# Non-Fungible token
## beyond fine arts

A perspective from the financial industry

Photo by Milad Fakurian on Unsplash

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## Executive Summary

# Non-Fungible Tokens Widen the Realm of Possibilities

**With a current estimated market cap about $2B USD and a growing number of players, NFT is poised for growth as the innovation continues to mature and more use cases emerge.**

In 2021, NFTs were the “talk of the town” and had gained a lot of attention. Beyond the hype of NFT in the art sector, use cases across various sectors, including the financial industry, are emerging as NFT increases in maturity. Currently, the NFT ecosystem is mostly dominated by emerging technology players and had a total market capitalization estimated at $2B USD as of August 2022, which is still relatively small compared to the total crypto market capitalization valued at approximately $1,118B USD. However, as the technology continues to evolve and the number of use cases increases, a growing number of non-crypto, “traditional players” in the financial sector (and beyond!) have shown interest, with some being directly involved and experimenting with NFTs.

NFT stands for non-fungible token and is often described as a blockchain-based asset that can be used to represent ownership of unique items. As such, it presents the same intrinsic characteristics of blockchain technology, that is: immutable, decentralized, traceable, transparent, and near real-time. On top of that, NFT bring its own set of characteristics, such as non-fungibility, uniqueness, scarcity, verifiability, and programmability.

**In an era of heightened digitalization and decreasing use of cash, NFTs can transform both how the financial industry operates and what it does and offers.**

In an era of increased digitization of financial services and with a decreasing use of cash for payment, NFTs are clearly relevant to the industry, with the potential to transform the way financial services firms are conducting business, to improve operational costs, and to create new lines of products that did not exist before. In short, NFTs present opportunities to innovate from within and gain in terms of operational efficiencies, but also lead the way to new products and services being created (from outside the traditional organizations/system), and in turn influence the financial industry that must adapt to demand. In this paper we dive further into the relevance of NFT by highlighting emerging use cases in the financial services sector, showcasing that NFT in the industry has moved beyond the realm of theoretical applications.

# Executive Summary

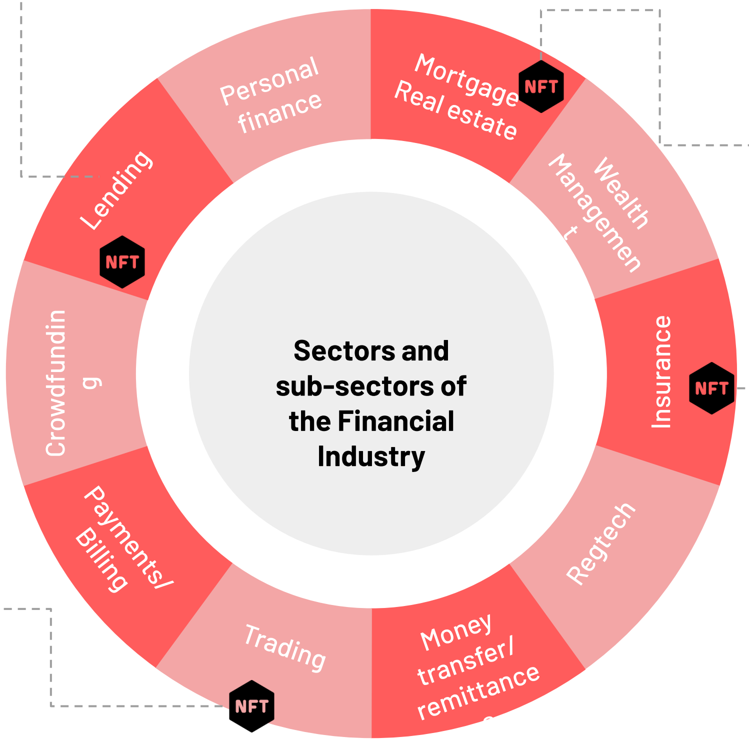
## Some prominent Use Cases in Finance

**NFT Lending** allows investors to list their NFT as a collateral and receive a loan in exchange, which helps them solve liquidity issues. The token lender can earn interest, and in case of default, the token lender can keep the NFT.

**New ways to lend and allow investors to access liquidity more easily and quickly.**

Investors and collectors can **trade** NFTs by either performing a purchase or a bid. Currently, most of the NFT trades are done through NFT marketplaces; however traditional players like the Nasdaq are also looking to offer NFT trading.

**New product for investors and collectors.**




NFT can be used as a collateral for a **mortgage loan**, which facilitates the process of acquiring a home loan. In addition, the mortgage contract becomes digital and represented as a NFT, which helps authenticate the ownership of the mortgage. A physical or digital property can also be registered as an NFT, allowing for the instant validation of ownership. For instance, in the metaverse, **real estates** are represented as NFTs.

**New way of issuing mortgages, and new type of real estate products adapted to the metaverse.**

NFTs are also impacting the **insurance** sector in two manners, either by offering coverage for an NFT or by having the insurance contract as an NFT. These solutions can help insurer perform real-time verification and authentication of insurance and policies, and detect more easily fraud.

**New insurance product covering the NFT sector, and leveraging the benefits of NFT for the traditional insurance sector.**

Executive Summary

# Next Steps for Sound and Widespread Adoptions

In order to apprehend news regarding NFT and understand where opportunities and risks lie for their organization, financial institutions, businesses and individuals need to begin to explore the innovation now. This paper highlights some of the key steps that should be taken in this regard.

### Financial institutions

- ✓ Explore the current use cases for NFT and understand their impact on their industry.
- ✓ Understand their customers' interest in NFT.
- ✓ Consider how they can help their customers navigate this type of product safely.
- ✓ Be aware of current regulations and regulatory trends.

### Companies

- ✓ Explore how NFTs could transform their industry and organization.
- ✓ Investigate the value added and benefits / revenues that could be generated from the use of NFT.
- ✓ Investigate potential risks associated with NFT for the business and how it could transform or be part of their operating model.

### Individuals

- ✓ Learn about the risks of investing in this type of product, and determine whether they are comfortable with the risks.
- ✓ Perform their due diligence before entering the market.
- ✓ Take the time to read the sale agreement when purchasing an NFT to ensure they actually do have ownership of the digital asset, and if not, evaluate the possible implications

Non-Fungible Token: Beyond fine arts

# Table Of Content

In 2021, the word “non-fungible token” (NFT) attracted a lot of attention, identified as one of the key technological trends to watch for. In fact, NFT was Collins Dictionary's word of the year for 2021. In the mainstream media, we could read that NFTs were, simply put, JPEG images sold for millions of dollars. The hype mostly started with the sale of Beeple's NFT for over $69M, which was followed by several big consecutive sales. The first tweet of Jack Dorsey, founder of Twitter, was sold for over $2.9M. A picture of Lebron James dunk sold for $230K in August 2021. And earlier this year, a CryptoPunk #5822 was sold for $24M in February 2022… to name a few.

However, beyond the hype of NFT in the fine art sector, and art in general, use cases across various sectors are emerging as NFT technology increases in maturity. And the financial industry is no exception. Notable players in the traditional financial systems have already been experimenting with the technology, such as the world's largest stock exchange, the New York Stock Exchange, which has filed a trademark application for its own NFT marketplace, as well as JP Morgan, which became the first bank to enter the metaverse with the purchase of a virtual land NFT.

*Bored Ape Yacht Club #8817" by Yuga Labs*

*Sources: BlockZero analysis (2022), CoinTelegraph Research (2021), CNBC (2021), World Economic Forum (2021), EuroNews (2022)*

By expanding their service offerings and incorporating NFTs into their current product line, the financial services sector could not only provide a better customer experience, but also mitigate a number of inefficiencies. The current discussion paper explores some of the use cases and potential impacts of NFTs in the financial industry. Yet, the fact remains that NFTs are still at an early stage of maturity, and we are just beginning to discover the real potential of this technology, which could revolutionize the financial industry and the way people interact and conduct business.

*CryptoPunk Collection by Larva Labs*

**The remaining of this paper is structured as follow:**

- **Section 1 - What is an NFT?**
- **Section 2 - The NFT Market and Ecosystem**
- **Section 3 - NFT Use Cases in Finance**
- **Section 4 - Concluding Remarks**

*Source: BlockZero analysis (2022)*

# What is an NFT?

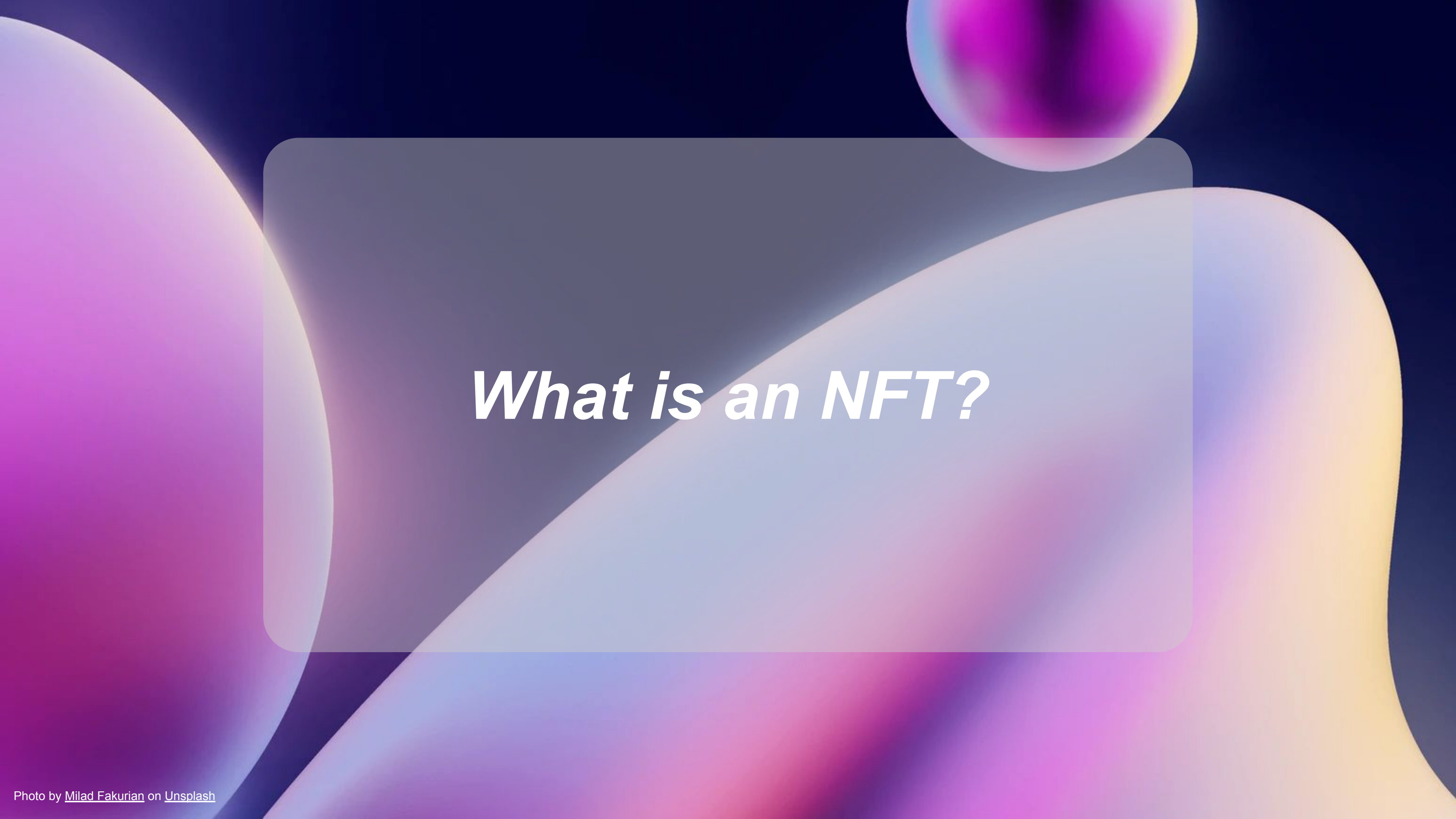


Photo by Milad Fakurian on Unsplash

# NFT is but one innovation enabling digitalization

The emergence of Blockchain technology and digital assets is built on a framework of innovation anchored on data, automation and business model transformation. As blockchain digital asset, NFT is part of those technologies that are revolutionizing the industry of finance.

## Artificial intelligence

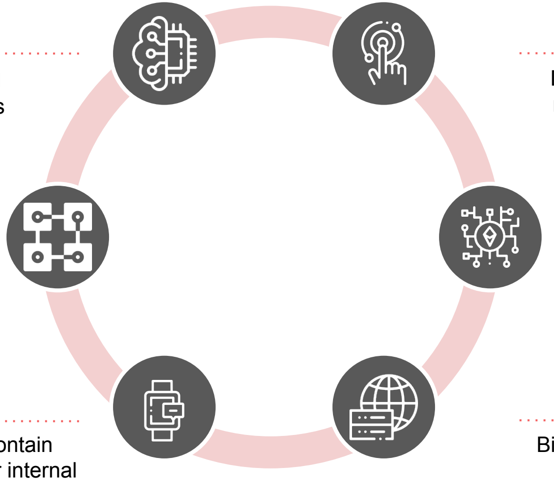
Artificial intelligence (AI) applies advanced analysis and logical techniques to interpret events, support and automate decisions and take actions.

## Blockchain NFT

A blockchain is an architectural conception of the broader concept of a distributed ledger. It represents a list of irrevocable, cryptographically signed transactional records.

## Internet of Things

The Internet of Things is the network of physical objects that contain nested technology to communicate, sense or interact with their internal states or the external environment.



## Digitalization

Digitalization is the use of digital technologies to change a business model and provide new revenue and value creation opportunities; it is the process of moving to a digital business.

## NFT Digital Assets

A digital asset is anything that is stored digitally and is uniquely identifiable so that organizations can use it to generate value. For example, documents, audio, video, etc.

## Big Data Analysis

Big Data represents a voluminous amount of information that requires innovative and cost-effective forms of information processing that enable improved insight, decision making and process automation.

**Post-pandemic context:** The digitization and globalization of relationships are strongly accelerated because of the health crisis. The demand from users and providers of technology (financial and others) creates a pressure for greater innovation.

NFT *Technology where NFTs intervene*

*Source: BlockZero analysis (2022)*

# NFT: Leveraging blockchain and more to store information

Before going any further, it is important to explain what an NFT is, and why it matters in the digital age. NFT stands for non-fungible token and is often described as a blockchain-based asset that can be used to represent ownership of unique items[1]. As such, it presents the same intrinsic characteristics of blockchain technology, that is: immutable, decentralized, traceable, transparent, and near real-time. On top of that, NFT brings its own set of characteristics, such as non-fungibility, uniqueness, scarcity, verifiability, and programmability.

Although often confused, an NFT is not a smart contract, but rather it is powered by smart contracts, which are applications running on a blockchain. Smart contracts address transferability of the NFT between owners, and help confirm the ownership of the digital asset[2].

## Key characteristics of NFTs

1. **Non-fungible**
Because of its uniqueness, an NFT cannot be exchanged for an equivalent token, unlike fungible tokens, such as bitcoin, where one bitcoin is equivalent to another bitcoin.

2. **Unique**
Each NFT is identified with a unique number, which acts as a certificate of authenticity.

3. **Scarce**
The value of an NFT comes from its scarcity. Generally developer will limit the amount of an NFT for a collection to increase scarcity.

4. **Verifiable**
Because all of the historical data is stored in the blockchain, the ownership of each NFT can be traced back to the original creator.

5. **Programmable**
Unlike real-world assets, NFTs can be fully-programmable. For instance, it is possible to program royalties into the contract to make sure the artist continues to receive residuals[3].

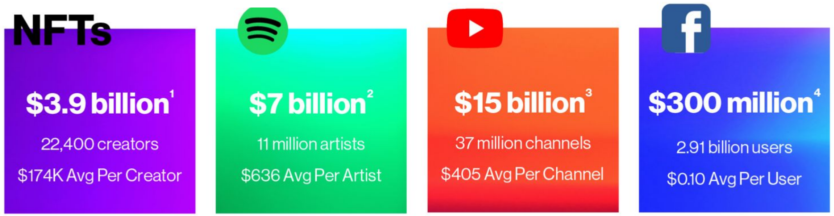
*Sources: BlockZero analysis(2022), 1 Etthereum (2022), 2 The Art Newspaper (2022), 3 EU Blockchain (2021), Nonfungible (2022), CB Insights (2021), Quartz (2021); Forbes (2022)*

# The relevance of NFTs in the digital age

In this digital age, NFTs are relevant because they solve problems that exist in today's Internet. For instance, prior to NFTs, real property of digital work of art did not exist and as such could easily be falsified, as it was the case with pirated music. It was therefore not uncommon for the art of artists to be reproduced without credit or remuneration. NFTs offer artists a new way to be recognized, but also to monetize their art, possibly more so than before.

A recent study conducted by a16z Crypto, a venture capital fund that invests in crypto and Web3 startups, suggested that in 2021 the direct impact per creator/artist - at least in terms of remuneration - was much greater when using NFT platforms such as OpenSea than when using centralized applications, such as Spotify. While these centralized platforms might offer greater visibility and audience to its content creators, this study at least points to the opportunity NFT represents and the potential for transformation.

**Estimated creator revenues by source[1]**




*Source from : a16z Crypto (2022)*

## Relevance for the financial industry

Although the use cases in the financial industry remain limited at the moment, in an era of increased digitization of financial services and with a decreasing use of cash for payment, NFTs are clearly relevant to the industry, with the potential to transform the way financial services firms are conducting business, to improve operational costs, and to create new lines of products that did not exist before. In short, NFTs present opportunities to innovate from within and gain in terms of operational efficiencies, but also leads the way to new products and services being created (from outside the traditional organizations/system), and in turn influence the financial industry that must adapt to demand.

*Sources: BlockZero analysis(2022), a16z Crypto (2022)*

# NFT products and applications are rapidly expanding

Currently, the most popular types of NFTs are those related to art. This is not surprising considering that NFTs represent about 16% of the global arts market[1]. However, as the technology evolves, new types of products are emerging, including as a way to issue bonds, distribute dividends, creating new real estate products, and for enabling the DeFi ecosystem.

## Most common NFT products and applications

- Arts
- Musics
- Gaming
- Trading cards
- Domain names
- Collectibles
- Photography
- Virtual worlds

## Some emerging NFT products and applications

- NFT-Bond
- Certificate ownership
- Passport
- NFT Real Estate
- Dividend
- DeFi

*Sources: BlockZero analysis(2022), 1 NonFungible and L'Atelier (2022),Fostec & Company (2022), Seed (2022)*

# NFT in finance has gained momentum in 2022

While we have mostly heard about NFTs starting in 2021, NFT history falls in the continuum of blockchain innovation, with more and more players from the financial services industry getting involved.

Non-traditional → Traditional

**2014 – Quantum**
The history of NFTs began in 2014 with Quantum NFT, which was introduce by Kevin McCoy, a New-York artist.

**2015 – Smart contracts & Ethereum**
The development of Ethereum brought the smart contracts that represent the NFTs we know today.

**2017 – CryptoKitties & CryptoPunks**
Two of the most popular NFT collection of all time were launched.

**2017 – OpenSea**
OpenSea is the first NFT marketplace to be created and to this date OpenSea is still the largest NFT marketplace based on all-time sales volume.

**2018 – SuperRare**
SuperRare is a digital art marketplace based on Ethereum where users can trade and collect NFTs.

**2020 – NFTX**
NFTX is the first NFT as an index-fund. It is a platform for creating liquid market for the illiquid NFTs.

**2021**

**Mar – Everydays: The First 5000 Days**
Beeple's art was sold for over $69 billion USD, and is to this day still the NFT's largest sale in terms of price.

**Aug – VISA**
Visa purchased an NFT CryptoPunk and mentioned that this was just the beginning of Visa's work in this space.

**2022**

**JAN – PROPY**
Propy announce the launch of its NFT platform which will enable real-world property to be bought with NFTs.

**FEB – J.P.Morgan**
JP Morgan announced the launch of the Metaverse lounge where people are going to be able to shop with crypto and NFTs.

**APR – Goldman Sachs**
Goldman Sach announced it was exploring NFTs as a financial instrument.

**JUNE – SIX Swiss Exchange**
SIX Digital Exchange launched its Web3 services, which will support NFT, crypto and other digital assets.

*Sources: BlockZero analysis (2022); PwC (2021), Decrypt (2022); Statista (2022), DappRadar (2022), Fortune (2022),PR Newswire (2022), Tech Crunch (2022)*

# Yet, NFTs raise new questions, including that of ownership

As NFTs gained popularity in 2021, questions of ownership began to appear. For example, one reason NFTs first appeared in the fine arts is because of this ability to own a unique piece of art for which ownership can essentially be intrinsically linked to you (through code). So, one would think, for instance, that by purchasing a Bored Ape NFT, one owns the NFT. However, according to the terms and conditions of the purchase, Yuga Labs is the real owner of the NFT. Moreover, one of the latest publications of the firm Galaxy Digital concluded that the real owner of the NFT is its creator and not the buyer. Although the ownership of NFT is not clear yet, and seems to be determined on a case-by-case basis, bound to evolve, there are currently three main ways to own NFT:

## Active ownership

Investors can buy an NFT on a **marketplace** like OpenSea, where there is no intermediary between the seller and the buyer.

The buyer can purchase an NFT through **two different options**: buy immediately for a fixed price or through an option. **Two types of auctions** are usually available, such as English and Dutch auctions.

## Fractional ownership

An investor can also buy only a part of an NFT, which is a **partial ownership. Specialized marketplace** like Unicly and Fractional allow investors to do fractional ownership.

There is another type of marketplace that allows investors to **pool their funds** and **bid together** in an NFT auction, such as PartyBid.

The NFT is governed by a **smart contract** which ensures every transaction is accepted by all of the stakeholders.

## Passive ownership

An investor can **buy funds,** which provide exposure to a diversified NFT basket.

It can also be a fund that allows the owner to hold baskets of **indexes that track a collection**, such as Bored Apes Yacht Club.

PARTY BID unic.ly WAVE Financial THREE ARROWS CAPITAL NFTX

*Sources: BlockZero analysis (2022), Galaxy Digital Research (2022), CoinTelegraph Research (2021), CoinDesk (2022), World Economic Forum (2022)*

# The NFT Market and Ecosystem

Photo by Milad Fakurian on Unsplash

# The NFT ecosystem can be broadly classified into 3

The NFT ecosystem can be broken down into three key dimensions: infrastructure, applications (Dapps) and marketplaces:

## NFT Infrastructure

NFT technology infrastructure refers to: 1) the underlying blockchain (traditionally the Layer 1 blockchain Ethereum; however the high cost of Ethereum's gas fees, Layer 2 blockchain are increasingly being used for NFTs, 2) minting applications enabling the creation of the NFT itself, 3) storage solutions where files are linked to the metadata of the NFT, 4) market intelligence and data collection services companies that enrich the ecosystem and, 5) management portfolio tools, which can help keep track of the NFTs across multiple wallets.

There are currently about 55 companies classified under NFT infrastructure.

## NFT Dapps

NFT Dapps refer to all decentralized applications that incorporate NFTs into their solutions. We can find a variety of different types of applications, such as for virtual worlds, music, sports, etc. More recently, several applications have emerged in sectors beyond arts and video games, including finance.

There are currently over 100 Dapps.

## NFT Marketplaces

NFT marketplaces are the front line of the ecosystem. This is the place where users can sell or buy their NFTs. These platforms offer NFTs in the same way as traditional auction houses, but also provide a way to sell directly from the creator to the buyer[1].

There are currently over 240 marketplaces[2].

*Sources: BlockZero analysis (2022),1 Harvard Business Review (2021), 2 Golden (2022)*

# NFT: Still a few years before becoming mainstream

According to Nonfungible.com, the NFT market grew exponentially in 2021 by 4.44%, reaching a total market capitalization of $17B USD, compared with only $372M USD in 2020[1]. As of August 2022, the total market capitalization of NFT was estimated at $2B USD reflecting overall crypto market downturn[2]. Yet, the NFT market remains relatively small compared to the total crypto market capitalization valued at $1,118B USD as of August 2022[2]. This is not surprising and in fact reflects the fact that NFT technology remains in early stages of development and market adoption. According to Gartner's hype cycle, which classifies a technology's maturity into five phases, NFTs are nearing the end of phase 2 - Peak of Inflated Expectations, with an estimated 2-5 years before reaching plateau of productivity, meaning before mainstream adoption [4].

Still, there were over 1,500 NFT companies globally as of June 2022, most of which are based in the U.S[5]. Considering that NFT technology has been around for less than 10 years, this number is non negligible and attests of both its current phase of maturity and its potential.

The NFT ecosystem is currently mostly dominated by technology / crypto companies, blockchain platforms, crypto-exchanges and start-ups. A notable example is OpenSea, the largest NFT marketplace, where, according to Chainalysis, 20% of user addresses on OpenSea account for 80% of all NFT secondary sales[6]. However, since the beginning of 2022, and as the technology continues to evolve and the number of use cases increases, a growing number of non-crypto, "traditional players" in the financial sector (and beyond!) have shown interest, with some being directly involved and experimenting with NFTs, including the NYSE, Mastercard, Visa, and JP Morgan to name a few.

*Sources: BlockZero analysis(2022),1 Nonfungible.com (2022), 2 CoinMarketCap (2022), 4 Gartner (2022), 5 Golden (2022), 6 Chainalysis (2022)*

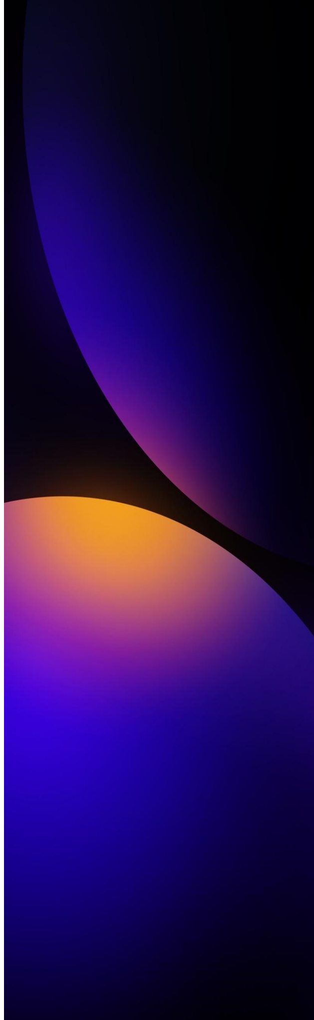


Photo by Milad Fakurian on Unsplash

# Overview of key players across dimensions (1/3)

NFT players across different dimensions are presented in the following pages. We have highlighted in pink those of interest to the financial sector.

## NFT infrastructure

| | |
|---|---|
| Layer 1 | ethereum, SOLANA, BINANCE SMART CHAIN, Polkadot., fantom, flow, Tezos, COSMOS, KUSAMA, AVALANCHE, WAX, XDC NETWORK, CARDANO, HYPERLEDGER FABRIC |
| Layer 2 | polygon, IMMUTABLE, NEAR, OP Optimism, EFINITY, ARBITRUM, SKY MAVIS, Ronin |
| Minting | venly, BLOCKPARTY, METAPLEX, UNIQUE, OpenSea |
| Storage & Wallet | Pinata, NFT STORAGE, IPFS, arweave.org, Filecoin, ardrive, XDEFI WALLET, Trust Wallet, Math Wallet |
| Data intelligence | nansen, NonFungible, CRYPTO SLAM!, Evaluate, NFT Charts, solanalysis, nftnow, OTM, icy.tools, NFTGO |
| Portfolio management | NFT BANK, Zapper, Dapper, NFTrade, ASSET MONEY |
| Others | UNSTOPPABLE DOMAINS, ENS, Urbit, POLKARARE, SYNTHETIX, Larva Labs, AADA DECENTRALIZED LENDING, NFTures, Goldman Sachs, PROPY |

Legend: Based in Canada

Sources: CoinTelegraph Research updated by BlockZero (2022), NonFungible (2022)

# Overview of key players across dimensions (2/3)

## NFT Dapps

| | |
|---|---|
| Virtual worlds | Decentraland, Somnium Space, Troverse, The Sandbox, Treeverse, HSBC, The Solaverse, NFT Oasis, J.P.Morgan, Chain Monsters, Alien Worlds, Cryptovoxels, Worldwide Webb, Substrata, Matrix World, NovaX, Citi, netvrk, CryptoBlades, Afflarium, KPMG, NFTWorlds, TCG World metaverse, Tezotopia, SuperWorld |
| Games | Gods Unchained, Enemy Metal, Dark Country, Eternal, Farmers World, Wolf Game, Kawaii Islands, Crypto Unicorns, Thetan Arena, Axie Infinity, TreasureDAO BridgeWorld, DeFi Kingdoms, Splinterlands, Polkafantasy, Avaxtars, WAXTycoon, polka pet world, Polychain Monsters, Cometh |
| Socials | Lazy, Uno Club, BitSpawn, RareRooms, Momint, Pictta, Mirror, JPG, Nifted, JRNY, Topps, VR All Art, Social NFT, POAP |
| Sports | sorare, F1 Delta Time, socios.com, DeRace, NBA Top Shot, UFC, Topps, Lympo, blockasset., NFL × Dapper Labs, Dugout Dawgz |
| Music and media | royal, Audius, biscuits n groovy, LimeWire, rocki, Melos Studio, Blockbeats, Sound, OneOf, Catalog, Sing, Facebook, Mint Songs, RCRD SHP, Spotify, NFT Tone, bitsong, Releap |

Legend: Coming soon or in exploration | Based in Canada

Sources: CoinTelegraph Research updated by BlockZero (2022), CoinDesk (2022)

# Overview of key players across dimensions (3/3)

## NFT Marketplaces

| | |
|---|---|
| Marketplace | OpenSea, BLOCKPARTY, async., POLKARARE, coinbase NFT, Rarible, GUARDIAN, kalao, VirgoCX, BINANCE NFT, NFT Top Expo, mintable.app, Genies, BakerySwap, ZORA, SuperRare, ENJIN, THETA DROP, YETI SWAP, solsea, FTX US, NFT Showroom, Artion, TOP SHOT, ebay, makersplace, SIMPLE MARKET, VIVE, institut., KNOWHERE, Decentraland, NYSE |
| Lending | Flowty, nftfi, nexo, Arcade., TOP SHOT |
| Liquidity | nft20, SuperFarm, POLKARARE, BLOCTO |
| Fractionaliza-tion | PARTY BID, unic.ly, Charged Particles, nftfy, NFTX |

**Legend**: Coming soon or in exploration; Based in Canada

*Sources: CoinTelegraph Research updated by BlockZero (2022); Dapp Radar (2022)*

# Canadian companies leading the way

Although Canada's place in the global NFT market remains relatively small, there are several Canadian companies operating or experimenting with NFTs - both tech and non tech. With a world-renowned video game industry, this is no surprise!

**Larva Labs** was founded by two Canadians, the company is mainly known for creating two of the most famous NFT projects, Cryptopunks and the Meebits collection.

**KPMG Canada** bought World of Woman NFT in February of this year, the acquisition was intended to promote the innovation that NFTs bring. KPMG also offers NFT services to its clients, such as guidance on the creation of a corporate NFT strategy[1].

**VirgoCX** is the first canadian crypto trading platform to offer NFT brokerage services. The platform operates in the same way as an Over-the-Counter (OTC) platform with the goal of providing more transparency to the NFT market[2].

**0x Society** is a Montreal-based NFT gallery, which represents the first crypto-art center in Canada. The non-profit organization focuses its work primarily on the promotion, diffusion and support of the crypto-art movement. Alongside the gallery, it also offers educational content through the 0x Academy.

**Dapper Labs** is a company that offers blockchain-based games and world-renowned digital collectibles, including CryptoKitties, NBA Top Shot and UFC Strikes.

**Ubisoft** has launched its video game platform that creates a new experience for users, using NFTs. Players can acquire Digits, which represent Ubisoft's first NFT, as in-game items[2].

*Sources: BlockZero analysis (2022),1 KPMG (2022), 2 Ubisoft Quartz (2022)*

# *NFT Use Cases in Finance*

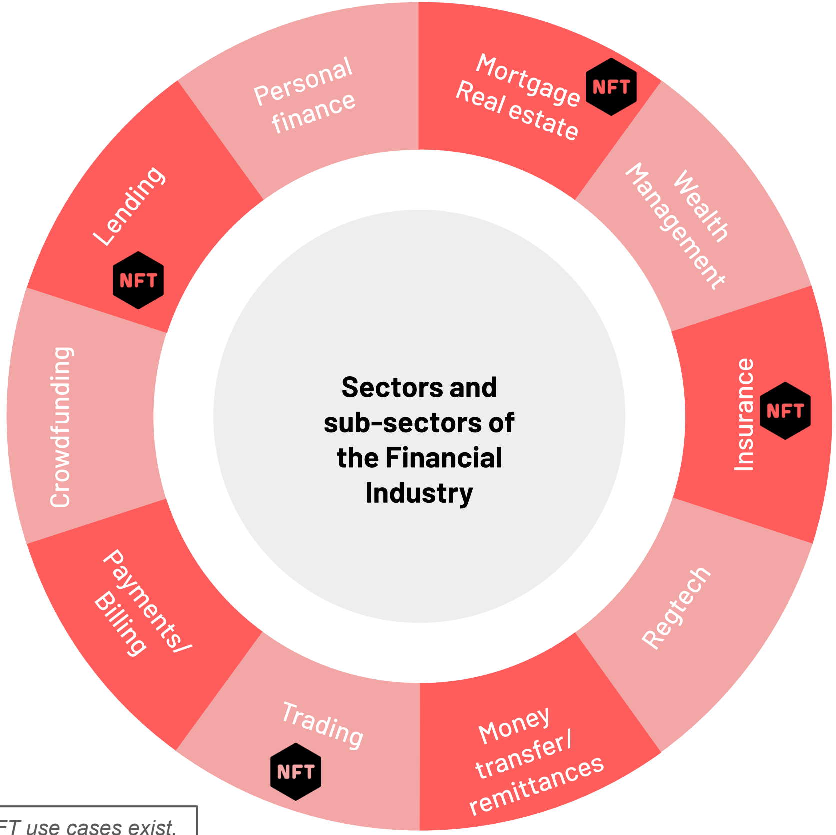
Photo by Jr Korpa on Unsplash

# Use Cases are emerging across different areas of finance

The financial industry is a large and diverse one, composed of a myriad of companies across different sectors. Yet the underlying infrastructure comprises both old and new processes and technology. The “pain points” associated with these legacy systems or processes can be mitigated with the help of several technologies, NFT being one. These pain points typically include manual and complex processes, the use of legacy systems itself, and the involvement of multiple stakeholders, to name a few.

The number of NFT use cases explored to help address these pain points is growing, with the potential to improve this industry through verification of asset ownership, real-time transactions, fraud detection optimization and more. NFTs further have the potential to democratize certain classes of assets, products, or services.

In the following pages, we explore a few of these use cases for the industry.




*Legend* NFT *Areas where NFT use cases exist, although it is evolving rapidly!*

*Source: BlockZero analysis (2022)*

# NFT Mortgage, Real Estate and Shards:

# Improving Existing Processes and Creating New Products

**NFT Mortgage:** An NFT Mortgage represents an NFT that can be **used as a collateral for a mortgage loan**. This use case facilitates the process of acquiring a home loan by allowing for **faster approval, greater flexibility for clients, and lower mortgage rates**. For example, in Canada, the average time to obtain a mortgage is about 11 to 25 days[1], while the transaction for an NFT mortgage could be only minutes[2]. In addition, the contract becomes digital and since the NFT represents a certificate of authenticity, it is possible to validate the ownership of the contract much more easily and safely. A few companies currently offer this type of product, including Bacon Protocol[3], Loansnap, and Vera.

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**NFT Real Estate**: An NFT Real estate is when a physical or digital property is registered as an NFT. One of the important setbacks in the real estate world is the transfer of property which requires a large amount of paperwork. An NFT Real estate can mitigate this setback through the **instant validation of property ownership on the blockchain**. NFT Real estate also allows the **purchase and sale of real estate in the metaverse**, which represents an emerging way of investing. Some companies are already starting to offer this kind of product. For instance, Propy is the world's first real estate NFT to be launched, which allows real-world property to be bought as an NFT[4].

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**Shard NFT:** Shard NFT is an experimental concept, also known as **fractional NFT**. This concept allows investors to own a fraction of a specific NFT, which **provides access to high-value assets for a fraction of the price in a low-cost fee structure**. Shard NFT also enables **more liquidity** to the NFT market by splitting the NFT into multiple share. Genesis Shard and ShardingDAO offer this type of financial product.

*Sources: BlockZero analysis (2022), 1 Canadian Real Estate Magazine (2021), 2 Law (2022), 3 Forbes (2022), TechCrunch (2022)*

# NFT Insurance and Lending

# Insuring the NFT; NFT as a contract or as collateral

**NFT Insurance:** An NFT insurance can be represented by two dimensions, either by **offering coverage for an NFT** or by having the **insurance contract as an NFT**. With regards to the former, between July 2021 and July 2022, over $100 million worth of NFT were reported as stolen through scams[1]. As a result, a few companies have begun offering insurance coverage for NFTs, such as Shield Coin and Coincover.

Regarding the latter, authentication of the ownership of an insurance policy typically takes an important amount of time and resources as certificates of insurance can easily be altered. When the insurance contract becomes an NFT, **authentication can be done in real time** and **the risk of fraud decreases** since all requests can be traced on the blockchain. For example, some companies like LaneAxis are looking to create NFT-based insurance, where the actual insurance document would be an NFT, thereby reducing the risk of fraudulent documents, as well as the risk of human error.

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**NFT Lending:** NFT lending allows investors to list their **NFT as a collateral**, and receive a loan form offer from other users. This allows people to **invest in the NFT market at a lower cost**, but also solve the problem of low liquidity in the NFT market. NFTfi, Pine, and JPEG'd are offering this kind of product.

*While most of the NFT use cases are still in exploration, according to a new report from KPMG and HSBC[2], NFT is the most prominent industry sub-sector, with 25% (out of a total of 6472 companies) of emerging giants in Asia Pacific identifying themselves as part of this sub-sector category. Therefore, an increase in players could come to define new use cases for different industries, including finance.*

*Sources: BlockZero analysis (2022), 1 Elliptic (2022), 2 KPMG & HSBC (2022)*

# Beyond these Use Cases: NFTs and the Metaverse

Importantly, NFTs are a pathway to the metaverse - the metaverse is widely considered by think tanks in the field to be the next iteration of the internet, which combines our physical and digital lives with an immersive experience [1,2,3] - where they represent an essential part of current transactions on marketplaces or in gaming applications[4]. Investors and users can benefit from the use of NFTs in a number of ways, by buying, staking, earning NFTs, and trading NFTs, but also by using them as an intellectual property or utility. In the metaverse, NFTs can represent a variety of things, such as loans, digital properties, clothing, among others, that can create value for consumers and businesses. As an example, in Axie Infinity, a video game, NFTs are avatars that players can collect.

## The metaverse economy of today (taken from McKinsey, 2022)[3]

- **~$55 million** Daily active users on *Roblox*
- **~$250 million** Daily trading volume of NFTs at peak
- **~$500 million** Metaverse real estate sales
- **~$10 billion** Invested by Metave into metaverse development annually
- **~$10 million** Extended Reality (XR) headsets shipped, 80% produced by Meta

## Financial services embracing the metaverse

**JP Morgan** launched a virtual lounge in the Decentraland metaverse.

**HSBC** has acquired a virtual property in the Sandbox metaverse[5].

**Citi Group** released a report on the metaverse, which could be worth $1 trillion by 2030[6].

**American Express** files several trademarks for metaverse and NFT[7].

**KPMG** has announced the opening of the first KPMG metaverse collaboration hub[8].

*Sources: BlockZero analysis (2022), 1 KPMG (2022), 2 Deloitte (2022), 3 McKinsey (2022), 4 Hackl & al (2022), 5 Blockworks (2022), 6 Citi (2022), 7 CoinDesk (2022), 8 KPMG (2022)*

# Concluding Remarks

Photo by Jr Korpa on Unsplash

# Challenges Remain before NFT Mainstream Adoption

Amidst the growing interest and adoption of NFTs, the innovation is not without limitations. Below, we present some of the main challenges to the adoption of NFTs that the industry will need to tackle for mainstream adoption to begin.

### Slow Confirmation

Since the majority of NFTs are based on the Ethereum blockchain, most transactions suffer from slow confirmation and low performance[1]. For instance, on average it can take 12 second to process a transaction on Ethereum[2].

### High Gas Price

Some blockchains, such as Ethereum, can result in a really high gas fees*, which can be more expensive than the NFT itself. For example, a simple NFT transaction between two users can cost between 60 USD to 100 USD in gas prices[1].

### Lack of Education

The correlation between awareness and ownership of NFTs is highly related, as with crypto in general, therefore lack of education could be a barrier to its adoption, and lead to scepticism around its value[3].

### Volatility of the Industry

NFTs are still highly correlated with crypto-currencies, whose volatility has been very high in recent months following several events, including the Terra crash and the Celsius bankruptcy. Therefore, the volatility of the market makes investors wary of investing in this market.

### Unclear Regulation

In most countries, there is no law that specifically or explicitly regulate NFTs, but they are usually falling under digital assets category. The lack of regulation or regulatory clarity is a key risk for investors and users, which can act to slow its adoption.

### Undiscovered Use Cases

In the financial sector and other industries, NFT use cases are still being discovered, while they are mainly concentrated in the arts and video games, we should see more and more utility use cases.

**Gas fees are the fees needed to pay to execute a transaction on a blockchain*

*Sources: BlockZero analysis (2022),1 Wang & al (2021), 2 Ethereum (2022) 3 Finder (2022), The National Law Review (2022)*

# What to consider for different stakeholders groups (1/2)

## Financial institutions

Identify potential industry pain points where digital ownership facilitate for example compliance, reduce delays, finality of transaction, certification, etc.

Review current blockchain training and internal expertise to include NFT and digital ownership into business strategy : categorization, characteristics, impact, risks, etc.

Gain perspectives from their clients (existing and future) and their interests in holding this type of asset. This step is necessary to appreciate how NFTs might impact their business.

Lack of adequate information on digital assets in general, but including NFTs, represents a key risk for clients and investors. Financial institutions can explore how to best support their clients to navigate through these new types of investment safely.

As the different governments are conducting a thorough review of existing and proposed regulations, regulatory uncertainties around expectations remain. In order to mitigate these uncertainties for their clients, organizations should ensure they are aware of current regulations and regulatory trends, including those related to NFTs. On the product side, the NFT experimentation could contribute to the development of these future regulations.



*Source: BlockZero analysis (2022)*

# What to consider for different stakeholders groups (2/2)

## Companies

NFTs can be used across all industries, whether to raise funds, monetize assets or as part of their product and service offering. It is therefore not too early for companies to start exploring how NFTs could transform their industry, and organization.

Companies should investigate the value added and benefits / revenues that could be generated from the use of NFTs against the costs and potential risks associated with them for the business, and how it could transform or be part of their operating model.

## Individuals

Individuals should learn about the risk of investing in this type of product and perform due diligence before entering the market and conduct business with an NFT provider. Credible sources of information should be consulted.

Individuals should also take the time to read the sale agreement when purchasing an NFT to ensure they actually do have ownership of the digital asset. And if not, they should be aware of the risks this might imply.



Source: BlockZero analysis (2022)

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## About BlockZero:

BlockZero is a boutique consulting firm specializing in the evolution of the financial industry through digital assets, digital currency, stablecoins and Central Bank Digital Currency (CBDC).

BlockZero advises global financial institutions, central banks, financial technology companies and companies in various sectors in the exploration, experimentation, technical implementation and rolling out of digital asset-based infrastructure.


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# Appendix

Photo by Jr Korpa on Unsplash

# Overview of Top NFT blockchains

| Blockchain | Logo | Layer | Marketplace | Transaction per second (avg) | Token standard | Popular NFT |
|---|---|---|---|---|---|---|
| Ethereum | | Layer 1 | OpenSea<br>Rarible | 15 - 30 | ERC-721<br>ERC-1155 | CryptoPunk<br>Bored Apes |
| Binance smart chain | | Layer 1 | Binance<br>BakerySwap | 55 - 60 | BEP-721 | Pancake Swap Squad<br>Mobox |
| Cardano | | Layer 1 | Spacebudz<br>CNFT.IO | 250 | CIP-25 | SpaceBudz<br>Clay Nation |
| Flows | | Layer 1 | NBA Top Shots<br>UFC Digital Coll. | Up to 1,000 | Flow NFT standard | NBA top shot |
| Solana | | Layer 1 | Magic Eden<br>Solanart | > 50K | SPL token NFT | Degenerate APE Acad.<br>Solana Monkey Buss. |
| Polygon | | Layer 2 | OpenSea<br>Aavegotchi | 10K | ERC-721<br>ERC-1155 | Zed Run<br>Aavegotchi |
| Tezos | | Layer 1 | Hic et nunc<br>Kalamint | Up to 40 | FA2<br>TZIP-12 | Hic et nunc collection<br>Rocket Monsters |

*Sources: BlockZero analysis (2022),CoinTelegraph Research (2021), Dappradar (2022)*

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