NEAR × PENROSE

NFTs (non-fungible tokens)

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Introduction

What are NFTs?

Non-fungible tokens, or NFTs, are verifiably unique representations of digital and physical goods (digital art, videos, music, event tickets, and legal documents, etc.) that use blockchain to certify both the uniqueness and ownership of the asset. As the world has become increasingly digitized, there has become a need to replicate the properties of physical items. Properties such as scarcity, uniqueness, and proof of ownership all needed to be solved for in our digital world.

Unlike most digital items which can be endlessly reproduced, each NFT has a unique digital signature, meaning it is one of a kind. NFTs are usually bought with cryptocurrency, and a blockchain, such as NEAR, keeps a record of transactions and ownership. While anyone can view the NFT, the buyer has the status of being the official owner—a kind of digital bragging rights. The NEAR protocol is quickly becoming the go-to blockchain for artists, game developers, musicians, writers, and even athletes and sports teams have gotten in on the action of minting, selling, and buying NFTs. NEAR is a high-performance blockchain that is designed to be super-fast, incredibly secure, and infinitely scalable.

The Concept of Fungibility

The concept of fungibility is foundational to understanding NFTs and what makes them different from other digital assets such as Bitcoin. If something is fungible it can easily be replaced by something that fulfils an identical function. It can be exchanged and interchanged with ease. Money

is a good example of a fungible item. If someone lends $10 to someone else, it really doesn't matter if they are paid back with a different ten-dollar bill from the one handed over—any ten-dollar bill will do. Money and digital currencies such as Bitcoin are both examples of fungible things.

On the other hand, if someone buys a plane ticket, they can't just pass it on to someone else as it contains information that makes it unique to them and hard to exchange like-for-like, such as their name, the destination, and departure time. The plane ticket is, therefore, an example of a non-fungible asset. Early examples of digital non-fungible digital assets include domain names, digital event tickets, in-game items such as avatars, and social media handles.

INTRODUCTION **Fungibility**   *figure 1*

✅ **Fungible**   ❌ **Non-Fungible**
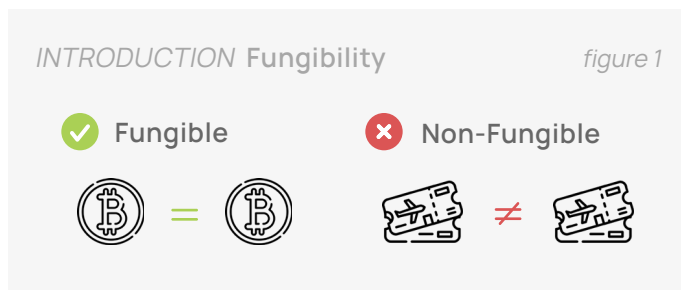
NFTs and Blockchain

NFTs are built on distributed ledger technology, most popularly blockchain, and serve as a method of authentication for buyers of unique items, proving aspects such as ownership. NFTs have potential for other use cases as well, such as being used to represent and verify ownership of real-world physical assets.

Core properties of NFTs

Some of the core properties of NFTs include:

1. Programmable and unique. Like all traditional digital assets and tokens built on smart contract blockchains, NFTs are fully programmable. Each

NFT contains code information that describes the properties of each token that makes them different to others.

2. Peer-to-peer. Trading NFTs can happen peer-to-peer without needing platforms that charge high fees.

3. Secure. Once a transaction is confirmed, it's nearly impossible to manipulate that data to "steal" ownership.

4. Rare. NFTs are provably scarce which ensures they remain desirable over time, and that supply does not overtake demand.

5. Traceable and Verifiable. Each NFT has a record of transactions on-chain, from when it was created, including every time it changed hands. This means each NFT can be verifiably authentic, and not a counterfeit. Verifiable proof of ownership that cannot be modified and new NFTs cannot simply be copy-and-pasted into existence.

Application

Why Should We Pay Attention to NFTs?

NFTs are changing the landscape for digital creators. This technology means that centralized gatekeepers (think the Spotify's and Amazon's of the world) can be circumvented so that creators can seamlessly deliver their work to customers and get the rewards. NFTs were developed to overcome some of the greatest challenges creators are facing on the internet today, and represent a breakthrough solution to the issue of digital ownership. Digital files can be easily and endlessly duplicated, so proving ownership
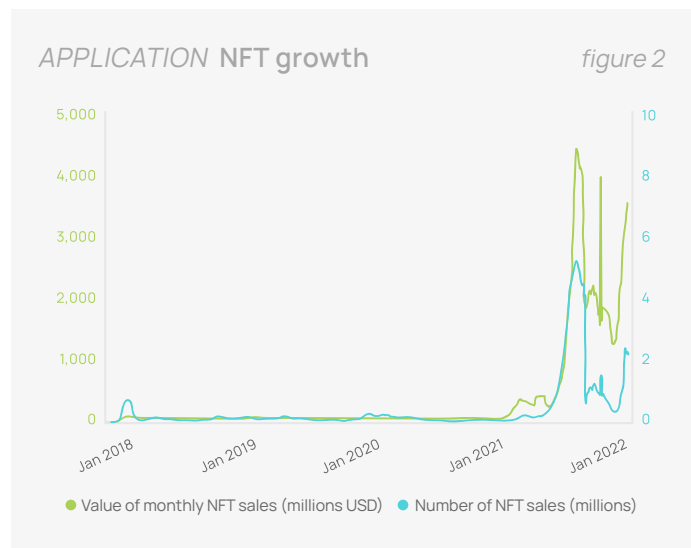
of digitally-native assets has historically been difficult. With NFTs, things such as artwork and music can be tokenized to create a digital certificate of ownership that can be bought and sold. The record of who owns the item is stored on the underlying shared blockchain ledger. The records cannot be forged because the ledger is maintained by thousands of computers around the world.

NFTs are revolutionizing how artists and creators share their work. The transition to digital art can provide creators with greater discoverability. Being digitally native also unlocks wider network effects. This creates a new way for artists in different sectors to showcase their work. Artists are no longer displaying their pieces in small galleries, but rather the largest gallery in the world: the internet. They are able to make a real living while also protecting the ownership of each piece they put on sale.

APPLICATION **NFT growth**   *figure 2*

● Value of monthly NFT sales (millions USD)   ● Number of NFT sales (millions)

New Business Models

NFTs have introduced a new business model which is more creator friendly. With traditional art, most artistic value is not captured until late in career or posthumously, meaning that the artist

1. DISCOVER

Browse NFT marketplaces or any creator-based social media sites and find an NFT you like. It can be a piece of physical or digital art, music, or many other forms.

2. ONBOARD

Dependent on where the NFT is listed, setup a specific type of wallet. Most NFT market-places have comprehensive, easy-to-follow onboarding guides.

3. PURCHASE

Fund the wallet you've just setup and buy your chosen NFT either at a fixed price or via virtual auction. You can then choose to resell your NFT at any time, for a price you set.

rarely receives much if any of this appreciation in value. This changes with NFTs. NFTs can contain programmable smart contracts that may give creators options to receive a cut of any future sale of their asset. This enables creators to access the upside of their sold creations as they gain value.

Although NFTs made their debut in the worlds of art and gaming, there is a growing list of applications across many industries:

ART

NFTs allow artists to monetize their artwork, reach a global audience, and protect their copyright. NFT art is art, physical or digital, that has been tokenized as a unique asset on a blockchain.

1. Programmable art. Artists can deploy a set of instructions for how their finished media should be rendered. These instructions can be modified via layer tokens, with abilities like state change, positional movement, or color alteration.

2. Secondary sales. NFTs allow artists to receive royalties every time their artwork changes hands.

3. Virtual galleries. Virtual reality galleries are being created to allow artists, collectors, and viewers to engage with one another from anywhere in the world and showcase art that is fundamentally scarce and unique, but accessible to anyone for viewing.

Snark.Art is a NEAR-powered art production platform that works with artists to create blockchain-based crypto art.

GAMING

NFTs are significantly improving the gaming experience for players and developers alike. The combination of NFT in gaming has led to the emergence of GameFi, where users trade and swap game assets for financial rewards. NFT gamification can work in many ways. Some of the most notable and common ways NFTs are disrupting traditional gaming are highlighted below.

Play-to-earn. NFTs in video games allow players to monetize their time ('play to earn'). Players

obtain unique NFTs as digital assets for fulfilling in-game objectives. These NFTs are scarce and desirable, and can be sold to other players. Players can also be granted NFTs that represent wins, levels achieved, and other in-game milestones that serve as digital memories.

Ownership of in-game items. Players and artists can create in-game digital assets such as unique swords, skins, or avatars which can be sold and traded to other players, which helps fuel in-game economies as a result.

New forms of funding. Limited edition NFTs are being used to fund game development. Players who own assets become more invested in the game and potential promoters, bringing in more players and reducing customer acquisition costs as a result.

Multifunctional and transferable identities. Players can create a single digital identity, built as an NFT, that can be used across all games. For example, an NFT may be used as a passport or as an avatar that can be transferred and used on multiple platforms.

MTVRS is a platform for players to discover, download, and play the next generation of Web3 powered games. Metamon is a free-to-play play-to-earn online battle royale game and sci-fi franchise featured on MTVRS and built on NEAR. Players can earn both NFTs and FTs by playing.

SPORTS

Sports teams and organizations have the opportunity to design and produce the next generation of collectibles using NFTs. The chance for fans to acquire, not just view, licensed digital media of their favorite sports moments will likely solidify NFTs place in the sporting world. The following highlight how NFTs are benefiting the sporting industry.

Fan engagement. Similar to how NFT digital art is created and traded, athletes and organizations can create digital collectibles for fans. These NFTs can also be associated with unique experiences or prizes, such as courtside seats, VIP tours, and signed merchandise.

Authentic merchandise and game-worn gear. NFTs can store authentic merchandise records and fans can exchange these assets on digital marketplaces. The technology will also provide trusted verification of authenticity to reduce fraud and counterfeit items.

Video clips & highlights. Fans can purchase, own, or sell NFT versions of specific, officially-licensed video highlights. The NBA's TopShot is one of the most popular in the space where Fans can buy and trade digital collectibles of NBA highlights. So far it has has generated almost $860 million in gross sales as of early 2022.

Tickets. NFT tickets can be created and programmed with set sale and resale prices, or even run the sale as an auction where people can bid for tickets. New revenue opportunities arise too, with the resale of NFT tickets as collectibles where event organizers can earn part of the reward with each resale of the ticket.

ITSMYNE is a marketplace for officially licensed sports NFTs that is built on NEAR where sports fans can talk NFTs and trade NFTs using crypto or fiat.

DEFI

NFTs are an additional asset class added to the growing decentralized finance (DeFi) ecosystem.

The ability to stack NFTs and smart contracts will allow for the invention of novel financial products.

NFT-backed loans. NFTs can be used as collateral to secure loans. Lenders can earn income through interest fees paid by borrowers.

Fractional ownership. NFTs can be created to represent fractions of an asset so people can gain ownership without having to buy the entire asset.

Automated market making. AMMs allow digital assets such as NFTs to be traded without permission and automatically by using liquidity pools instead of a traditional market of buyers and sellers.

Upshot One is a NEAR-powered protocol where NFTs meet DeFi. Upshot provides insights into NFT markets and enables real-time NFT appraisals.

REAL ESTATE

NFTs allow buyers and sellers of real estate to store property records in the blockchain. This new feature will allow the property purchase process to be executed via smart contract, with the actions planned for each of the parties involved: the seller, the buyer, the real estate agent, the authorities, and the legal representatives. The founder of Techcrunch, Michael Arrington, recently sold his apartment in Kiev using an NFT.

In the future we may see the NFT market expand even more. NFTs may become the new standard used in identity and security and security applications. With NFTs, users would be able to better protect and control their personal information, like medical histories, birth certificates, and more. Other applications are gaining traction too - in the worlds of fashion and

wearables, supply chain, intellectual property and patents, and more. Many large organizations, including Disney, Nike, Coca-Cola, and Taco Bell have already shown their interest in NFTs, with more organizations joining the list every day. NFTs are opening up exciting possibilities for the future and we will likely see them transcend the crypto and real-world economy boundaries.

NEAR & NFTs

What Can I Do to Begin Experimenting With NFTs?

For anyone looking to begin experimenting with NFTs, the good news is that NFTs are not as complicated as they may sound. The NEAR protocol is making creating and trading NFTs easier, faster, and cheaper than any other blockchain protocol. The following are some of the ways that you can begin experimenting with NFTs.

PURCHASE

A great way to get familiar with the space is to purchase an NFT. There are a few tools that you will need to get started. All you need to purchase an NFT is a digital wallet, currency (fiat or cryptocurrency, depending on the marketplace), and a user account for the marketplace which sells the NFT you're looking to purchase. Decide on a budget for yourself, since NFTs can have a wide range of price tags. If you aren't sure how much to use, spend some time browsing through a few NFT marketplaces to get an idea of what different NFTs cost. NFT transactions typically require payment with cryptocurrency.

A crypto wallet is an essential tool for holding NFTs, cryptocurrencies, and interacting with

blockchains. The [NEAR Wallet](#) is a convenient in-browser wallet where you can hold the keys to your NFTs and cryptocurrencies. While registering for a wallet account, make sure you take careful note of the security measures. Digital wallets use a recovery phase that is needed to recover access to your wallet.

[Mintbase](#) is a NFT platform and marketplace, built on NEAR, that allows anyone including those with less technical backgrounds to create their own NFTs. Also built on NEAR is [Paras](#), an all-in-one platform where you can create, trade, and collect digital art cards. Mintbase and Paras are a few examples of many platforms where you can get started to either create or purchase your first NFT.

NEAR & NFTS Highlighted sales   *figure 4*

C #4156 ([CryptoPunks](#))
Last sale price: $10.2M
Mint year: 2017

EVERYDAYS: THE FIRST 5,000 DAYS ([Beeple](#))
Last sale price: $69.3M
Mint year: 2020

MUSEUM OF FUTURE 083 ([howiseedatworld](#))
Last sale price: $5,930.11
Mint year: 2020

DOODLE #6914 ([Burnt Toast](#))
Last sale price: $1.1M
Mint year: 2021
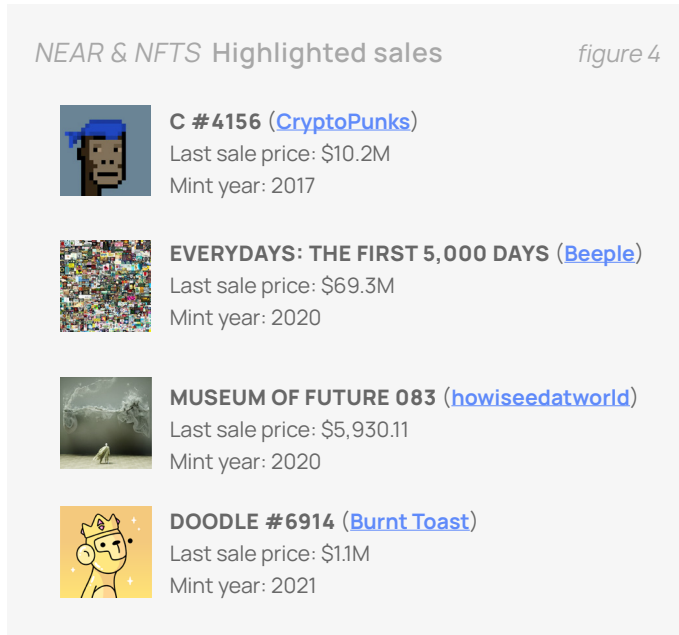
Not everyone who owns an NFT decided to create or purchase one for the same reason. Some owners are investors, who look for opportunities to buy and sell NFTs to turn a profit. Other owners are collectors, who may be looking to support an artist or industry and truly enjoy the variety of artwork and other digital assets created as NFTs.

NFT creators and owners like the NEAR protocol because it is much less expensive than other blockchains (for example, 10,000 to 100,000 times cheaper than using Ethereum!) and extremely fast (just 1 second per block on average).

CREATE

Another way to become immersed in the world of NFTs is to actually create one yourself! The biggest barrier to utilizing NFTs in the past has been that they have been challenging to create and require significant technical expertise. That has quickly been changing with the rise of more user-friendly platforms and intuitive user-interfaces. Many NFT creators are digital artists, but by no means do you need to consider yourself creative to participate.

EARN

Organizations around the world are recognizing the utility of NFTs for verifying credentials. Some institutions are issuing NFTs as proof of course completion. Earn your first NFT at the [NEAR Academy](#) - NEAR Academy offers fun and free interactive courses, where upon successful completion, you will receive your certificate of completion as an NFT.

COMMUNITY

Many NFT projects are built around a core community of supporters and like minded people. Discord and Telegram are popular platforms for connecting people interested in, or already participating in the project. These chat servers are

usually partially public and partially private, with some gated elements exclusive for token owners. These online communities can be a great place to learn more about NFTs and particular NFT projects you're interested in. Learn more about NFTs by joining the NEAR community on the Discord channel **here**.

Technology

How does this technology work, exactly?

For those of you interested in learning more about the underlying technology that makes NFTs possible, the following is an overview:

OWNERSHIP

NFT ownership is provable because records are held on a blockchain. Blockchain networks, such as NEAR, certify that they are unique and non-interchangeable. Minting an NFT means creating it for the very first time and becoming its original

owner. An NFT is created when it's minted by a smart contract. A smart contract is a piece of code that self-executes a transaction on the blockchain. Assets of the buyer and seller are swapped irreversibly by code, without the need for third-party involvement.

METADATA

Each NFT has associated "metadata". Metadata is the data that describes the properties of the NFT. This can include attributes such as size, artist name, and scarcity. It can be stored within the NFT directly or by linking to the source of the data. Using digital contracts, smart contracts, the creation and transfer agreement terms for the NFT are set in code and automatically executed. Blockchain addresses are used to transact NFTs between parties. The address is a unique identifier to send and receive the NFT. Unlike other blockchains, NEAR has human-readable addresses making it much easier to send and receive digital assets such as NFTs.
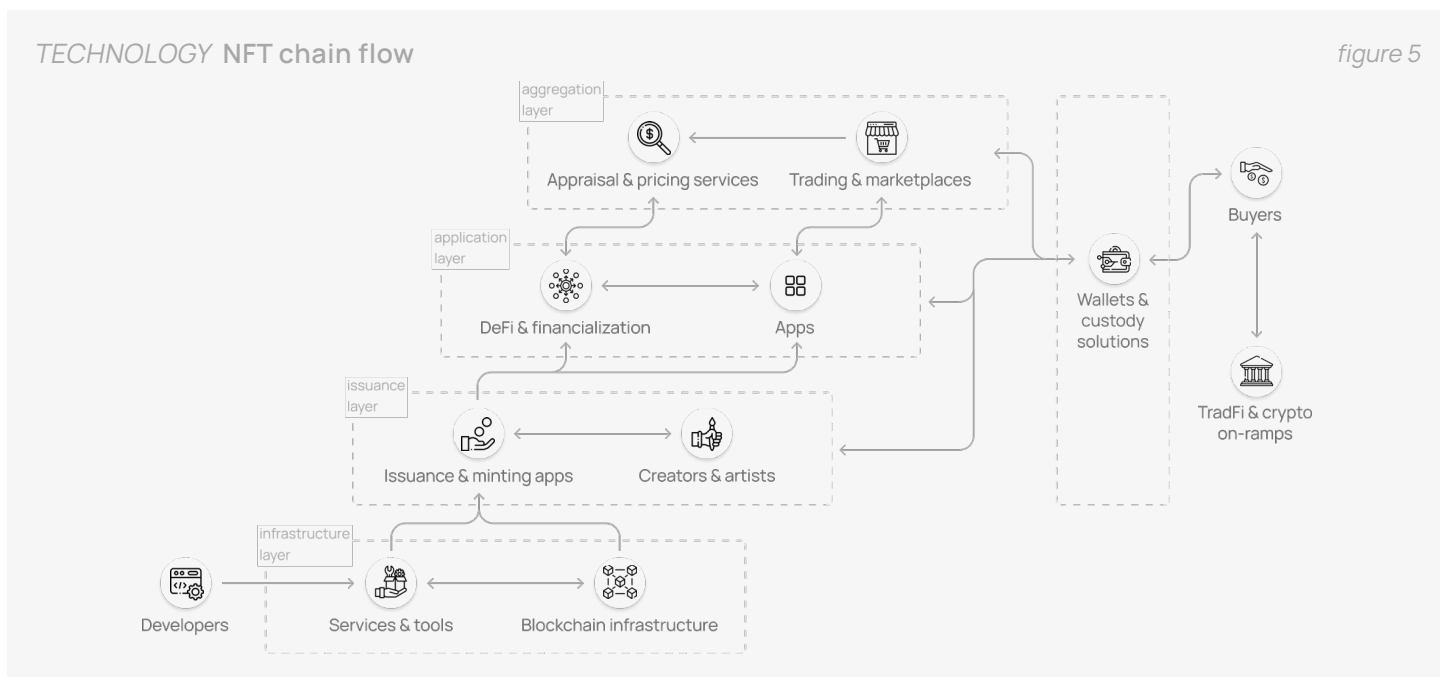
TECHNOLOGY NFT chain flow   *figure 5*

TRANSACTION FEES

Each time a transaction on a blockchain takes place, it uses energy. Transaction fees are charged to compensate for this energy and ultimately process the transaction. When minting, buying, or selling NFTs, participating computers (nodes) on the blockchain are required to process the transaction. Computers involved in processing transactions are incentivized because they receive financial rewards. Transaction fees are necessary to prevent misuse of the blockchain so that the network doesn't become jammed with infinite requests.

To give you an idea of what to expect for transaction fees on NEAR, below are some common actions and what the fee would be in NEAR tokens. Depending on current gas prices, using NEAR can be 10,000 to 100,000 times cheaper than using Ethereum.

Operation	Fee ($NEAR)
Create account	0.000042
Send funds	0.000045
Stake	0.000050

MARKETPLACES

Marketplaces are platforms where NFTs can be bought and sold, and sometimes even created and displayed. There are many platforms available. The NEAR protocol is ideal for creating and trading NFTs because it is significantly faster and has transaction fees that are negligible in comparison to Ethereum. Hip Hop Heads is an NFT collection that is a collaboration between the Universal Hip Hop Museum, the NEAR Protocol, and Ed Young. Hip Hop Heads chose NEAR because it allows the collection to be more accessible to the general population. Minting the NFTs is relatively cheap and they can be purchased with credit cards. NFT royalties are written into the NFT code, allowing artists and creators to gain royalties from secondary sales even if the NFT moves to another marketplace.

Further Resources

🔗 Website	🎙️ Podcast	📎 File attachment
📝 Article	📹 Video	📘 Book

Videos

📹 **NFT explained in 5 minutes** (Simplilearn)

📹 **NFTs Are Fueling a Boom in Digital Art. Here's How They Work** (Wall Street Journal)

📹 **How to Buy and Sell NFTs For Profit (Complete Guide)** (Max Maher)

📹 **NFTs - If You Don't Know, Now You Know** (The Daily Show with Trevor Noah)

📹 **What is an NFT? (Non-Fungible Tokens Explained)** (Whiteboard Crypto)

Websites

🔗 **LearnNear.Club**

🔗 **NextNFTDrop**

🔗 **NFT Calendar**

Blog Posts

📝 **NFT Art: where to begin as an artist..?** (Non-Fungible.com)

📝 **The Non-Fungible Token Bible: Everything you need to know about NFTs** (OpenSea)

📝 **Non-fungible tokens (NFT)** (Ethereum)

📝 **A Beginner's Guide to NFTs** (Linda Xie)

📝 **NFTs for Dummies Cheat Sheet** (Dummies)

Blog Posts (cont'd)

📝 [NFT 101: Everything You Need to Know](#) (NFT-Now)

📝 [NFTs, Explained](#) (The Verge)

📝 [Beginner's Guide to NFTs: What Are Non-Fungible Tokens?](#) (Decrypt)

📝 [What Is a Non-Fungible Token? A Beginner's Guide](#) (Enjin)

📝 [What Are NFTs and How Do They Work?](#) (CoinDesk)

📝 [What is an NFT? Simple & Easy Explanation with Examples](#) (NFTExplained)

PDFs

📎 [NFTs Profit Playbook](#) (Penrose Partners)

📎 [Non-Fungible Tokens Report](#) (Crypto.com)

📎 [Demystifying NFTs](#) (EU Blockchain)

Books

📘 [NFT for Beginners](#) (Crypto Art AI)

📘 [NFT Guide: How to Create and Sell Non Fungible Tokens, discover and Invest in Crypto Art and Collectibles in the Blockchain](#) (Charles Pett)

📘 [The NFT Handbook: How to Create, Sell and Buy Non-Fungible Tokens](#) (Matt Fortnow & Qu-Harrison Terry)

📘 [NFT Art and Collectibles for Beginners: The Must Have Guide for Understanding Non Fungible Tokens (NFTs)](#) (Chris Collins)

Exploring the NEAR NFT ecosystem

1. Open Near Wallet and upload funds using Moonpay

📽️ [Funding with Moonpay](#)

2. Go to [Paras.id](#) and buy a Near NFT

📽️ [Purchasing an NFT on Paras](#)

3. Create your own NFT 'card' on Parasand upload it to the marketplace for sale

📽️ [Listing an NFT for sale on Paras](#)

4.Go to [Mintbase](#) and create your own NFT store. Format your store aesthetically, and mint an NFT to list on it. Essentially recreate the video found here: https://docs.mintbase.io/creating/store

📽️ [Deploying a store on Mintbase](#)

📽️ [Minting an NFT on Mintbase](#)

5. You can also buy others' NFTs on Mintbase.

📽️ [Purchasing an NFT on Mintbase](#)

6. Become part of the NEAR Cryptopunk world by purchasing one of their NFTs on [NPunks.io](#).

📽️ [Purchasing an NPunk](#)

7. Check out some of the NFT play-to-earn games launching on the NEAR ecosystem: [Metamon](#) & [Shroom Kingdom](#).

📽️ [Overview of Metamon and Shroom Kingdom](#)

Quick Start Guide to Minting Your First NFT

If you are a digital artist or looking to get into the NFT game, you can easily get started with no technical expertise. You can tokenize your art, music, photography, and more by creating an NFT. If you want to mint, sell, and develop your own NFT, follow the steps below.

1   **Create a NEAR Wallet** if you don't have one already.

2   **Head to Mintbase** and connect your NEAR Wallet (this acts as your login).

3   **Deploy your own store** - a "store" is your own smart contract on the NEAR blockchain.

4   **Customize your store** with a custom display name, header image, set default royalties and splits, and add your social media handles.

5   **Mint your first NFT** once your store has been deployed - click the "mint" button in the top right.

6   **Add metadata** to your NFT (fig 6).

7   **Set your NFT for sale** using an auction or set-price.

8   **Set tags on your NFT** so that it can be easily found on the Mintbase marketplace.

9   **Congratulations**, you've minted your NFT! When someone purchases your NFT, ownership will automatically be transferred and you will receive your revenue almost instantly!

QUICK START **NFT metadata**   *figure 6*

Royalties: how much you receive every time the NFT is resold

Revenue: how much revenue you receive upon the first sale (you can even share revenues with other co-creators who also have a NEAR account!)

Date: if your NFT is a ticket, you can add a date

Media: add an image or song

Document: upload a license or pdf document with your conditions

Location: add a location on Google Maps

Website: add your website

Custom: add additional custom information