artists, NFTs are a way of generating revenue from their art – previously in short supply. NFTs have a feature that enables the artist to set terms and conditions, such as earning a percentage whenever the token is resold, so the creator benefits from a piece going viral. As for buyers, they have a way of financially supporting the artists they like, and a digital asset that can increase in value and be sold for a profit.

Digital art is especially vulnerable to theft and reproduction. Unlike a painting, any digital image or video can be downloaded, making a perfect copy of the original. NFTs allow someone to authenticate ownership of the original. But is digital ownership truly valuable if anyone with an internet connection can view and download an exact copy of the original? This remains to be seen.

Some people clearly think so. Digital artist Bleeple [sold a digital work of art for an eye-popping \\$69m](#), while the NFT for [famous GIF NyanCat sold for nearly \\$600,000](#). Christie's now holds auctions for digital art alongside physical pieces, further legitimising the format.

Collectibles

The first use of NFTs in the wild was for digital collectibles known as [Crypto Kitties](#). Crypto Kitties could be seen as digital beanie babies, or pokemon cards. Users spend real-life money to buy and sell digital kittens – each kitten has a 256 bit genome, and users can breed kittens to create new combinations. Individual crypto kitties have sold for over \$100,000, although the average sale is much lower. Like other collectibles, such as baseball cards, value is determined by scarcity and by what a buyer is willing to pay.

One potential use of NFTs is to link physical collectibles with a digital certificate of authenticity. Nike have filed a patent for [CryptoKicks](#) – a method of tokenising sneaker ownership to keep out fakes and theft. Like the kittens, owners will be able to 'breed' shoes and create unique new pieces, subject to Nike's actual manufacturing restrictions.

Video games

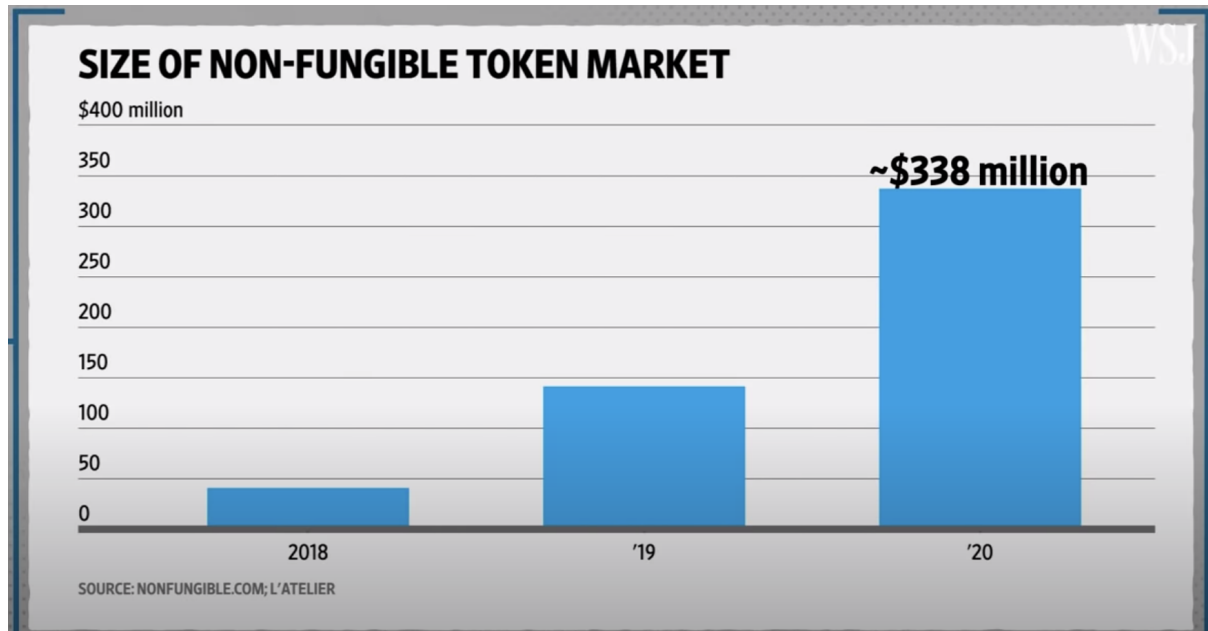
Users have been spending staggering sums of real money on in-game content for years now. Special characters, video game skins, rare equipment – people are happy to pay money on improving their digital experience. However, when they stop playing a game, that investment is lost.

Some think that backing in-game purchases with NFTs would give players more ownership and control, as well as making unique in-game items even more valuable and sought-after.

Are NFTs a bubble?

The NFT market volume has exploded in just two years and tokens are changing hands for millions of dollars. One common concern is – is this not just a bubble?

Well, it could be. If the public opinion decides that 'original ownership' in a world of exact replicas is worth little more than bragging rights, the bubble bursts and the whole edifice collapses. Beanie babies and tulip bulbs saw the same peak and crash, with those getting in too late holding the bag. On the other hand, if public opinion believes NFTs are worth millions, they'll be worth millions. Like contemporary art pieces, the value is determined by the bidders.



Are NFTs a scam?

When large sums of money change hands, you can expect scammers entering the field and see how they can make a profit. Several digital artists have already had their work stolen by impersonators. The scammer 'verifies' themselves as the artist and mints NFTs of original work, taking the revenue for themselves.

The NFT creation process does not require proof of copyright ownership – the system is ripe for fraud. As an artist, the format is so new you have basically no recourse in the case of someone minting your work as an NFT. As a buyer, it's impossible to know if you are truly buying the original. While NFTs are not inherently a scam, the market is a scammer's paradise.

Are NFTs causing climate change?

As mentioned above, most NFTs are recorded on the Ethereum blockchain. Ethereum uses a system called 'proof-of-work' to maintain its decentralised system of security, expending energy to 'sign' new records to the blockchain without a central authority. By design, proof of work is energy intensive. The more NFTs are recorded to the Ethereum blockchain, or to any other blockchain which uses proof-of-work (most of them), the more energy is consumed.

However, proof-of-work isn't the only way of keeping a blockchain secure. Others use proof-of-stake – locking some of their own tokens into the blockchain, which can be

penalised for bad behaviour – as a way of keeping the records accurate. This would immediately eliminate the energy requirement and climate concern. Public proof-of-stake blockchains are not yet widespread, and while Ethereum has been making noise about changing its proof for years, it's unclear when, if ever, this will happen.

At least in 2021, NFTs are big business, and players from all kinds of industries are getting involved. NBA Top Shot has [sold over \\$390m of digital trading cards](#), NFT-based highlights of sporting moments, that anyone can watch for free on YouTube. Kings of Leon sold over \$2m worth of NFT music. NFT marketplaces like OpenSea, MakersPlace and RareSea take a 10% cut of a sale – plenty of people are making a lot of money. Digital artists are excited to monetise their work and increase their revenue streams.

Nevertheless, NFTs will only stay valuable if the illusion of value is shared and maintained. The market could decide that owning an original is worth no more than a digital replica, or that security risks mean that originality can't even be verified. In an instant, the speculative frenzy could burst.