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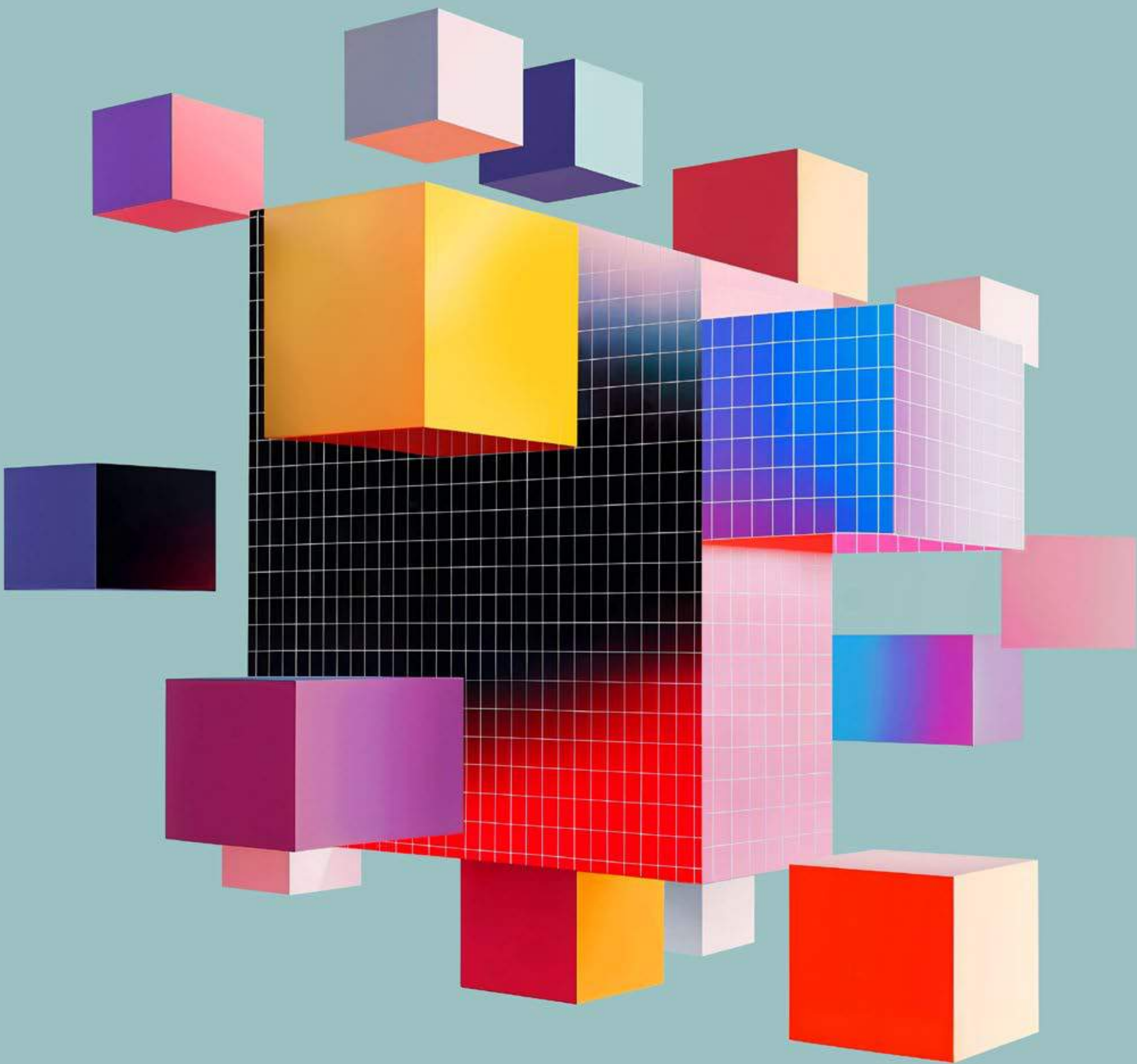
EXECUTIVE SUMMARY

Regulating NFTs

Striking the Balance between Business Innovation and Risks

INSEAD

DIGITAL CURRENCIES
Governance Group



About the document and acknowledgement

Research into the opportunities and risks of NFTs, and considerations for policymakers is based on interviews with industry and regulatory representatives across different jurisdictions.

This report, developed through a mixture of primary and secondary research, aims to explore the NFT landscape with reference to why and how regulators and lawmakers should take an interest in this industry and follow its development closely. There are strong incentives to protect consumers and to ensure that taxes are collected appropriately. Yet at the same time, it will be important for regulators and policymakers to work alongside NFT players to ensure they support and encourage entrepreneurial experiments in this space. Entrepreneurs are looking for home bases for their companies that offer certainty and stability when it comes to regulation. There is an excellent opportunity to encourage this economic activity, while ensuring that companies operate within guidelines.

We are grateful to the leading industry representatives and policy/regulatory experts that met with us to explain their perspectives over several hours of interviews. A full list of acknowledgements is included in appendix b.

About the authors

Digital Currencies Governance Group (DCGG) – a trade organisation representing digital assets issuers and service providers in both the UK and EU. Our mission is to facilitate an open dialogue and encourage communication between policymakers and digital asset experts to support the design of a sound and proportionate regulatory framework that ensures safety for all market participants.

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FAQs

What is a Non-Fungible Token (NFT)?
NFTs are relatively new types of digital assets that are designed to represent ownership of something that is unique and scarce, whether that be tokenised physical assets, rare digital resources, shares, or practically anything else. Enforced by smart contracts, NFTs cannot be replaced with another identical token and the scarcity of the NFT is provable on publicly visible blockchains.

What is a blockchain?
A blockchain is a distributed and immutable digital ledger that is responsible for recording transactions and tracking the movement of digital assets on its network. Primarily, blockchains were used to track financial assets but today, there are a growing number of use cases as the blockchain is an efficient way to store value.

What does 'non-fungible' mean?
Similar to major digital assets like bitcoin, NFTs are stored as data on a blockchain and held in NFT-compatible wallets. NFTs differ from other digital assets through a characteristic known as "non-fungibility" – which essentially means it is unique and non-interchangeable given each NFT has its own specific set of attributes that make it distinct from other tokens.

Why do NFTs have value?
Since NFTs are unique and can vary in their rarity, desirability, and utility, a market has developed around highly sought-after NFTs, where collectors and traders buy and sell NFTs with the value set by speculation, supply and demand, and other factors. Like many collectibles, the worth of a NFT is set by how much somebody is willing to pay for it.

How are NFTs being used?
The number of potential use cases for NFTs continues to grow. Popular use-cases include representing individual works of art, a form of digital art or collectibles, in-game assets, land/property ownership, brand loyalty certificates, ticketing, or in supply-chains. There are many examples that will continue to grow and develop.

What are the benefits of NFTs?
NFTs have the potential to support growth and innovation in the economy, increasing engagement between artists and fans, brands and customers, and providing/exchanging certification of ownership across a range of asset classes. This has the potential to transform a wide spectrum of sectors ranging from the carbon credit market to real estate and art.

What are the risks of NFTs?
Consumers may not fully understand the risks involved in purchasing NFTs for speculative purposes, or the related rights embedded in NFTs. Illicit actors could exploit the marketplace for money laundering purposes, or to conduct scams.

Why regulate?
Where an NFT represents a financial services activity, existing regulations are likely to apply. Specific guidance on when an NFT falls under existing regulations is important to provide regulatory clarity. Given their non-fungible nature, however, NFTs are closer to artworks and collectibles, or related to non-financial services activities where less stringent regulations should apply. The following page lists several recommendations for policymakers to consider, which are explained in more detail in chapter 6.

Policy Considerations and Recommendations

Financial services

- As a priority, regulators should focus on producing NFT-dedicated guidance on the specific characteristics that may result in the issuance, purchase, or trading of an NFT being treated as a regulated financial services activity.

- Policymakers should consider whether existing securities laws should apply to f-NFTs, or whether the development of a modified set of requirements should apply.

- The fungibility of an NFT should not be the sole determinant of whether or not financial services regulations should apply. The economic reality, utility and full suite of characteristics must be assessed on a case-by-case basis.

Non-financial services

- NFTs should not be regulated as a distinct asset class and applying financial services regulations is often inappropriate due to NFTs' non-fungible characteristics. A case-by-case approach should be adopted, aligning with rules from analogous traditional sectors.

- Governments should monitor developments and engage with NFT marketplaces to better understand the potential threats of intellectual property infringement and the role of industry self-regulation.

- Clarity should be provided on the legal status of NFTs and digital assets as a form of property.

- Governments and regulators should consider establishing an expert advisory panel to provide opinions on the application of legal and regulatory frameworks to NFTs as the technology continues to develop.

- Guidance on NFT taxation with regard to calculation methods and taxable entities should be provided to promote legal certainty.

- Governments and regulators should consider developing 'sandbox' initiatives to allow brands and issuers to experiment with new NFT technologies and applications, while also providing increased training to staff on NFT products and services.

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1

What are Non-Fungible Tokens (NFTs)?

In this section, we describe and define NFTs, explore their characteristics and categorisations and trace the mechanics of NFTs from creation to ownership.

NFTs are built on blockchain technology and involve smart contracts. Blockchain[1] is a type of shared database (also known as a distributed ledger technology) that stores information in blocks linked together across a peer-to-peer network. Decentralised blockchains are immutable – once data is entered into the block, it is irreversible. Blockchains are mostly known for cryptocurrencies such as Bitcoin. Crypto wallets[2] are essentially password managers for digital assets. They store private keys (passwords not coins) that help people use the blockchain.

Non-custodial wallets refer to all types of storage solutions where the owner is the only one who can access and control their funds. While custodial wallets are controlled by a third-party provider such as a marketplace, an exchange, broker, or a crypto bank. Hot wallets are software apps that can be downloaded to a desktop or mobile device; the private keys are stored online. Cold wallets are hardware devices that look like a USB stick that have to be attached to a computer; the private keys are stored on the device.

Description of NFTs

There is no single definition of an NFT and researchers and analysts have made different attempts at defining them. These include identifying properties such as *uniqueness and indivisibility*: "a peculiar type of token that is indivisible and unique".[3]

As a *contract* "a cryptographic[4] token issued on a blockchain associated with a 'smart contract'",[5] and "unique, digital items with blockchain-managed ownership".[6]

As *proof of ownership or representation*: "a unique digital asset stored on the blockchain[7] that serves as proof of ownership or authenticity for a digital or physical item/ right";[8] "digital assets containing unique identification codes that verify ownership",[9] and "blockchain-based records that uniquely represent pieces of media".[10]

For simplicity's sake, we will use the definition given by INSEAD's expert Professor Pavel Kireyev, who defines an NFT as **"a digital certificate of ownership"**.[11]

NFTs exist on blockchain technology and are made possible through "smart contracts". A smart contract contains the address of the issuer, the name of the token, the unique identifier of the token and the functions of the smart contract, as well as a link to the underlying file which could be stored on a storage blockchain, a centralised database, or on an open-source peer-to-peer file distribution protocol known as InterPlanetary File System (IPFS).[12]

'Non-fungible' means each NFT is distinct and cannot be replicated or replaced by another token. In this regard, an NFT is like physical objects such as a ticket to seat B23 in the stalls for the Nutcracker ballet or the painting 'The fighting Temeraire' by JMW Turner, RA. This compares to fungible things which include fiat currencies where a £5 note can be exchanged for another £5 note or cryptocurrencies, which, like NFTs, are stored on blockchain, but unlike NFTs can be exchanged on a one-to-one basis.

Technology Standards of NFTs[13]

NFTs utilise token standards supported by various blockchains such as Ethereum, Algorand, Polygon, Solana, and Tron. The largest and most established ecosystem for NFTs is Ethereum - the first blockchain that could support NFTs as it enabled the creation, storage, programming and trading of these tokens and is home to the largest exchange, OpenSea.

While the Ethereum ecosystem is decentralised, it still requires someone to set the rules and standards that define what is possible on the blockchain. The core developers created a subcategory of improvement proposals called Ethereum Request for Comments (ERC) that define the technical standards for the creation of tokens, smart contracts, applications, and wallet formats on Ethereum. All the tokens that are created must follow the standards set by these ERCs. Today, there are three standards most common on Ethereum: ERC-20, ERC-721, and ERC-1155.

ERC-20 is the token standard that allows developers to create fungible tokens, which means one unit of a token can be interchanged with any other unit of that token because they represent the same value. Given NFTs are non-fungible, they are not typically designed via this standard. As the use-cases of blockchain expanded, there was a need to tokenise and represent unique data on the blockchain. The ERC-721 standard emerged as the primary format for NFTs, which possess a unique value.

Both these token standards allow for one smart contract to support a single type of fungible or non-fungible token. This can be time consuming as it requires writing a new smart contract to deploy a new token. This led to the establishment of the ERC-1155 token standard, enabling developers to create fungible, semi-fungible, and non-fungible tokens using the same standard. It also enables multiple types of individually configurable tokens. For example, an NFT game could be developed using the ERC-1155 standard to provide the fungible in-game currency and NFTs for unique in-game assets.

Characteristics of NFTs[14]

NFTs have seven important characteristics:

1. **Non-fungibility:** the primary attribute of an NFT is its non-fungibility. This means each NFT is unique and is marked by a distinct digital signature or represents specific digital content like art or collectibles.

2. **Blockchain Foundation:** NFTs are built on blockchain technology which records and authenticates each token's details, ensuring secure and verifiable ownership.[15]

3. **Immutability:** An NFT's blockchain data is permanent and unchangeable, offering high security and trust in its authenticity and ownership.

4. **Provable scarcity:** Creators can determine the specific number of rare items versus common items by programming this into the smart contract code. This characteristic is important as it can increase the price of rare items.

5. **Ownership and Provenance:** NFTs establish a new form of digital ownership. The blockchain provides a transparent history of ownership and any associated transactions (sales or transfers), enhancing traceability.

6. **Programmability:** NFT smart contracts execute specific actions under specific conditions. This feature adds functionalities such as embedded royalties, ownership transfers and special customer-experience-enhancing features like access to 'invitation only' online or physical events.

7. **Interoperability:** Due to the standardisation of NFTs on blockchains, NFTs can be used across various platforms and applications, enhancing their utility in different virtual environments. This means they can also be traded on open marketplaces and sell in any currency.

Categorisation of NFTS

There is no commonly held taxonomy of the multiple use cases of NFTs. Some analysts have characterised speculative versus non-speculative,[16] while others have looked at NFTs tied to physical or purely digital categories.[17] Our research draws on different attempts to characterise existing use cases, but it should be noted that some NFTs cross the different categories, which adds to the difficulty in proposing an exact taxonomy:

Label	Description	Examples
Authentication	NFTs can represent digital identities or certifications, providing a secure and immutable way to verify credentials	A Breitling watch now comes with an NFT warranty
Traceability	These NFTs trace origins and history by validating, for example, a digital ID such as across a supply chain. They are often found in private blockchains	One example is to integrate an NFT into product labelling, packaging or tags for verification as the product journeys through the supply chain
Ownership	These are the most common and relate to (1) physical goods such as ownership of a luxury watch (this is linked to authentication by NFT certificate), and (2) ownership of digital 'goods', such as those found in virtual worlds and gaming.	1. Breitling's NFT warranty also proves the owner of the watch. 2. These NFTs are used to create, buy, and sell items such as armour, weapons, and characters
Royalty	Tracking ownership, management, and governance of assets with a view to managing royalty revenues in digital environments	Jacques Green, an electronic musician, minted a music track and generated $27,000 in royalties
Loyalty	NFTs used to build and reward loyalty with a brand	Starbucks' Odyssey loyalty programme offers members 'journeys' of different activities such as interactive games or fun challenges to deepen knowledge of coffee and Starbucks. Members are rewarded for completing journeys with a digital collectible 'journey stamp' (NFT)

Label	Description	Examples
Single use	These have little resale value and include NFTs that are "burned" after use	Tickets to events, single year memberships, gaming items with no secondary market value
Reusable	This is the largest NFT category and includes digital fashion, music, art, collectibles, avatars etcetera. and for art can include anything from static images to interactive 3D models	NBA Top Shot, Bored Ape Yacht Club, CryptoKitties, CryptoPunks, private club memberships, tickets that transform into additional unique experiences/content to fans beyond the physical experience of a concert or event, and album art that offers access to other content, amongst others
Perpetuals	These represent a digital location such as land in a virtual world	The Decentraland metaverse offers users the opportunity to buy land using NFTs to certify ownership
Real asset	These have an underlying physical real asset and could be listed on an NFT market. These include crowdfunding or management of real assets or fractionalizing ownership across a group	Nike's CryptoKicks – using NFTs to prove ownership of a physical shoe
Preservation	Digitising and protecting cultural artefacts, giving them immutable status on a blockchain	Any object in a museum or even an image of, for example, the great pyramid of Giza could be tokenized for preservation.

Creating, Selling, Owning and Disposing of an NFT

With the growth in NFTs, platform-based mechanisms to trade NFTs have been developed. These platforms act as marketplaces and are built on the idea that, similar to physical content, digital content can also be scarce (limited in quality) and can be meaningfully owned and traded. High profile platforms including OpenSea, Rarible, Top Shot, Nifty Gateway, SuperRare, Sorare and Blur have been launched. Using blockchain technology, they verify provenance to ensure the NFT is original and offer a range of services as storefronts and auction houses.

To verify every transaction on the blockchain, there is a 'gas' fee (akin to an admin fee) charged. Reducing or removing gas fees has become a thriving industry of its own with new protocols – such as Layer 2 protocols[20] – being launched to cope with this challenge. In addition to gas fees, marketplaces generate their revenues in three ways: commission fees, T-Bonds, subscriptions.

- Commission Fees: The most typical way is to take a commission from the seller and fees range from 2.5% on OpenSea (for NFTs created using OpenSea) to 3% on Paddle8. Rarible imposes a 1% service fee for both buyers and sellers on each transaction, while SuperRare charges a 3% marketplace fee on each SuperRare purchase.[21] Blur.io launched in October 2022 is designed to cater to professional markets and offers zero platform fees and optional royalties. Because of this, it quickly stole the leadership crown from OpenSea for NFTs by volume.[22]

- NFT T-Bonds:[23] These are smart contracts that contain fungible assets which are locked until a predetermined set of conditions are met, such as a certain date, when they are unlocked.

- Subscriptions: These are emerging as a new way for NFT marketplaces to monetize. These include listings of valuable tokens, pooled watchlists with historical returns, daily summary emails etcetera.[24]

Researchers[25] have categorised NFT marketplaces across a spectrum from **streamlined** to **augmented**. Streamlined platforms include OpenSea and Rarible, host auctions and fixed-price sales and target a wide user base. They offer users the ability to pay in cryptocurrencies and with credit cards. Augmented marketplaces are niche players with a wide range of services for creators and consumers alike. These services include minting (NFT creation), marketing, curation, pricing recommendations, portfolio trackers and even games. Sorare, for example, focuses on digital sports cards and hosts fantasy football (soccer) competitions.

Examples of Marketplace	Offers	Category of Platform	Link
OpenSea	Range of NFTs including music, movies, games, and art	Streamlined	opensea.io
Blur	Catering to professional NFT traders	Streamlined	blur.io
SuperRare	Digital art	Augmented	superrare.com
Nifty Gateway	Limited-edition NFT drops with famous brands and artists for exclusive collections	Streamlined	niftygateway.com
Rarible	Community-owned marketplace where anyone can create and sell NFTs	Streamlined	rarible.com
Paddle8	Artwork, collectibles and NFTs from both established and emerging artists	Augmented	paddle8.com
NBA Top Shot	National Basketball Association for NBA collectibles	Augmented	nbatopshot.com
Sorare	Football, NBA, Major League Baseball	Augmented	sorare.com/en-gb

Source: Selected company websites.

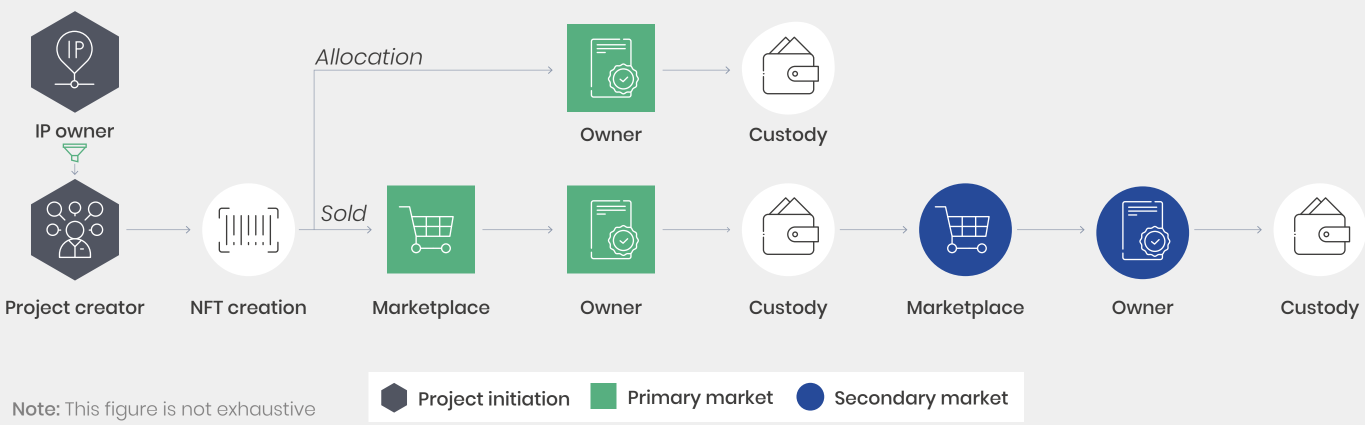
Acquiring an NFT:

The journey of an NFT starts in the mind of the creator and/or IP owner and goes through different stages from creation to either allocation to an owner directly or is sold through a marketplace. Either owners hold the NFT in their crypto wallets or they can sell it on a secondary market to other owners.

The diagram below from Bain & Company, illustrates a simple Journey of an NFT.

Figure 1 Example of an NFT journey starting with project initiation, followed by the minting process before entering the buying and selling cycle

Source: Bain & Company, adapted from the World Economic Forum



Note: This figure is not exhaustive

Creating and Selling an NFT:[26]

The creator can use any multimedia file such as a digital painting, text, audio, photo or video in digital format such as .JPEG, .PNG, .PDF, .MP3, .MP4 etcetera. The process of creating an NFT is known as "minting", which is effectively writing a digital item to the blockchain by assigning metadata to the NFT. A critical choice is the number to be created as value depends on uniqueness, particularly for collectibles. A creator must decide the number as it is programmed into the smart contract and cannot be changed once the token is minted. A creator will need a digital wallet with some cryptocurrency in it before they can create their NFT. Most people create through an existing marketplace which offers them an automatic "create" function, whereby the creator simply uploads their file, gives their NFT a name and descriptions and clicks the create button. To sell NFTs the owner can do this through a fixed price sale or an auction. The Blockchain's Distributed Ledger Technology (DLT)[27] ensures that each NFT is unique and that its ownership is securely recorded.

Destroying an NFT:

NFTs cannot actually be destroyed due to their immutability. Instead, to destroy an NFT, they can be removed from circulation by being 'burned'. This means that they are sent to an address that no one owns, known as a "black hole wallet". Essentially, while the NFT remains in existence on the blockchain, it cannot be accessed.[28]

The reasons for burning an NFT are to clean up a wallet;[29] to manipulate scarcity and therefore price or to exchange for physical products instead, which Damien Hirst did by burning the NFT representations of physical paintings;[30] to create media/consumer interest in a brand/marketplace[31] or game[32]; or to comply with a legal judgement as the SEC ordered Stoner Cats to do in 2023.[33]

2

Understanding the NFT Landscape

NFTS have developed from experiments on blockchain, through a boom and bust hype cycle, to today's landscape where they are moving towards mainstream applications. This section explores the history of NFTs and the landscape today with a showcase on Ledger, a global platform for digital assets and Web3.

History of NFTs:

Pre-History – The Early Days (2012-2016)

NFT historians point to 2012 and "coloured coins"[34] as the very first "experiment" of using Bitcoin's language to store small amounts of metadata on the blockchain that represented asset manipulation instructions. The first "NFT as a concept" is credited to artists Jennifer and Kevin McCoy who partnered with tech entrepreneur Anil Dash, to establish the provenance of a digital piece of art and sell it in its digital form. They minted "Quantum" on the Namecoin blockchain in 2014. It was largely forgotten about until 2021 when McCoy promoted it and it was sold by Sotheby's in June 2021 for over $1 million.[35] In 2015, Spells of Genesis was released as the first blockchain-based game using trading cards by EverdreamSoft on the Bitcoin blockchain.[36] In 2016, Rare Pepes emerged, a collection of digital collectible cards of illustrations of Pepe the Frog. This kickstarted the first crypto art market as some were sold on eBay.[37]

Bitcoin is still used for the storage of metadata that can be employed, for example, to authenticate luxury products as in the case of Woleet and Ulysse Nardin watches, thus overlapping with NFT uses. **"Woleet and Ulysse Nardin: Taking Blockchain to the Luxury Watch Market"**.

Creation of NFT Standards (2017-2020) or Year Zero

The first significant implementation of NFTs occurred with the launch of CryptoPunks[38] in June 2017. It grew from a project on the Ethereum blockchain by Larva Labs who created the standard ERC 20. CryptoPunks consisted of 10,000 unique pixelated collectible characters. The collection gained significant attention from investors and the public who could purchase one of the 10,000 collectibles on a blockchain marketplace using a digital wallet which made the collection more accessible.[39]

Figure 2 CryptoPunks

Source: https://www.larvalabs.com/cryptopunks.

2017 and 2018 were two defining years when the standards of ERC721 and ERC1155 were created and enabled the functionality of NFTs on the Ethereum blockchain.

CryptoKitties developed by Dapper Labs in Canada[40] is considered to be the first "mainstream" application of NFTs and launched the standard ERC 721. CryptoKitties is a blockchain-based virtual game that allows players to adopt, raise and trade virtual cats. The Generation 0 cats were sold in a Dutch Auction which was pioneering for blockchain.[41] Other blockchain technological developments that were created for the game included an on-chain breeding algorithm inside a closed-source smart contract and randomness of breeding. It became so popular that it caused congestion on the Ethereum network, which was too slow to process the transactions. The popularity of CryptoKitties suggested both a potential market demand for NFTs in this space and the need for scaling solutions for NFTs to manage demand.

Such was their popularity that other developers created their own applications on top of it including accessories "KittyHats" and "Kitty Race" where the cats could race each other to win ETH.

Figure 3 CryptoKitties

Source: https://guide.cryptokitties.co/guide/types-of-cats/exclusive-cats

2017 also saw the first platform marketplaces specialising in buying/selling NFTs[42] such as Opensea.io. OpenSea offers users the ability to create NFTs. It operates an NFT secondary market for sellers either at a fixed price, best price or top-down auction. Similarly founded in 2017 and launched in 2018 is SuperRare, a social network for the art world. Other art market based platforms followed including Rarible and Async.art (2019), Nifty Gateway, Artblocks and Foundation.app (2020) and Hic and Nunc (2021).

Play-to-earn game "Axie Infinity"[43] was launched in 2018, offering a new model to NFT consumers. In 2020 a virtual world called "Decentraland"[44] was launched. a virtual world where players could buy plots of land and associated accessories, construct buildings etcetera, all done by building NFTs.

The breakthrough for NFTs began in earnest in 2020, when the US's leading Basketball Association, the NBA, partnered with Dapper Labs to create NBA Top Shot. These NFTs featured basketball video clips, similar to conventional sports trading cards. The average sale price of an NBA Top Shot peaked at $181.81 in March 2021. Brands including Hublot, Louis Vuitton, Lamborghini, Ulysse Nardin, Burberry, Franck Muller, Balenciaga, ba&sh, and Nike also started to explore NFTs (see chapter 3 for more details).

It is considered that the COVID-19 pandemic and lockdowns had a role in boosting consumer interest in NFTs.[45] The shift from physical activities to the internet and working-from-home rather than commuting gave people additional time to explore digital worlds and more disposable income to invest into crypto currencies. The increase in awareness of NFTs was also influenced by celebrities posting about them on various social media platforms where discussions about NFTs were prevalent.

Explosive Growth, Scams & the Bubble Bursts (2021-2022)

March 2021 was a busy month for NFTs. Major headlines were made around the world when digital art NFT "Everydays: The First 5,000 days", a collage of 5,062 vector works by Beeple sold for $69.3 million at Christie's. It was the first sale of digital artwork offered by a high-profile auction house. This pivotal event significantly raised the profile of NFTs globally into the public consciousness.[46] That month US rock band Kings of Leon was the first major band to release an album as an NFT, in partnership with YellowHeart, they offered concert perks and audiovisual art. 18 "golden tickets" were minted containing unique art 12 of which were placed in a vault with six auctioned. Twitter co-founder, Jack Dorsey, sold an NFT image of his first tweet for $2.9 million in an auction. He donated the proceeds to charity.[47]

Figure 4 Everydays: The First 5,000 days by Beeple

Source: https://en.wikipedia.org/wiki/Everydays:_the_First_5000_Days#/media/File:Everydays_the_First_5000_Days.jpg.

Figure 5 Bored Ape #8817

Source: https://blockgeeks.com/5-most-expensive-bored-ape-yacht-club-nfts/

Another set of 10,000 NFT collectibles known as the Bored Ape Yacht Club (BAYC) by Yuga Labs launched in April 2021. Each ape had distinctive traits and characteristics. These NFTs are not only collectibles but also grant membership to an exclusive club, offering access to special events. Unlike other NFTs, owners of these tokens have full rights to use their ape in any project they choose, including music, TV, books, films, and other media.

Ape owners often use their ape as an Avatar, and they have become a cultural phenomenon in the NFT community. The collection is considered as a prominent, and one of the most profitable examples of NFTs.[48] Bored ape #8817 was sold for $3.41 million.[49] Scarcity, high demand, celebrity endorsements and community engagement drove up demand for BAYC NFTs, creating rapidly growing price inflation.

In June 2021, CryptoPunks were in the news when Sotheby's sold NFT no. 7523, the only CryptoPunk with a surgical mask, was sold for $11.8 million.[50] In December 2021, "The Merge" by artist Pak sold for $91.8 million through online auction platform Nifty Gateway.[51]

Throughout 2021 consumer brands across the spectrum from FMCG, luxury goods, media and entertainment started issuing NFTs. Typically, these NFTs were linked to real products or art renderings, as well as warranties. Some brands launched NFT games (see chapter 3 for more details).

The NFT bubble is considered to have begun in January 2022 when trading volumes reached $17.6 billion (a 21,000% increase over 2021), with the numbers of buyers increasing by nearly 3,000% and sellers by 3,700%.[52] Yet the price inflation for NFTs was not sustainable. In April 2022, Reuters reported signs of an NFT "crash"[53] but it was only in September 2022 that the bubble burst and trading volumes fell by 97%. Three reasons were suggested to have caused the fall in value: price decline alongside trading volumes; lack of long-term value; and a decline in public interest.[54]

The NFT marketplace also suffered from scammers looking to exploit naïve buyers by hyping up prices using social media and then disappearing. A 'rug pull'[55] is a scam promotion of a crypto token on social media that creates excitement and inflates the price. At a certain point, the scammer sells and the price drops, often to zero. One of the more notorious rug pulls took place in October 2021. Leveraging off the Bored Apes Yacht Club, the developer "Evil Ape" minted 10,000 "Evolved Apes" which were supposed to be part of a blockchain game. Evil Ape disappeared after selling the NFTs leaving buyers with worthless .JPEGs and no game. The scammer earned about 798 ETH, approximately $2.7 million.
In January 2022, the Big Daddy Ape Club organised collectors to mint "Big Daddy Ape Club" NFTs except no NFTs were minted. The scammers made off with 9,136 SOL (Solana blockchain currency) equal to $1.3 million of collectors' money. The NFT drop had been "verified" by Civic, a verification company. Other rug pulls include Mercenary (2021) which scammed $760,000, Blockverse which scammed 793 ETH ($1.9 million) and Frosties (2022) ($1.1 million scammed). Two men were later arrested by the FBI for the Frosties scam.

Celebrities were not immune to scammers, Ozzy Osborne announced an NFT collection in January 2021, "CryptoBatz". These were a series of 9,666 digital bats and gained wide media coverage and were promoted on Twitter. When CryptoBatz changed its URL, the old URL was not deleted, nor were tweets pointing to the old URL. Scammers realised and promoted the old URL, tricking would-be purchasers into revealing their private keys and then draining their wallets.[56] The prevalence of scammers and the apparent ease of scamming naïve users, have added to calls for greater consumer protection.

There was also a case of insider trading. Nate Chastain, OpenSea's head of product, resigned after using insider knowledge about which NFTs would be featured on OpenSea's homepage, by purchasing them cheaply in advance and selling them at higher prices once they were listed. He was convicted and sentenced to three months imprisonment. Chastain was previously convicted at trial of wire fraud and money laundering.[57]

NFT Marketplaces and Today's Landscape

After the 2022 bubble burst, 2023 saw a significant market decline in NFT trading, although a range of companies, sports clubs, and media and entertainment companies continued to enter the NFT marketplace, likely as part of increasing use of digital channel marketing strategies to raise brand awareness and build fan bases and consumer loyalty (see Chapter 3 for more details).

Towards the end of Q4, the broader cryptocurrency market enjoyed a more positive outlook and the NFT market started to follow with increased trading volumes.[58] However, between October and November, there were quite a lot of fluctuations in price, with the average NFT price dropping by 42% to approximately $150 in November.[59] Notably, there were fewer buyers than sellers active in the market, suggesting supply outstripping demand.[60] Collectibles continued to dominate albeit with a slight dip, while art NFTs benefitted from a remark by Elon Musk about some NFTs not being on blockchain[61] which allegedly sparked increased NFT trading. At the same time, Utility NFTs, linked to passes offering exclusive access, became increasingly popular, such as Art on Internet offered by the Red Bull Velocity Pass.[62]

Analysts following the market suggest that the outlook for 2024 is that NFTs will evolve beyond collectibles with utility NFTs expanding in popularity. These more dynamic NFTs encourage and allow consumers and fans to engage more closely with the underlying brand or offering[63] and may thus be more attractive to consumers and fans alike.

Case study:
Ledger Bringing Security to NFT Owners and Brands

Amidst the scamming and security issues, Ledger is trying to bring greater security and knowledge to both users and brands.

Ledger (www.ledger.com), was created in 2014 to support consumers to store and manage their digital assets (crypt currencies and NFTs) securely. The company focuses on developing a variety of products and services to enable both individuals and companies to securely buy, store, swap and manage their digital assets. The company is known for its hardware wallets and has sold about 6 million to date. Hardware wallets offer greater protection as the key is stored on the wallet rather than online.

Leveraging its reputation for security, Ledger provides a user-friendly platform where users can securely manage their digital assets, including NFTs. This is supported by a Live marketplace app. The company partnered with Tag Heuer and NFT projects such as RTFKT and DeadFellaz for the marketplace.

Ledger's hardware wallets integrate seamlessly with the NFT marketplace. This attracts newbies and experienced users. In 2022, Ledger marketplace was the world's first secure-mint which enabled "clear signing" of transactions rather than "blind signing". Clear signing offers users greater transparency. They can view all transaction details, preventing common scams such as phishing.

The company has formed strategic partnerships with artists, creators and other marketplaces, which has helped Ledger to expand its offerings and visibility in the NFT community. These include Hublot, Fendi, and Grant Yun.

As well as offering secure hardware devices and a marketplace, Ledger has developed an educational tool so that anyone who wishes to enter the digital asset marketplace can develop their knowledge. The company believes that with the freedom of digital sovereignty, financial liberty, decentralisation and ownership through crypto currencies and NFT – the Web3.0 world, also comes the great responsibility of security awareness, self-custody, and asset management. Increasingly, as we noted earlier, there is an increasing number of scams and hacks that individual crypto investors and NFT holders should also be aware of to avoid them as much as possible. Through its products and services, the company seeks to educate consumers about how to protect themselves in the Web3.0 world. It launched Ledger Quest – a gamified, fun and engaging way to learn about Web3.0 and how to protect users from scams and hacks.

Figure 6 Quest categories

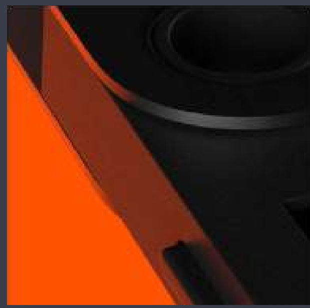
Source: Ledger documents.

Partner quests

Branded quests, exclusive to partner brands. Designed and co-created to provide the highest quality of onoarding experience and rewards.

Community quests

Community owned quests, exclusive to token holders. Designed to provide creators with the tech and content they need to educate and reward their community members



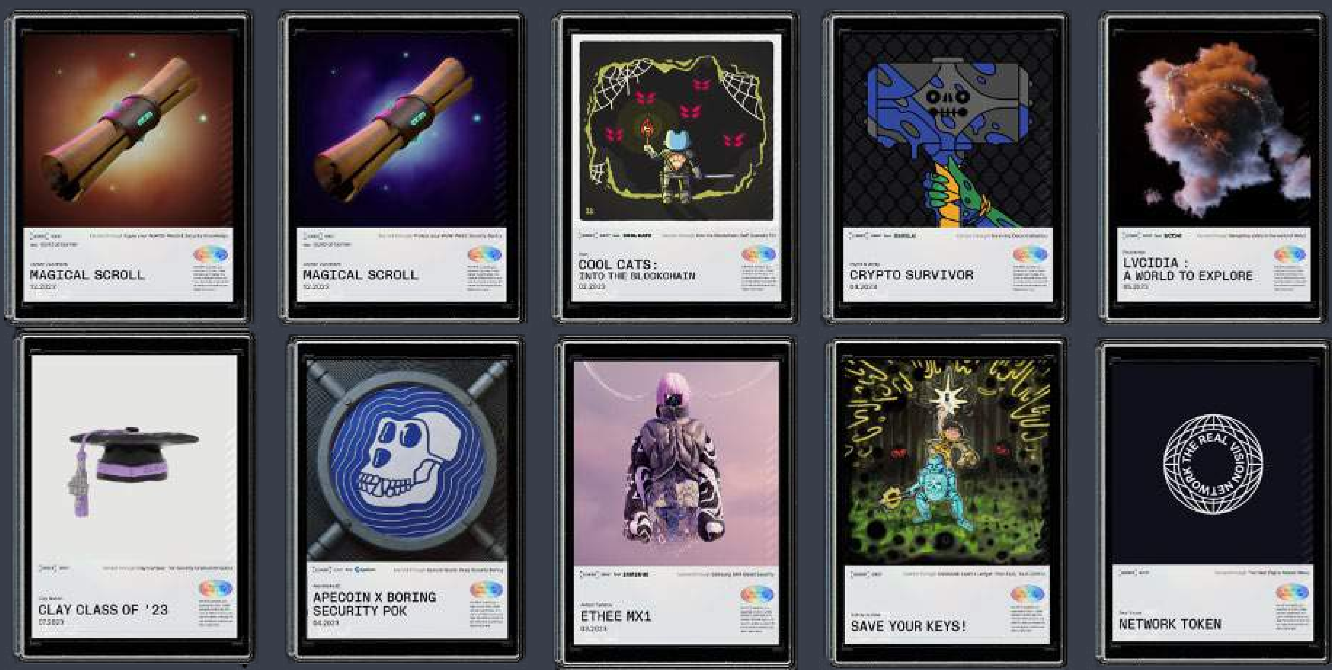
Academy quests

Ledger ecosystem quests. Accessible to the broader Web3 community. Designed to educate people on related products and services

Through a series of 'quests', developed as time-bound quizzes, users educate themselves to win NFT proof of knowledge rewards while learning about how to create and invest in NFTs responsibly. When each quest is successfully completed, users are given an NFT "Proof of Knowledge", as shown in the graphic.

Figure 7 POK NFT design (examples)

Source: Ledger documents.



3

Utility of NFTs

NFTs have been issued for many different uses. In this section we explore two main uses – NFTs used for activism and NFTs used by brands across different industries with a focus on luxury goods/art world, FMCG/food, retail, entertainment, and sports.

NFTs & Activism[64]

As a global, decentralised platform, NFTs are increasingly being used for social and political activism. Artists, in particular, have been dropping NFT collections with proceeds then being donated back to charities.

Members of the Russian feminist protest punk rock group, Pussy Riot, are also using NFTs for activism. In March 2021 they launched "PANIC ATTACK" and in September that year "ACAB"; 333 NFTpieces on Open Sea via SuperRare. The collection featured a piece titled "Virgin Mary, Please Become a Feminist". Proceeds were used for feminist activism. Collectors received additional perks such as free tickets to their concerts. Similarly, "Women Rise" is a collection by Maliha Abidi, activist and artist who aims to empower women and advocates for social justice. The collection is 10,000 pieces of randomly generated NFT art pieces representing women worldwide who have supported gender equality, girls' education, and mental health in marginalised societies. The proceeds were donated to the Malala Fund charity for girls' education. The Women in Innovation Fund, co-founded by Reckitt, invests women-led healthcare startups in Africa using NFT sale proceeds.

In April 2021, US whistleblower, Edward Snowden auctioned "Stay Free" which raised over $5.4 million, which was donated to the Freedom of the Press Foundation to further their cause. Black Lives Matter hosted an NFT digital art fair of black creators.

Conservation firm PLCnetworks and carbon credit exchange Coorest, partnered to tokenize real animals at game reserves and privately owned conservation parks in Africa. Collectors can own an "elephaNFT" or a "lioNFT". The NFTs provide monthly "proof-of-life" verification of the animal. 70% of the funds raised from the NFTs go the reserve/conservation area. Ukraine DAO raised $8 million in two days from the sale of an NFT of the Ukrainian flag in 2022.

Celebrities also used NFTs for charitable funding, including Kate Moss and Cara Delevingne for female empowerment. Jack Dorsey, co-founder and former CEO of Twitter, sold an NFT of his first tweet for $2.9 million and donated the proceeds to Covid-19 relief.[65]

Brands Entering the NFT Marketplace

Despite the boom and bust over collectibles, brands continue to enter and be active in the NFT market, particularly luxury goods companies.[66] This section looks at the brands and the types of activities that they are engaging in through NFTs. We spotlight five industries in particular: Luxury goods/art world, FMCG/food, retail, entertainment, and sports.

There are compelling business reasons for brands to enter the NFT market. We can see two distinct but linked drivers for brands and their customers: (1) for the **technological functionalities** that are inherent to NFTs, and (2) as part of a brand's **marketing/customer engagement strategy**. We explore both drivers and end with a summary of some of the major brand NFT activities across the five different industries.

NFT Technology Functionality for Brands and Consumers

Here, we can see three main use cases for NFTs:

Traceability: Being able to trace the provenance of raw materials is particularly helpful to a brand, for example, with regards to ESG reporting. This may be the more utilitarian use of NFTs, but it could be a useful functionality to enhance a brand's supply chain activities and as evidence to support their ESG reporting.[67]

Proof of ownership: NFTs offer proof of ownership that can be linked to warranties for repairs. Often warranties come as slips of paper or require customers to register online through a website as an additional step in the purchasing process. These are not ideal as warranty cards get lost or customers forget to register. When a product does need repairing, often it is unclear as to who the owner needs to contact, particularly for a luxury product. In 2016, to alleviate the frictions around warranties and provide proof of ownership, Woleet, a French digital notary solution using blockchain, teamed up with Ulysse Nardin. Together, they offered customers blockchain-based certificates of ownership for their Ulysse Nardin watches. These are not NFTs per se but illustrate the functionality of blockchain.

INSEAD case study:
Woleet and Ulysse Nardin: Taking Blockchain to the Luxury Watch Market

In 2022, luxury watch brand Breitling enhanced its customer experience of purchasing by creating a digital passport that includes proof of ownership and warranty support and gives full transparency over the sourcing of raw materials. Breitling partnered with Arianee, a Web3.0 company that offers its customers digital product passports, membership and loyalty tokens and utility collectibles.

Authentication: Many brands suffer from counterfeiting of their products. The US Patent and Trademark Office estimates global counterfeit goods total around $1.7-4.5 trillion each year.[68] Being able to authenticate that a product is genuine by creating a digital twin, will be helpful not only in reducing criminal activity but also to give a brand's customers peace of mind.[69] For example, LVMH announced in 2019 that it would be launching its own blockchain (with smart contracts - NFTs) to authenticate and trace origins of materials for its brand Louis Vuitton and Parfums Christian Dior.[70] The plan was to extend this to LVMH's circa 60 other luxury brands.

Authentication offers a further functionality enhancement: proof of authenticity for secondary market sales. Should a customer decide to sell the product on, their buyer will also benefit from an NFT authenticating that the product is genuine. In 2020, for example, French fashion brand, ba&sh integrated a resale solution supported by Arianee's blockchain in partnership with second-hand platform, Reflaunt. On the brand's French website, a "resell" button was located next to items listed on a customer's online account. Clicking the button created a digital certificate for the item, enabling it to be listed on various resale marketplaces with the identification certificate transferred to the new owner, ensuring authenticity of the product. For more details see INSEAD case study **"Creating Value with Blockchain & NFTs: Arianee leading the transition to Web3.0 with digital product passports"**. Similarly, Italian watchmaker Panerai announced it would include an NFT digital passport along with every watch purchase after October 2023, with the passport being transferrable to the next owner in the event of resale.[71]

INSEAD case study:
Creating Value with Blockchain & NFTs: Arianee Leading the Transition to Web 3.0 with Digital Product Passports

Brands Using of NFTs as Part of Their Marketing/Customer Engagement Strategy

Beyond the technological aspects, the strongest driver to use NFTs for many brands is for brand building and enhancement purposes. We can see both advantages for brands but also for consumers.

Advantages for consumers from branded NFTs:

1. **Exclusive access and additional content:** many brands are offering utility NFTs where only holders of these NFTs can access this content or experience. Anheuser-Busch, for example, hosted a physical event offering free beer, tours and performances through NFTs.[72] Tiffany & Co launched its NFTiff collection for holders of CryptoPunk NFTs only. Tiffany's exclusive opportunity enabled holders to purchase a pendant of diamonds and gemstones for 30 ETH per piece.[73] Turner Prize winning artist, Damien Hirst, used NFTs as digital copies of physical artworks created by his assistants and sold for $2,000 each. Buyers had a year to decide whether to trade the NFT for the physical artwork and burn the NFT or to burn the physical artwork and keep the NFT version. INSEAD case **"Damien Hirst: From Sharks to NFTs and the Luxurification of the Art World"** explores Hirst's entry into the NFT marketplace.

INSEAD case study:
Damien Hirst: From Sharks to NFTs and the Luxurification of the Art World

2. **Ownership and value appreciation:** consumers benefit through ownership of a digital asset with an expectation that it might appreciate, although as we witnessed with the CryptoKitties bubble, this is not guaranteed.

3. **Social and community engagement:** NFTs can offer consumers the experience of being part of a community of like-minded people and/or making a positive societal impact through their brand choices. Social Impact examples include Taco Bell which partnered with Rarible in 2021 to mint 25 digital art pieces – "transformative taco". The owner of each NFT received a $500 Taco Bell gift card to spend at any location. Taco Bell donated all the proceeds to the *Live Más Scholarship*. While toilet paper brand Charmin partnered with Rarible to mint NFTP (Non-fungible Toilet Paper) to support the Direct Relief Charity.

From a community-building perspective, sports fans are passionate about supporting their clubs and collecting merchandise such as team outfits and trading cards. Moving into the digital world, several sports teams and clubs have offered their fans NFTs. The Dallas Mavericks, for example, issued NFTs to game attendees building a sense of community while attracting them to come to the game. The Sorare platform is a blockchain NFT gaming platform that offers fans of football (soccer), basketball (NBA), and baseball (MLB) the opportunity to play fantasy leagues. Fans buy cards at auctions, trading them on a secondary market, and can win cards as prizes in tournaments. INSEAD's case on Sorare traces how the founders, fans of physical collectible football cards themselves, built Sorare and now partner with major clubs across the world.

INSEAD case study:
Sorare: Bringing Fantasy Sports into the Metaverse with NFTs and Blockchain Technology

Advantages for Brands offering NFTs:

Most brand NFTs originally focused on image, video or audio collectibles but increasingly they are using utility NFTs to build relationships and increase loyalty with their customers through customer engagement strategies. Brands' Utility NFTs offer not just a digital representation but give users access to special events and additional offerings/experiences. These integrate the physical and digital worlds to create new "phygital" (physical and digital) experiences and ownership.

1. **New marketing channels and influencer marketing:** the internet has expanded the number of channels that brands can exploit to market. NFTs are a further channel in the digital world. GenZ and Millennials are very much at home in the digital world active in the metaverse or through gaming, others follow influencers on Instagram and TikTok. Younger generations who follow influencers, in particular, have a strong interest in the brands promoted by the influencer they follow.[74] Thus, they may have high awareness of certain brands, even if they do not have the spending power of older generations (this applies particularly to GenZ). Some brands who traditionally appeal to older generations are considering how to entice younger audiences by partnering with brands and characters who have high recognition with this demographic. For example, Christian Louboutin partnered with Marvel to use NFTs to modernise its brand image and appeal to younger generations. Consumers purchase the shoes and accessories and are given NFTs as a bonus.[75]

2. Balmain partnered with Mattel to create 50 Barbie and Ken dolls styled in Balmain and accompanied with NFTs of Barbie avatars for consumers to own a digital part of the collection. While younger generations may not have the purchasing power of their parents, owning a digital collectible of a sneaker or handbag could be one step towards physical ownership later and planting seeds for brand loyalty. Balmain has two NFT collections featuring sneakers from its physical collection. Balmain's Creative Director, Olivier Rousteing is a pioneer on social media and has transformed Balmain into a fashion powerhouse thanks to his stylistic and digital acumen. He has the largest number of Instagram followers of any designer (9.9 million). INSEAD case study "**Olivier Rousteing at Balmain: From Instagram to NFTs, Digital Leadership in Style**" explores Rousteing's use of social media and NFTs to promote the Balmain brand.

INSEAD case study:
Olivier Rousteing at Balmain: From Instagram to NFTs, Digital Leadership in Style

3. **Audience engagement, building loyalty and brand awareness:** there is intense competition amongst brands fighting for share of consumer attention and to build brand loyalty. It is becoming harder to keep the attention of consumers who are also likely to shift to other brands if their loyalty is not sufficiently rewarded with new offerings and experiences.[76] Brands are looking to utilise NFTs to offer new ways to engage audiences both existing and new consumers with something different and special. American rock band Kings of Leon launched an NFT album with access to exclusive experiences, for example. Starbucks created a seasonal hype for its pumpkin spiced latte by launching "Pumpkin Spice Latte" NFT digital stamps through its Odyssey loyalty programme. Retailer, Macy's, offered free NFTs to promote its events. While Amazon is preparing to launch NFTs tied to real world assets.[77] Entertainment companies such as Warner Brothers, Marvel, Paramount and Netflix have all offered NFTs relating to their movies and/or TV shows and characters to keep viewers interested beyond the transmission of the movie/TV show. Luxury goods companies, they have extensive connections to celebrities and can offer NFTs that give access to exclusive events or collaborations with celebrities and artists to elevate their brand experiences.[78]

4. **Data collection and market insights:** similar to other digital channels, NFTs offer brands the opportunity

for data collection and market insights. Starbucks, for example, uses its Odyssey loyalty programme to track customer preferences and behaviours.[79]

5. **Generating revenues:** ultimately brands are looking for new sources of revenue to drive growth. For brands in the NFT space, NFTs are another initiative in their digital growth strategy toolkit. There are numerous examples of brands generating revenues from dropping NFT collections. Dolce & Gabbana, for example, sold their Collezione Genesi NFT of nine unique NFTs for $5.7 million, while Gucci auctioned its Aria project for $25,000.[80] Tiffany generated $4.76 million in royalties from NFT sales.[81] Nike generated $185 million in revenues through various NFT collections. Additionally, Nike's NFT collectible business resulted in $91.2 million in royalties. NBA Top Shot (National Basketball Association) amassed more than $1 billion in revenue through its collection of digital NFT cards.[82]

NFTs are still a nascent channel for brands but as both brands and consumers are looking for new ways to engage with each other, it is likely that NFTs will continue to play a role in many brands' digital channel strategies.

The following tables provide an inexhaustive selection of NFT activities across different industries.

Luxury goods – embracing art, authenticity and ownership

Year	NFT	Details
2016	Damien Hirst	"The Currency" art collection
2018	Hublot	Hublot Loves Art series with Maxime Buchi
	Vacheron Constantin	Announces it will use NFT to authenticate and track its watches
2019	Lamborghini	NFT game "Lambo Run" with Salesforce blockchain
	Louis Vuitton	Announces it will use NFTs to authenticate and track luxury goods
	Ulysse Nardin	NFT warranty certificate for all new purchases
2020	Burberry	NFT art project "Burberry Blanket" with digital artist Danny Sangra
	Franck Muller	NFT watch "Free the Bid"
	Balenciaga	NFT art project "Afterworld, the Age of Tomorrow"
	ba&sh	Resale certificate of product authenticity
2021	Gucci	NFT art project "Aria di Libertà"
	Dolce & Gabbana	NFT art project
	Louis Vuitton	NFT game in partnership with Beeple
	Givenchy	NFT collectibles to celebrate Pride Month
	Jimmy Choo	NFT sneaker auction and mystery boxes
	Karl Lagerfeld	Holders could mint one of 777 digital avatars of Lagerfeld
	Balmain	Vogue Singapore Flame Dress

Year	NFT	Details
2022	Balmain	Barbie avatars in partnership with Mattel
	Tiffany & Co	NFTiff collection dedicated to CryptoPunk holders only – a pendant of diamonds and gemstones for 30 ETH per piece
	Breitling	Digital warranties
	Lacoste	Genesis Pass NFTs – golden tickets to a virtual universe; NFTs for product drops and ownership certificates
	Hublot	Hublot Loves Art series with Takashi Murakami
2022	Prada	Time Capsule NFTs claimed after buying physical merchandise
	Yves Saint Laurent	10,000 YSL Beauty Golden Blocks NFTs that open the door to the brand's Web3 community
	Louis Vuitton	PFP NFT Collection limited edition for players of Louis: The Game Web3 experience and levelled up
	Salvatore Ferragamo	Celebrating its new store in Soho, New York, visitors could customise and mint unique NFTs with costs covered by the brand
	Burberry	Blankos Block Party NFT collection & social space
2023	Balmain	Unicorn digital sneakers with VIP experiences
	Louis Vuitton	Collection of "Treasure Trunks"

Source: https://heni.com/nft/more-info/the-currency; https://www.hublot.com/en-gb/news/hublot-launches-two-nfts-takashi-murakami; https://www.voguebusiness.com/technology/louis-vuitton-to-sell-euro39000-nfts; https://www.nftculture.com/newsletter/10-luxury-brands-embracing-nfts/; https://www.burberryplc.com/news/brand/2022/burberry-x-blankos-block-party--new-nft-collection-and-social-sp; https://nftevening.com/luxury-fashion-brands-nft/; https://presslounge.vacheron-constantin.com/vacheron-constantin-certifies-its-entire-range-of-watches-using-blockchain-technology/; https://nft.lamborghini.com/TheEpicRoadTrip; https://www.youtube.com/watch?v=YHoWhKha4r4; https://www.voguebusiness.com/technology/balmain-releases-first-phygital-unicorn-sneaker-collection; https://vogue.sg/balmain-nft/; https://www.breitling.com/gb-en/blockchain/; https://www.forbes.com/sites/stephaniehirschmiller/2023/06/29/lacoste-reveals-the-next-phase-of-its-nft-undw3-loyalty-program-and-its-got-bite/; https://www.coindesk.com/markets/2019/03/26/louis-vuitton-owner-lvmh-is-launching-a-blockchain-to-track-luxury-goods/.

FMCG & Food – increasingly moving into NFTs to build customer loyalty and support charitable work

Year	NFT	Details
2019	NIKE	Files blockchain patent for product authenticity, launches CryptoKicks, NFT-based customizable sneakers
2021	Taco Bell	NFT collection including real-world digital gift cards
	P&G	5-piece collection on Rarible, proceeds to charity Direct Relief
	Coca-Cola	Collection inspired by its history and culture
	Burger King	Reward programme "Keep it Real"
	McDonalds	Set of NFTs to celebrate McRib and promote Shanghai restaurant opening
	Budweiser	Collection of 1936 unique digital beer cans
	Adidas	Tokens for real world merchandise in collaboration with Gmoney, Bored Ape Yacht Club and PUNKS Club
	L'Oréal	Collection to showcase gender issues in the digital space
2022	Puma	4 cat-themed projects
	GAP	NFT hoodies
	MAC	Collection to raise funds for its NGO MAC Viva Gam Fund
	Evian	20 NFTs with creator Sara Shakeel for Somerset House Young Talent Fund
	Wendy's	Collection based on menu
	Unilever	NFTs to raise awareness of inclusivity in the metaverse
	Stella Artois	Limited edition packages to sponsor horse racing
	Starbucks	Loyalty programme redeems for experiences and discounts
	Nike	19,000 bundles of digital and physical Cryptokicks iRLs – Nike Trillium Lace Engine holders had priority access to purchase four limited editions of the iconic trainers
2023	Starbucks	"First Store" collection
	Flyfish Club	NFT-holders-only restaurant in New York. The NFT grands holders unlimited access to a private dining room in an iconic location

Sources: multiple websites https://nftnyc.medium.com/nikes-dec-2019-patent-reveals-revolutionary-nft-use-a74c115bd0c; https://www.theverge.com/2021/3/8/22319868/taco-bell-nfts-gif-tacos-sell; https://news.pg.com/news-releases/news-details/2021/Charmin-Rolls-Out-First-Ever-NFTP/default.aspx; https://www.coca-colacompany.com/media-center/coca-cola--masterpiece--collection-fetches-more-than--500-000-in; https://olympus-assets.com/nft-campaign-from-burger-king/; https://insidebitcoins.com/news/mcdonalds-nft-mcrib; https://medium.com/@kcginsburg_69345/budweiser-shakes-up-the-collectibles-game-with-nfts-a-behind-the-s-33ec1ca01f50; https://www.adidas.co.uk/metaverse; https://www.lorealparisusa.com/nft-art; https://nftplazas.com/super-puma-nft/; https://www.gapinc.com/en-us/articles/2022/01/gap-launches-gamified-collectible-nft-experience-t; https://consensys.io/solutions/nft-experiences/mac-viva-glam; https://www.forbes.com/sites/stephaniehirschmiller/2022/04/04/evian-x-sara-shakeel-nfts-minted-on-tezos-blockchain/; https://blog.cryptoflies.com/wendys-is-set-to-enter-the-metaverse-with-wendyverse-featuring-virtual-foods-drinks-and-restaurants/; https://www.unilever.com/news/news-search/2022/unilever-and-the-metaverse-navigating-the-new-virtual-world/; https://www.lovethework.com/work-awards/campaigns/racing-in-the-life-artois-758849; https://stories.starbucks.com/press/2022/starbucks-brewing-revolutionary-web3-experience-for-its-starbucks-rewards-members/; https://nftnow.com/news/nike-x-rtfkt-just-unveiled-their-cryptokicks-smart-footwear-line/; https://www.niftygateway.com/collections/starbucks-odyssey-the-first-store; https://www.flyfishclub.com/.

Retail – particularly ecommerce and major brands entering the marketplace

Year	NFT	Details
2021	Alibaba Group	Marketplace for artists' IP
	Walmart	Trademarks for future metaverse trading
2022	Selfridges	Virtual store in Decentraland
	CVS	Trademarks to set up virtual health clinic
	Majid Al Futtaim	Digital wallet infrastructure
	Harvey Nichols	Virtual display for NFT pieces for purchase on-site
	Shopify	Enables NFT trading
	Ebay	Own NFT collection and marketplace
	Macy's	Free NFTs to promote its events
	Home Depot	Trademarks in preparation for NFTs
	IKEA	Property care initiative through NFTs
2023	Amazon	Preparing launch of NFTs tied to real world assets

Sources: https://thetokenizer.io/2021/08/18/alibaba-launches-its-nft-marketplace-to-trade-intellectual-property/; https://www.cnbc.com/2022/01/16/walmart-is-quietly-preparing-to-enter-the-metaverse.html; https://themediaverse.com/selfridges-launches-first-metaverse-department-store-in-decentraland/; https://www.coindesk.com/business/2022/03/04/cvs-eyes-metaverse-with-4-nft-related-trademarks/; https://www.edgemiddleeast.com/emergent-tech/majid-al-futtaim-launches-digital-wallet-in-mena; https://hypebeast.com/2022/4/harvey-nichols-launches-blue-chip-nft-retail-space; https://www.shopify.com/tokengated-commerce; https://investors.ebayinc.com/investor-news/press-release-details/2022/eBay-Acquires-Leading-NFT-Marketplace-KnownOrigin/default.aspx; https://www.macys.com/social/macys-parade-nft-2022/?p=winnerAnnouncement; https://nftplazas.com/the-home-depot-files-for-web3-trademarks/; https://nftlately.com/ikeas-space10-links-nfts-to-irl-furniture-to-encourage-better-care/; https://blockworks.co/news/amazon-nfts-real-world-assets-token.

Sports – used both by clubs and players

Year	NFT	Details
2020	NBA	Top Shop collectibles
2021	Green Park	Mixing gaming with sports
	MLB	Collections with Candy Digital
	LaLiga	Partnership with Sorare – fantasy sports game that includes NFT collectables to represent real players
	McLaren Racing F1 Team	NFT platform with Tezos
	Dallas Mavericks	NFT rewards to game attendees
2022	Australian Open	NFTs to capture real time actions
	Liverpool Football Club	NFTs for fan engagement
	Autograph	NFTs to enable athletes to sell autographed NFT collectables
	Paris St Germain FC	Collection of players in new kits
	FC Barcelona	First NFT sells for $693,000 at Sotheby's in New York
	Lionel Messi	Collection based on career with Argentina's national team
2023	UK's Premier League	Partnership with Sorare

Sources: https://nbatopshot.com/; https://nft.greenparksports.com/; https://www.candy.com/mlb; https://laligagolazos.com/; https://www.mclaren.com/racing/formula-1/; https://www.mavs.com/nft-faq/; https://www.pwc.ch/en/insights/regulation/australian-open-metaverse-nfts.html; https://www.liverpoolfc.com/news/reds-launch-lfc-heroes-club-first-digital-collectibles; https://autograph.io/; https://en.psg.fr/advancedsearch?query=NFT; https://www.sothebys.com/en/digital-catalogues/fc-barcelona; https://ethernity.io/collection/lionel-messi-man-of-the-past; https://www.reuters.com/technology/premier-league-signs-nft-deal-with-softbank-backed-sorare-2023-01-30/.

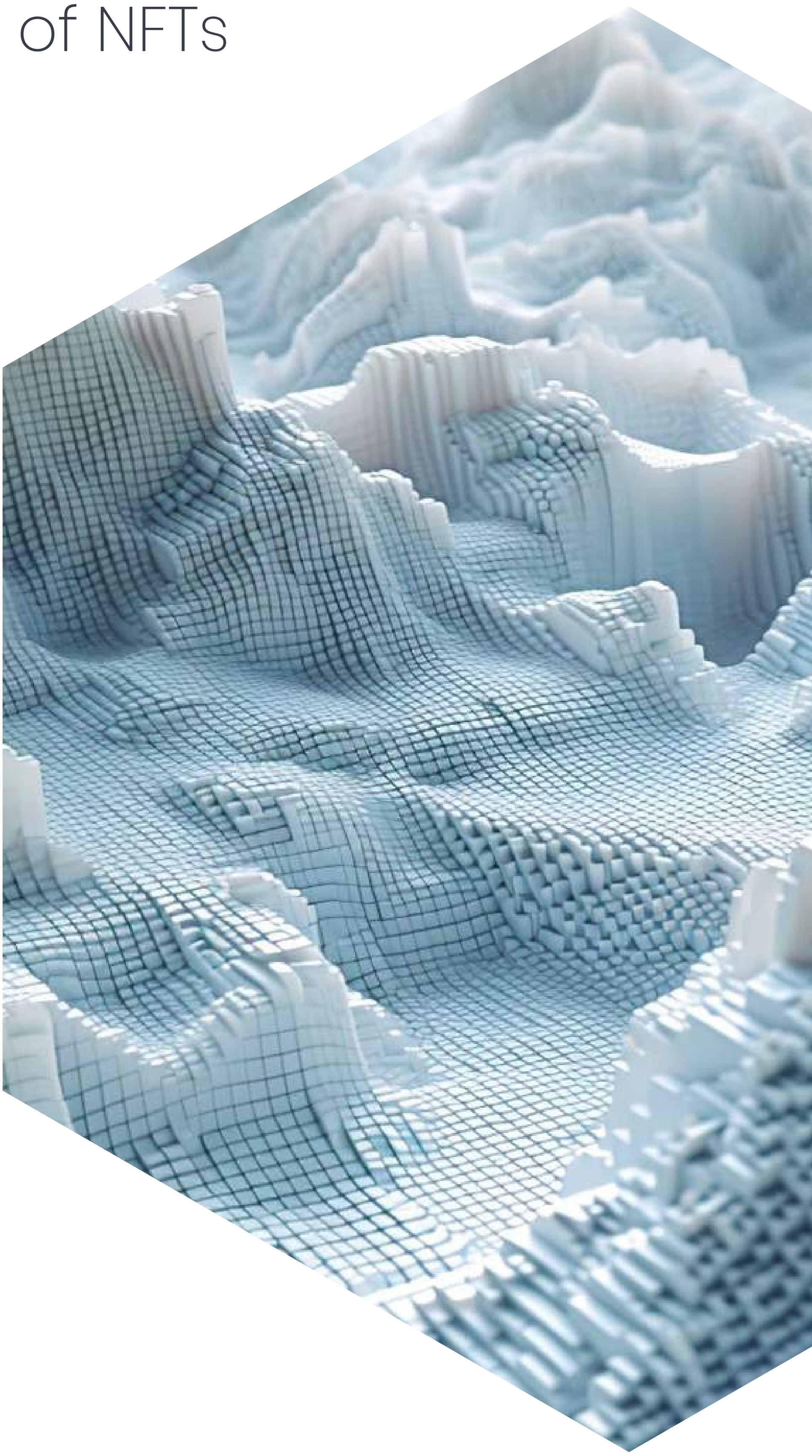
Media & Entertainment – increasing interest in NFTs

Year	NFT	Details
2021	3LAU	NFT album with 33 unique NFTs
	Kings of Leon	NFT album with access to exclusive experiences
	Warner Bros	Collection based on movie Space Jam
	New York Times	Announces Kevin Roose column NFT auction for charity
	Rave Family Block Fest	First NFT virtual music festival
	Paramount	Collectables based on TV shows with Recur
	Marvel	Collectables based on characters
	Cannes Film Festival	Zero Contact released as an NFT
2022	Disney	NFT collection with VeVe
	Royal	Marketplace for buying/selling percentages of songs as NFTs for future royalties
	Netflix	Minigame for Stranger Things season with NFTs as rewards
	Dead of Winter	Production funded by 10 pieces of digital artwork
	Coachella music festival	NFT collection that granted customers lifetime festival passes, unlock exclusive on-site experiences or redeem physical items

Sources: https://nft.3lau.com/#/auction; https://www.rollingstone.com/pro/news/kings-of-leon-when-you-see-yourself-album-nft-crypto-1135192/; https://variety.com/2021/digital/news/space-jam-new-legacy-nft-lebron-james-1235016220/; https://www.nytimes.com/2021/03/26/technology/nft-sale.html; https://variety.com/2020/music/news/rave-family-block-fest-minecraft-what-went-wrong-1234709680/; https://www.startrek.com/en-un/news/first-nft-collection-from-paramount-global-and-recur-partnership-to-drop-with-star-trek-on; https://www.marvel.com/articles/gear/first-ever-marvel-digital-comic-collectibles-nft-veve; https://nftplazas.com/pplpleasr-producer-pass-nfts-cannes-film-festival/; https://www.veve.me/; https://royal.io/; https://hypebeast.com/2022/7/netflix-stranger-things-nft-candy-digital; https://opensea.io/collection/ff3-the-dead-of-winter; https://www.forbes.com/sites/bernardmarr/2022/02/17/how-the-coachella-music-festival-is-using-nfts-and-blockchain/.

4

Mapping the Risks and Opportunities of NFTs



Understanding and balancing opportunities for economic growth whilst managing critical associated risks will be key for the future development of the NFT space. This section explores some of the present and possible risks and opportunities that NFTs may pose across different marketplaces. As new applications emerge, there is potential for even more to develop. Therefore, continuous interaction and cooperation among regulators, businesses, and consumers are essential to ensure that proper safeguards are established.

Opportunities

As NFT adoption continues to grow, it is important to observe the emerging opportunities of NFTs for fostering innovation, economic growth and benefitting society at large across several key areas.

Strengthening and disrupting the real economy

Straying away from the narrative of "a solution in search of a problem" often associated with emerging products in the digital assets space, NFTs have the potential to substantially strengthen the real economy and add value to existing utility in various industries.

One such area is the ***carbon market*** and carbon credits as part of global efforts for offsetting greenhouse gas (GHG) emissions and meeting climate objectives. Carbon credits are permits that enable public and private entities to produce an amount of carbon emissions up to a certain cap that can afterwards be traded if that cap is not reached. This promotes capital flows to environmentally-friendly projects around the world. Yet, in the real economy, from an administrative standpoint, carbon credit sales are long and costly processes that involve a high level of due diligence and multi-party participation, and could be vulnerable to fraudulent or manipulative practices like replication.

To address this gap, market players have kickstarted initiatives for minting or purchasing carbon credits as NFTs to enable the benefit of uniqueness and trust within carbon credit sales, reducing risks of duplication and promoting transparency. NFTs in this context allow for the visualisation of necessary data, as well as the record of movement through the value chain, in a matter of seconds, thus alleviating the burden of prolonged bureaucratic procedures and bolstering the overall efficiency of the process.

Another sector that is benefitting from NFT adoption is ***real estate***. In 2022, a Florida home became[83] the first in the U.S. to be auctioned off as an NFT, selling for more than US$650,000. The transfer of home ownership via an NFT offers numerous efficiencies, including fractionalization (which could still guarantee utility rights), reduced settlement times, automated compliance, data transparency, and reduced initial capital requirements and broader investor base, when considering it as a speculative asset. Jurisdictions, such as the UAE, are beginning to explore methods to encourage real estate tokenization given the importance of the real estate sector to their respective economies. Real estate may also exist in digital formats, with land sales on different metaverses also increasing as an activity.

Another significant advantage of embracing NFTs lies in its promotion of ***democratisation and opening up new opportunities for artists and collectors***, with NFT artwork serving as a notable example. In the conventional non-digital art realm, investing in artwork has historically posed limitations and high costs for the average individual, creating formidable barriers to entry. Contrastingly, the NFT space allows for the fractionalization of artwork, enabling consumers to acquire small fractions of an art piece at a more affordable price. This not only broadens investment opportunities but also facilitates the commercialization of artistic works, fostering liquidity in the market.

The democratisation extends beyond the buyer's realm to benefit artists as well. Within the NFT ecosystem, artists gain a more democratised platform to sell their artwork and receive royalties, a feat often challenging in the traditional art market. Additionally, it serves as a conduit for bolstering the legitimacy of digital artists and emerging creators, affording them a more efficient and open avenue to monetize their creative endeavours. In essence, NFTs contribute to a more inclusive and accessible landscape, both for art enthusiasts seeking investment opportunities and for artists striving for recognition and fair compensation in the digital age.

Proof of Ownership

The immutability and transparency inherent in NFTs, as facilitated by blockchain technology, empower individuals to establish unequivocal ownership of digital assets, services, or knowledge. This capability was previously unattainable without reliance on centralised platforms. The transparent record of ownership not only safeguards against unauthorised use but also protects users from potential exploitation by third parties. Traditional scenarios often see ordinary users receiving no compensation for their digital activities, while third-party platforms profit from user data. NFTs, however, provide a mechanism to validate user activity, ensuring fair compensation for contributions and safeguarding intellectual property.

Authenticity

The unique and immutable nature of NFTs facilitates the authentication of assets, products, and individuals, offering significant value to consumers who prioritise provenance. NFTs can also serve as unforgeable identifiers for individuals on the internet, representing their identity on the blockchain. This inherent authenticity verification promotes more confident consumption and is particularly valuable in industries where the genuineness of goods is paramount, such as the art and collectibles market. In these contexts, NFTs establish a verifiable and immutable record of ownership, provenance, and authenticity, thereby enhancing asset value and protecting against counterfeiting or fraud.

Transparency

NFTs contribute to transparency and economic security by providing a clear and transparent record of all transactions and interactions associated with a specific asset. This transparency surpasses what traditional, centralised marketplaces can offer, helping to reduce fraud and manipulation and fostering increased trust in the market. Moreover, the transparency of NFTs enables consumers to easily track and comprehend the history of their digital assets or purchases, breaking down silos of central control in traditional marketplaces. Overall, the use of NFTs provides legal certainty and security for consumers, empowering them to transact and consume confidently in the digital realm.

Promoting new forms of activism

NFTs have created a new avenue for activism and charitable funding for various causes in the digital domain - from social causes to ongoing conflicts as discussed in Chapter 3.

Fostering community-building

As outlined in Chapter 3, another key benefit of NFTs is that they have the ability of enhancing the connection between businesses and consumers, offering unique engagement opportunities for fans and customers with brands, and fostering loyalty and community. NFTs promote a better and more holistic understanding of a brand's consumers, which in turn informs the improvement of the offering of a relevant good or service.

Risks

Market Volatility

Volatility is observed in all crypto markets, with regular 'mini-crashes', recoveries, booms, and price corrections. Some consumers may not fully understand the risks involved in investing in NFTs and the potential outcome for a market crash. A recent study from DappGambl examined NFT market movements and considerations for downturns. An analysis of over 73,000 NFT collections demonstrated[84] that 95% of them (69,795 collections) have a market value of 0 ETH, essentially making these collections worthless, which was attributed to a surplus of supply over demand. Careful due diligence of propositions and understanding of the market would be necessary, beyond initial hype, for consumers to make informed investments to mitigate the risks emerging from these crashes, particularly price fluctuations or loss of value.

Market volatility could also be a by-product of technological risks. In particular, smart contracts and underlying Blockchains could exhibit vulnerabilities or be exposed to malicious cybersecurity attacks. These can be more prominent in the case of inefficient or nonexistent auditing processes of the smart contract code or the general infrastructure. On this end, technological vulnerabilities can negatively impact the value, accessibility or overall security of an NFT, which may lead to increased market fluctuations. Yet, it is worth noting that these technological risks are commonplace in any emerging and fast evolving market, as such transparency and education to promote consumer awareness are a necessity.

Money Laundering

Illicit actors could exploit the anonymity and lack of harmonised AML measures within the NFT ecosystem to facilitate money laundering and terrorist financing, for example by using layering techniques to obscure the source of funds and reduce traceability. Considerations regarding money laundering and terrorist financing in NFTs have already been indicated by international standard-setting bodies such as the Financial Action Task Force (FATF), which we explain in more detail in the next chapter.

To address money laundering risk, companies operating within the NFT market should be empowered to make use of the transparency and traceability of Blockchains to build structures to swiftly detect and track suspicious transactions to tackle illicit activity. Blockchain analytics tools can be important for tracing such transactions and mitigating those risks.

NFTs conferring ownership rights to digital artwork typically do not fall under the current AML regulations applicable to high-value art dealers, which predominantly cover physical artworks such as paintings and sculptures. Since NFTs represent ownership, whether of a digital or physical asset, it is reasonable, from a policy standpoint, for consumers to enjoy similar protections as they would in transactions involving tangible assets. Nevertheless, the effectiveness and scope of these consumer safeguards in the context of NFTs remain uncertain. A thorough, independent analysis of existing consumer protections is essential to determine whether legislative adjustments are necessary, encompassing considerations such as the sufficiency of current financial services regulations.

Scams

Illicit actors may also take advantage of the anonymity characterising Blockchain technology, and by association NFTs, as incumbent traditional sectors are already subject to strict regulatory frameworks. Due to its novelty and, at the same time, rapid growth, NFT marketplaces may not have the capabilities to enforce mature or sufficiently consumer protection mechanisms, which gives rise to broader regulatory concerns.

We explore the most prominent practices and potential risk scenarios that individuals and businesses should be mindful of in relation to NFTs below:

- **Wash trading**: Artificially inflating the price of an NFT. This type of fraud is usually done by the issuer or seller with the objective to create a misleading appearance of high demand, usually through transactions from wallets under their control (selling, buying and reselling), to increase the monetary value and popularity of the NFT when seen by the end-user.

- **Rug pulling:** A type of fraud that occurs when creators advertise the sale (usually as yielding returns) of an NFT to attract investment, and after garnering funds from consumers from initial sales, prematurely close off or intentionally deflate the value of the project, resulting in investors losing funds or ending up with NFTs that hold minimal or no value at all. As discussed in Chapter 2.

- **Market speculation**: Speculative practices in the NFT market (the holding, buying or selling of an NFT to affect price movements with the objective of making future profit) may give rise to high price volatility and significant losses for investors due to potentially erratic fluctuations.

- **Insider trading**: As with traditional sectors, NFT marketplaces can be prone to insider trading, which implies the use of privileged non-public information by individuals to use or trade that information to facilitate making investment decisions that allow for unfair advantage in profit-making over the rest of the marketplace users. This is more likely to occur in the absence of stricter rules or policies that prohibit such insider trading. In August 2023, a former product manager at the largest NFT marketplace to date - OpenSea - was sentenced[85] in the U.S. to three months in prison for buying NFTs prior to those being listed on the platform, which was recorded as the first case of insider trading in the sector.

Misleading Information

Misleading information about potential gains from investing in NFTs poses a significant risk, as advertisers and influencers targeting vulnerable individuals could exacerbate the potential harms. Protecting consumers from deceptive practices, false advertising, and inflated narratives surrounding the value of NFTs is important. Misleading claims and advertisements that unscrupulously guarantee specific values or returns should be mitigated through regulatory oversight, fostering a more informed and secure environment for participants in the NFT market. Advertising rules typically exist across different markets, although it is important for the various regulatory agencies to invest resources in monitoring and educational initiatives to promote a well-informed marketplace.

Intellectual Property

Related to the above, consumers need to be better informed about what they are purchasing and what they can do with their NFT, without infringing the rights of the platform of NFT creator. Systems for IP protection are not well developed for two major reasons: (1) existing IP laws in national contexts are not well-adapted to the realities of NFTs and (2) the global nature of the industry makes it challenging to harmonise IP protections across borders. In September 2023, the UK's Digital, Culture, Media and Sport (DCMS) Committee highlighted[86] the major points in relation to potential IP challenges in the NFT space, which dissected the scale of risk observed in the market and specific creator and investor concerns. The considerations are outlined below:

- **Copyright infringement**: The unauthorised issuance ("minting") of copyrighted works. Copyright holders cannot benefit from "notice and takedown" procedures, as infringed material could easily reappear considering the digital domain context. In principle, as outlined[87] in evidence provided to the DCMS Committee, minting an NFT from an existing creative work without the explicit permission of the creator would constitute a breach of copyright, but clear guidelines for IP protection are lacking. In practice, there is currently limited clarity on whether the creator of the underlying work or the person who minted the NFT holds the copyright to it; legal protection could at this stage be seeked on a case law basis, however there has not been sufficient evidence to inform strong legal principles on the issue.

- **Lack of consumer certainty over the ownership of the underlying asset**: The level of clarity over ownership of the underlying asset is currently seen as weak, causing confusion for investors. Buyers of NFTs often misunderstand that buying an NFT constitutes the transfer of the copyright attached to it as well, which is not the case unless the creator specifically specifies that within the smart contract or another agreement that is deemed legitimate in legal terms. Thus, it appears not initially clear for investors as to how to distinguish between the ownership of the certificate of the artwork (the NFT bought) and the ownership of the underlying copyright. Further resales down the line could strip the initial creator from compensation stemming from royalties. Customers should therefore be properly informed as a risk mitigation measure.

In traditional creative industries, it is commonplace that, at base level, IP rights can be assigned or transferred through affirmative actions by creators in writing and through signature to hold legal weight. In the context of NFTs, this can be achieved through embedding the right to IP protection within smart contracts, however it is not a harmonised or standardised practice. Moreover, it is not clear whether all smart contracts can be programmable to satisfy these objectives and prevent IP infringement. Therefore, the transfer of rights might not be as easily facilitated in the Blockchain context and operational challenges can arise.

As the NFT market grows, these principles, operational structures and practices could become more refined, but at this stage, it is important that individuals that mint an NFT, as well as buyers, understand that in principle the copyright of the artwork is not transferred by default, and specific agreements tailored to the Blockchain context are necessary in order to prevent IP infringements. Potentially, a self-regulatory organisation or code of practice setting minimum standards that includes better transparency and education of their collaborators. Terms and conditions for collaboration should be deemed unreasonable and therefore unenforceable. Instead, collaborators should require independent legal advice before signing a contract which gives away their rights to their work.

Energy Consumption

The emergence of NFTs presented concerns regarding the ecological impact of the underlying Blockchains (primarily the Ethereum blockchain in the case of NFTs), and the way the existence of NFTs further exacerbates the issue of rising carbon footprint of the issuance of digital assets as a whole. Yet, since Ethereum's "Merge" of September 2022, the new proof-of-stake consensus mechanism, the energy intensity and consumption of the Ethereum blockchain, and by association NFTs, has been significantly reduced.

Drawing the line

The adoption of NFTs and their spread across multiple industries can bring significant benefits to society and meet various consumer demands. At this stage, new use-cases are being continuously shaped, which carries certain risks from an operational, marketing or ownership standpoint. Yet, it seems that the majority of these risks can be attributed to the nascent nature of the sector, where specific safeguards, either from the industry or the regulatory side, to tackle these risks are still being developed. In this case, incumbent actors and products benefit from long-standing practices and regulatory frameworks to address similar risks to consumers, and the novelty of the NFT sector allows for establishing ways to deal with such risks in a way that is aligned with the realities of the ecosystem. We discuss this issue more in-depth in the next section of this report. Overall, when these challenges are addressed and the specific opportunities of NFTs are leveraged, this ecosystem has the potential to usher in continuous economic growth, inclusivity and positive change in the way people interact with the digital and physical domains.

5

NFT Regulation

Key regulatory considerations
and global perspectives

The Task for Regulators:

The rapid adoption of emerging technologies like NFTs presents a unique challenge for policymakers: crafting and adapting suitable regulations that safeguard both consumer interests and business innovation. Navigating this dynamic landscape demands regulatory agility, adaptability, and a deep understanding of the intricacies and applications of digital assets and their underlying tech.

A crucial aspect of this is the ongoing debate around NFT regulation. As discussed earlier, NFTs function as an agnostic infrastructure, establishing provenance and uniqueness of assets. Therefore, any regulatory framework must avoid conflating NFTs as a specific asset class or associating them solely with speculative cryptoassets. However, while most NFTs, e.g., digital collectibles, artwork or tickets, do not have a financial nature, some tokens marketed as NFTs may more closely resemble financial instruments. Scrutinising the characteristics and function of each NFT is crucial to determine if existing regulations apply or new ones are needed.

A primary concern is identifying when an NFT crosses the line into a financial services activity, triggering stricter authorization requirements. Debates surrounding fungibility and token purpose significantly influence how regulators interpret applicable rules. Financial services, or bespoke cryptoasset regulations, are more likely to apply when a large class of NFTs that are largely indistinguishable from each other are minted and traded as a financial services instrument with no price differentiation between the different tokens.

Beyond the question of financial services activity, additional discussions surround the potential need for bespoke regulations for non-financial NFTs. These discussions could consider investor protection and market integrity frameworks to safeguard consumers from risks like wash trading, market manipulation, and transparency issues, as raised by one interviewee. These debates might gain more prominence during periods of high NFT market volatility or if concerns emerge around intellectual property, copyright, or ownership rights.

Regulatory Perceptions:

Unlike fungible assets, which are readily marketable, NFT sales depend on their utility and unique value, generally resembling non-financial products such as digital collectibles or artwork more than financial instruments. This consensus emerged consistently during our interviews, where the distinct nature and utility of NFTs was emphasised in comparison to traditional instruments or other tradeable cryptoassets. Supporting this, the UK's HM Treasury stated in a consultation on future cryptoassets regulation:

> **NFTs are more akin to digital collectibles and artwork than a financial services product. So, in the same way the sale of art is not regulated as a financial services activity, the government considers that in general activities in connection with NFTs are not appropriate for regulation as a financial service.**[88]

The EU's Markets in Crypto-Assets (MiCA) regime further strengthens this perspective by explicitly excluding NFTs due to their unique value and non-interchangeability. The Monetary Authority of Singapore (MAS) echoes this stance, considering NFTs a non-priority and currently outside their scope beyond existing Payment Services and Securities laws. As an interviewee mentioned, companies can easily obtain legal opinions in Singapore to clarify if their NFTs fall under digital payment token definitions and avoid unnecessary regulation, demonstrating in a manner the ambiguity involved in assessing the application of existing rules to NFTs and the role of legal professionals in the marketplace.

The UAE, with its diverse virtual asset regulatory regimes, also leans towards light-touch regulation for NFTs, following the logic that regulation is generally determined by NFTs real-world application and may be deemed an investment or payment token if used for such purposes (e.g., if the NFT is popular on financial services markets it closely resembles a financial instrument). The Dubai Virtual Assets Regulatory Authority (VARA) recently mandated that NFT marketplaces acquire a Virtual Assets Exchange and/or Broker-Dealer Licence, and NFT issuers need a VARA Licence or approval. VARA retains flexibility to adapt their approach and has been praised for its engagement and understanding of the cryptoasset market.

As VARA is the only bespoke regulator for virtual assets, other jurisdictions must rely on traditional financial services regulators to assess and apply financial services rules that may apply to NFTs. Considering this widespread perspective and the economic reality that NFTs rarely serve payment purposes, truly non-fungible tokens are unlikely to be captured by financial services or current crypto-specific regulations. The focus then shifts to determining whether an NFT resembles an investment contract or regulated activity. This requires a nuanced assessment of its utility and characteristics, with fungibility being a key factor under existing and proposed financial services regulatory frameworks.

One policymaker summarised: "Many regulatory elements can be explored, but the financial aspect is not a priority as financial regulation always comes last." Nevertheless, financial services regulations are strict and costly, so understanding when existing rules or new cryptoassets frameworks apply to NFTs is paramount. The French financial regulator, the Autorité des marchés financiers (AMF), acknowledges this difficulty, summarising a view consistently shared with us that NFTs do not easily fit into existing definitions, prompting them to analyse each NFT's characteristics to determine applicable regulations. The general perception correctly remains that NFTs are unlikely to be used for financial services, although the possibility that an NFT that provides rights to a financial asset or operates in a similar way to a financial instrument ought to be subject to very different regulation. This requires a case-by-case approach where the characteristics of that token are the determining factor.

A Case-by-Case Approach:

The Financial Action Task Force (FATF) sets standards for the prevention of money laundering and terrorist financing, providing authorities with the power to investigate based on the frameworks of their respective jurisdictions. Many of the regulators we spoke with highlighted the importance of these regulations in developing rules as they apply to NFTs.

The FATF stated in their 2021 'Updated Guidance for a Risk Based Approach: Virtual Assets and Virtual Asset Service Providers':

> **NFTs are generally not considered to be Virtual Assets (VAs) under the FATF definition. However, it is important to consider the nature of the NFT and its function in practice and not what terminology or marketing terms are used […] Some NFTs that on their face do not appear to constitute VAs may fall under the VA definition if they are to be used for payment or investment purposes in practice. Other NFTs are digital representations of other financial assets already covered by the FATF Standards […] Countries should therefore consider the application of the FATF Standards to NFTs on a case-by-case basis.**[89]

The FATF guidance resonates with national regulators, highlighting that most NFTs likely fall outside the scope of traditional financial services regulations. This perspective was confirmed in our interview with the Malta Financial Services Authority (MFSA). They explained that truly non-fungible NFTs pose limited risks in financial markets and are unlikely to be used for payment or investment. **Technical terms should be well understood by regulators such that the different classes or subsets of NFTs are not conflated or confused.** It is also important to consider whether the activities are genuinely the same, particularly as Decentralised Finance business models continue to test the boundaries.

NFTs may not be regulated based solely on their non-fungible characteristics, which has the potential to create an unclear regime and create inconsistencies with outcomes-based approaches towards regulation given an NFT may provide rights to an underlying regulated activity. In this scenario, an NFT may more closely resemble a security token subject to regulatory oversight. Regulatory guidance is important, and by examining individual aspects like fungibility, transparency, and ownership rights, a clearer understanding emerges, enabling a tailored regulatory approach for each NFT.

Bespoke Regulations - MiCA:

Globally, regulators are navigating the challenge of integrating crypto into existing frameworks or creating entirely new ones. The EU's Markets in Cryptoassets (MiCA) Regulation ((EU) 2023/1114) exemplifies a bespoke approach specifically designed for cryptoassets not covered by current financial regulations. MiCA focuses on transparency, disclosure, authorization, and transaction supervision for those involved in issuing, trading, and providing cryptoasset services, with a focus on transparency, disclosure, authorization, and transaction supervision.

Interestingly, MiCA deliberately excludes truly unique and non-fungible tokens like digital art and collectibles. However, a crucial caveat was added later – NFTs that can be fractionalized, belong to large series, or represent fungible assets are excluded from the exemption due to their potential financial services use. This focus on futureproofing is further evident in MiCA's requirement for the European Commission to present a report on latest crypto asset developments by late 2024. This report, as our interviewees explained, will encompass topics like:

- Appropriate regulatory treatment of NFTs and marketplaces.
- Defining the boundary between financial and non-financial NFT use-cases.
- Assessing Anti-Money Laundering (AML) protections for the NFT sector.

The findings of this report could potentially inform future revisions of MiCA, known as MiCA II.

It is important to note that despite MiCA's existence, EU member states still have the legal freedom to implement stricter regulations. In late 2023, the French National Assembly voted in favour of a law[90] aiming to secure and regulate the digital space, otherwise called the "Sorare Act". This new development marks a step towards the establishment of a regulatory framework dedicated to games integrating NFTs and monetisation models, creating a new category of games under French Law bringing in new requirements such as an identity check and prohibition on social media promotions to minors. This move was met with positivity from the industry in separating Web3 gaming platforms from gambling. France is one of the first jurisdictions to create a specific regime for companies using NFTs as part of their games with an objective to provide certainty to the industry.

Financial Services Regulations:

In the absence of dedicated NFT or crypto-specific legislation, stakeholders in the NFT space find themselves obligated to evaluate their projects within the frameworks of existing financial regulations, which may be updated to include other cryptoasset activities. This process often involves scrutinising the rights associated with NFTs to determine their regulatory status within a specific country, leveraging guidance from national regulators or governments.

The UK stands out for integrating qualifying cryptoassets into existing financial services regulation. This move aims to place cryptoassets on an equitable footing with other financial services activities. At present, an NFT could be regulated if it amounts to:

- "**Specified Investments**": under the Financial Services and Markets Act 2000 (Regulated Activities) Order 2001 (which will include additional cryptoasset activities in the future).
- **Financial Instruments**: under the Markets in Financial Instruments Directive (MiFID) if the tokens amount to 'financial instruments'.
- **E-money**: Under the Electronic Money Regulations 2011 (EMRs) if the tokens amount to e-money.
- **Payment Services**: Within the scope of the Payment Services Regulations 2017 (PSRs).

In the UK, alignment with MiFID II activities means that if an NFT meets the definition of a financial instrument then it will also fall within the UK's regulatory regime. Similar to the UK, Singapore's MAS provides guidelines on digital token offerings based on existing laws like the Securities and Futures Act 2001. However, NFTs are generally considered exempt due to their non-fungible nature, unless sold within financial services markets.

Financial services regulations lack global harmonisation. MiFID II, for example, leaves the definition of a financial instrument open to interpretation by EU member states, potentially leading to regulatory arbitrage and challenges for firms operating across borders. **Collaboration between regulators, bilaterally and with international organisations, is crucial to establish clear guidelines for NFT marketplaces.**

The U.S. takes a fragmented approach, with different regulations across states and several bills under development in Congress. While collaboration between federal and state regulators is expected to increase, much of the debate remains around whether an NFT or cryptoasset constitutes a security under the Securities and Exchange Commission (SEC). The U.S. Supreme Court's Howey Test serves as the basis for this determination, a process in place since 1946. An investment contract, and therefore a security, must meet four conditions:

- Investment of money
- Common enterprise
- Reasonable expectation of profits
- Profits primarily derived from the efforts of others

Applying this test to cryptoassets has sparked significant debate and uncertainty given its broad nature. The SEC has also begun taking enforcement action against NFT projects classified as investment contracts under the Howey Test, creating further confusion across the market. This is not unique to the U.S., and retrofitting existing financial services definitions and laws to NFTs creates numerous difficulties.

Regulatory Action by the SEC:

In 2023, the SEC took action against two NFT projects, alleging they violated securities laws. They argued that the NFTs constituted investment contracts based on promises of increased value and smart contract royalties paid to the issuer, leading to a reasonable expectation of profits for purchasers.

However, Commissioners Pierce and Uyeda dissented, questioning the application of the Howey Test. They argued that the NFTs were not company shares and did not generate dividends, and compared the situation to selling collectibles with promises of increased value. This disagreement highlights the controversial nature of applying the Howey Test to NFTs and raises questions about whether enforcement action is always warranted.

> This legitimate concern [regarding customers losing money], however, is not a sufficient basis to pull the matter into our jurisdiction [...] we do not routinely bring enforcement actions against people that sell watches, paintings, or collectibles along with vague promises to build the brand and thus increase the resale value of those tangible items.[91]

Even if the NFT sales fit neatly within the U.S. Howey Test, it still raises questions as to whether enforcement action is warranted. As this is the first NFT settlement, the action taken by the SEC raises difficult questions and as emphasised in Commissioner Pierce and Uyeda's statement "the Commission should have grappled with these questions long ago and offered guidance when NFTs first started proliferating". The lack of specific guidance on NFT applications has led industry leaders to seek no-action letters from the SEC. This desire for regulatory clarity underlines the industry's preference for clear parameters over operating in a regulatory void.

Fractional NFTs:

Fractional NFTs (f-NFTs) introduce a fresh regulatory consideration into the equation. By dividing ownership into smaller shards, they introduce aspects of fungibility and commonality among shard holders. This raises crucial questions:

- **Collective investment schemes**: If the seller retains control, could an f-NFT be considered a unit within a collective investment scheme, necessitating regulatory oversight?
- **Securities**: Does the F-NFT resemble a security?
- **Derivatives and beyond:** Do f-NFTs resemble derivatives like options or futures, depending on how profits or income are shared or pooled?

Applying the U.S.' Howey Test to f-NFTs further complicates things. Selling shards could satisfy the "common enterprise" criterion, potentially reclassifying a non-security NFT as a security, as Commissioner Peirce warns. The key question becomes: do purchasers reasonably expect profits derived from the efforts of others? This hinges on factors like how distributions and appreciation occur, especially in the secondary market.

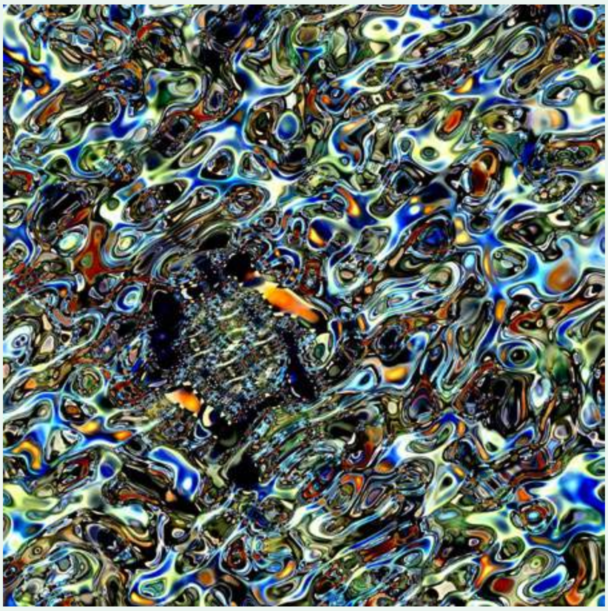
Therefore, **a thorough evaluation of the entire transaction's economic reality is essential**. This includes scrutinising offer terms, distribution plans, economic incentives for buyers, digital asset holder and issuer participation in profits, the existence of a secondary market, and whether the issuer's efforts directly influence expected returns.

Owning an NFT in anticipation of its scarcity increasing its value resembles traditional investments like art collecting. This expectation alone unlikely triggers the need for regulation. However, when combined with factors like the issuer retaining a portion of publicly sold NFTs and actively marketing them for secondary market profits, the transaction begins to resemble an investment contract and potentially a security, akin to shares in a common enterprise.

It is important to remember, as highlighted in an interview, that existing financial services definitions and tests were not designed for NFTs and cryptoassets. Applying them directly might not be the best solution. **Recognizing diverse fractionalization methods and their varying levels of risk and commonality is crucial for developing appropriate regulatory frameworks that fit the complexities of this evolving landscape**.

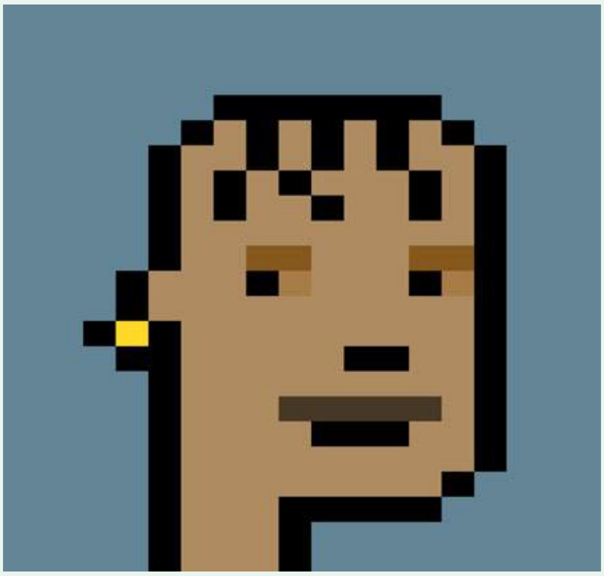
To illustrate the nuances involved, consider two scenarios:

Example 1
Agoria Fractional Generative Art:



French artist Agoria's collaboration[92] with Ledger on fractionalized generative art allows purchasers to own portions of a larger artwork as desired. This innovative engagement model for collectors does not introduce significant commonality or fungibility among shard holders, potentially keeping it outside the realm of financial instrument regulation.

Example 2
Otis Collection's CryptoPunk Split:



The fractionalization of CryptoPunk #543 by Otis Collection presents a stark contrast. Marketing the shards as "shares" and emphasising secondary market profit potential clearly pushes the transaction towards being classified as a security.

The regulatory determination should therefore hinge on an objective analysis of the economic reality of the transaction and the characterization of the instrument in commerce as outlined by the offer's terms. If a promoter or third party plays a pivotal role in managerial efforts crucial to the enterprise's success, and investors anticipate profit, it is likely to be categorised as a security.

Where to Focus Regulatory Efforts:

- **Regulating Platforms Over Individuals**: Targeting platforms that facilitate f-NFT transactions could be more practical than regulating individual buyers or creators, especially in decentralised networks. This is more challenging for DeFi transactions, where focus could be placed on the on/off ramps to the network.
- **Initial Fractionalization Offerings (IFOs)**: Applying a concept similar to IPOs or ICOs, with modified securities laws, could require creators to register f-NFT sales and provide disclosures. This will likely bring them within more bespoke cryptoassets regulations, such as making a public offer as a cryptoasset under HMT's proposed approach in the UK.
- **International Coordination**: Collaboration is crucial for AML requirements and potentially broader regulatory efforts. This is especially important in the consideration of DeFi marketplaces.

The meaning of ownership in the context of intellectual property (IP):

Beyond the potential classification as a regulated financial services activity, another consideration that remains unclear is the transfer (or lack thereof) of ownership of an NFT.

A legal recognition of NFTs as a form of property would enable much needed clarity for market participants. In 2023, the UK Law Commission extended[93] a recommendation to the Government to adapt their existing framework by introducing a third category of legal property to address digital assets, which can be extended to NFTs. This allows for more certainty in creating an environment that may lead to additional innovations, acknowledged by the Law Commission that "NFTs will take a leading, exploratory role in establishing property rights in data objects in mainstream and retail use".

In October 2022, the Chief Judge of the US Bankruptcy Court for the Southern District of New York referenced the Law Commission's consultation paper which might be considered in this case because the legal principles in the consultation, while not binding or applicable on US courts, may be persuasive. Ensuring NFTs are designated with protectable asset status can provide numerous benefits across the marketplace and a more harmonised approach to legal ownership can protect consumers and encourage business innovation.

As highlighted in the UK's Digital Culture, Media and Sport (DCMS) Committee's report into NFTs and the Blockchain, "the prevalence of IP-infringing content and lack of protection for consumers is in part down to the legal exemptions granted to online intermediaries that host third party content referred to as "safe harbour" provisions." NFT marketplaces are typically not liable for unlawful content, placing greater responsibility onto consumers. However, consumers may be unaware of the rights attached to an NFT project.

Article 17 of the EU Copyright Directive (Directive (EU) 2019/790) goes further to deal in cases of infringement requiring platforms in scope to make best efforts to either obtain a licence for or block unauthorised content and use best efforts to prevent further uploads once notified by rightsholders. Although, this does not apply to online marketplaces or even auction houses. An assessment of the suitability of these rules as applied to NFT marketplaces is warranted.

However, it is logical to treat NFTs in a similar vein to their traditional "counterparts" (e.g., art or collectibles), other than when the NFT resembles a financial instrument. The question then remains whether protections in the art world and for marketplaces, such as Sotheby's, are sufficient. Treating NFTs on these platforms any differently to other works of art would completely bypass a "same risk, same regulatory outcome" approach based on proportionality.

A potential solution to AML concerns and the lack of protections facing consumers is the introduction of industry self-regulation. This could encourage responsible conduct from within, to uphold market standards and creation of protocols and guidelines by the industry. Governments and regulators could play a role in overseeing the development of such standards, including the prevalence of disclosures related to the associated IP rights.

AML: Lessons from Traditional Art

While regulatory clarity for financial assets is robust, a European Commission regulator aptly points out the challenge of achieving the same outcome for NFTs. Despite not falling under financial regulation, NFTs pose specific operational risks like money laundering, market manipulation, and fraud. Yet, a dedicated AML/CFT framework for this burgeoning ecosystem remains elusive.

Internationally, concerns about NFTs' vulnerability to illicit activity are already causing concerns. FATF's 2023 report on art and antiquities market financial crime[94] identified several factors, including ease of transfer, lack of physical movement, smart contract vulnerabilities, and wash trading, that make NFTs susceptible to money laundering. FATF's updated guidance for virtual assets and service providers further underscores the need for AML considerations in the NFT space.

These concerns resonate at the national level too. In the UK, NFTs meeting the definition of a "cryptoasset" fall under the Money Laundering Regulations, triggering oversight by the Financial Conduct Authority. Similarly, South Korea's AML Act may encompass NFTs exhibiting virtual asset characteristics. Interestingly, the EU initially proposed including NFT marketplaces within the upcoming AML rulebook, but later dropped it due to inconsistencies with MiCA's exclusion of such platforms.

Therefore, in the absence of dedicated NFT AML/CFT rules, existing regulations across jurisdictions only apply if an NFT falls within their specific cryptoasset definitions. However, many NFTs, due to their non-fungible nature, often fall outside these definitions. **This necessitates a case-by-case assessment by regulators, comparing each NFT against existing obliged entities within their scope.**

The traditional art world offers valuable lessons in how AML measures could be applied. The EU's Fifth Anti-Money Laundering Directive (Directive (EU) 2018/843) - 5AMLD - and UK regulations subject art market participants, like dealers and auction houses, to strict AML due diligence and risk monitoring. Similar measures are emerging in the US with the Anti-Money Laundering Act 2020. Under 5AMLD, artworks are a category of 'High Value Goods' that carry the potential risk of money laundering. For artworks exceeding €10,000, the legislation requires dealers to register with national competent agencies in order to verify client identities and report suspicious transactions.

However, 5AMLD did not define regulations specific to NFTs and the legislation is yet to be extended to NFT markets. The transparent nature of blockchains provides additional records and trails for forensic specialists and enforcement agencies, limiting NFTs role in comparison to traditional art. However, there may be a growing need to address AML concerns and adapt global AML requirements to accommodate digital assets rather than stifle their development. **Regulators should therefore engage regularly with the industry to keep informed of the latest art innovations, educating themselves on digital asset fraud and scam techniques. Further collaboration and the role of standards issued by FATF will also become increasingly important to create an internationally consistent regime.**

AML Frameworks

5AMLD did not establish specific regulations for NFTs, leaving a regulatory gap yet to be filled. The transparent nature of blockchains provides additional records for forensic specialists and enforcement agencies, limiting NFTs' role compared to traditional art. Yet, there is a growing need to address AML concerns and adapt global requirements to accommodate digital assets, fostering development rather than stifling it.

To establish effective AML frameworks, policymakers may consider extending existing regulations, such as 5AMLD, to cover NFTs. Alternatively, engaging with industry stakeholders to promote self-regulation could be explored, akin to the Financial Industry Regulatory Authority (FINRA) in the US. NFT industry groups could establish best practices for Know Your Customer (KYC) procedures, transaction monitoring, and reporting suspicious activities. Dedicated self-regulatory organisations (SROs) for the NFT space could set AML/CFT standards, monitor compliance, and resolve disputes, potentially easing the burden on government regulators.

By adapting insights from traditional art regulation to the unique characteristics of NFTs and exploring self-regulation initiatives collaboratively with governments, a safer and more transparent art ecosystem—both

virtual and physical—can be cultivated. Self-regulation may also offer an effective means of establishing market principles, facilitating information exchange, and adapting to emerging concerns to ensure consumer protection and standardised ownership status for NFTs.

Regulatory Guidance: A Balancing Act

NFTs present a unique challenge for regulators. Classifying them within existing financial instrument frameworks often feels like forcing a square peg into a round hole. Their diverse capabilities and non-fungible nature defy simple categorization. This lack of fit can lead to dramatically different interpretations of potential risks, creating inconsistency and confusion in the market.

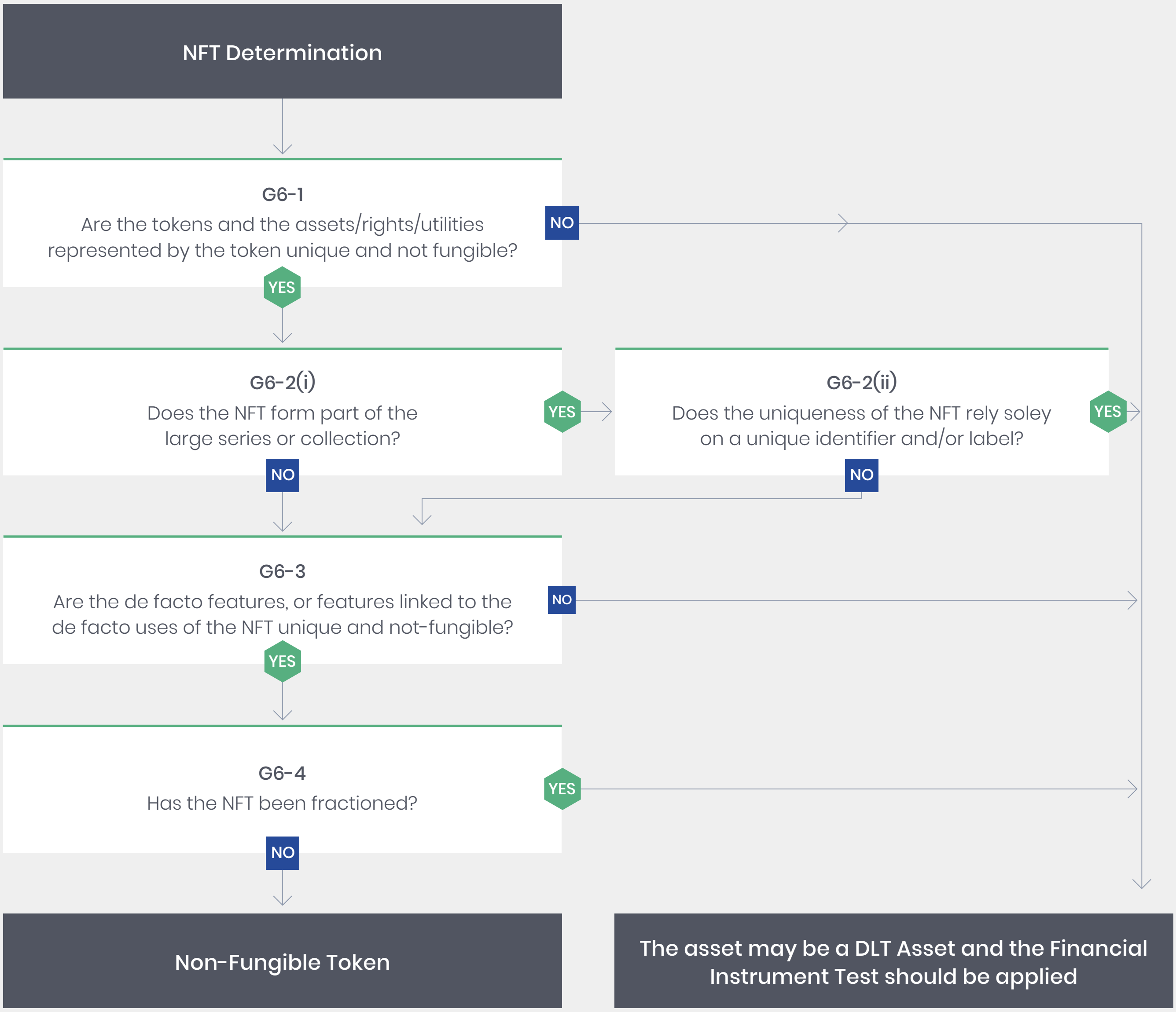
Navigating this complexity requires clear guidance from regulators. Creators, marketplaces, and purchasers all need to understand how NFTs interact with financial services laws. This includes understanding:

- **How to categorise NFTs**: Establishing clear criteria for classifying NFTs as financial instruments or not, or whether they fall within cryptoassets regulations would offer a crucial starting point.
- **Information needs of purchasers**: Guidance on disclosing relevant information about an NFT before purchase, including potential intellectual property, copyright, and ownership issues, would empower informed decision-making.
- **Smart contracts and financial regulations**: Clarification on how royalty payments tied to smart contracts might be interpreted within financial services regulations would reduce uncertainty.

The MFSA in Malta issued[95] guidelines in June 2023 in an attempt to clarify what constitutes a truly non-fungible token and therefore falls outside financial services rules. They incorporate a separate “financial instrument test” similar to the Howey Test to identify NFTs with characteristics resembling regulated financial activities.

Figure 8 Flowchart for NFT Classification

Source: MFSA NFT Guidelines, June 2023.



This proactive approach provides helpful direction, but further work is needed given it is an extension of the EU's position that a NFT falls outside the scope of regulations. The guidelines do not extend the discussion of how a financial instrument test may apply to NFTs or examine characteristics beyond the fungibility of the token. In the UK, HM Treasury indicated in their response to consultation on the future financial services regulatory framework for cryptoassets that something marketed as an NFT could fall within the future financial services regime for cryptoassets if the application was more akin to an exchange token in practice. This nuanced perspective recognizes that NFTs, while technically unique, may be considered fungible if little differentiation exists among them, subjecting exchanges trading in such tokens to applicable regulatory regimes for cryptoassets.

Both the EU's bespoke regime and the UK's approach relying on existing financial services legislation, place significant emphasis on fungibility as a key determinant for the classification of NFTs falling within the regulatory sphere. However, in the absence of specific guidance from regulators, it is still not clear where the boundary between where financial services and cryptoassets regulations apply according to their characteristics. Ultimately, the lack of global harmonisation regarding fungibility and its role in classifying NFTs for regulatory purposes creates significant uncertainty for the entire market.

Developing NFT-specific FS Guidance

Classifying NFTs is an important, yet complex assessment to make from a financial services regulatory standpoint. A regulator from the European Commission explained that this would become more evident as regulatory initiatives toward the industry start to develop. In their view, the digital assets space as a whole might require a completely new approach, as well as clear definitions, and a new set of principles from a policy perspective in order to be holistically assessed and eventually supervised. They argue that the language level is currently underdeveloped and the lack of clear definitions should be priority number one to address. Indeed, **a well-defined taxonomy is a crucial tool to facilitate holistic and proportionate assessment, and determine the extent to which an NFT satisfies specific requirements and regulatory considerations.**

Regulators should base their case-by-case assessment of NFTs potentially acting as financial instruments by observing the following criteria, which could be added to NFT-specific guidance or to existing legislative frameworks:

- Is the NFT a financial services product (by providing rights to a financial asset or operating in a similar way to a financial instrument). Beyond the asset represented, this could include the following characteristics:
  - The NFT grants rights to income or dividends to the purchaser;
  - The NFT is traded on financial services markets;
  - The NFT is largely indistinguishable from others in the collection and the holder retains some control over the collection or f-NFT, and its valuation for holders by encouraging secondary market participation
- Does the offering of a series or collection of NFTs more closely resemble an ICO offering? If so, this may be regulated accordingly (e.g., under specific cryptoassets regulations).

It is likely that if an NFT is more fungible or interchangeable, it is more likely to satisfy the conditions of a payment or investment instrument and subject to regulations. However, we do not believe the fungibility criteria alone should be enough for regulations to apply. A case-by-case assessment is still necessary, and will take into account the above considerations of whether stringent securities or financial services regulations should apply.

Global Regulatory Approaches and Perspectives: Insights from industry players

We interviewed ten industry experts across a spectrum of activities from legal, venture capital, advisory, platform developers, and those deeply involved in the development of and support of NFT creators. Within the group, there is a clear recognition of the multifaceted nature and transformative power of NFTs and the challenges they post to traditional regulatory paradigms. This section explores their perspectives of the NFT landscape with particular regard to regulatory issues. We do not discuss NFTs as securities as it is out of scope.

As with many novel and evolving technologies, the landscape for NFTs is in flux. Our experts identified a spectrum of NFT utilities to consider beyond what could easily fall into the realm of financial regulation. As shown in the previous chapters, the spectrum can be seen on one side as positive, potentially societal enhancing, NFT offerings such as authentication of credentials, transparent ownership verification and management of data to, at the other extreme, wild speculatory offerings that exploit consumers. A plethora of NFTs such as ticket tokens, small collectibles, enhanced user experience tokens sit between these extremes. To safeguard consumers while promoting the creative and economic potential of NFTs, the experts call for a nuanced regulatory approach. This should be adaptive and flexible, preventing bad behaviours, while enabling innovation and experimentation within a set of clear boundary conditions that can guide entrepreneurs, developers and creators and even consumers and brands alike.

There is a clear message from experts that regulators should consider the utility of NFTs rather than the technology, when considering what to regulate and what to exclude from the regulatory regime. In all cases, guidelines that offer clarity, simplicity and speed are critical to attract entrepreneurs keen to pursue new economic opportunities. Entrepreneurs need to be able to be agile to explore and exploit the NFT landscape while not being faced with expensive administrative and legal burdens to overcome. Jurisdictions that offer this approach, while ensuring adequate consumer protection and clear taxation requirements, will be more attractive than those that don't offer these guidelines. Entrepreneurs are already 'shopping' to set up their base locations, preferring welcoming and supportive jurisdictions. Regulations should aim to address the diverse use cases of NFTs, ensure the safety and integrity of the markets and consumers, and support the burgeoning creator/developer economy that thrives upon them.

Beyond the Bubble – a bullish future for NFTs

Before turning to the regulatory perspectives, our experts shared their views on the future for NFTs. There is no doubt that the bursting of the recent speculative bubble has left a mark on the nascent digital marketplace for NFTs, however, our experts are bullish about their future and on use cases that are less harmful. Perhaps a good comparison for NFT's next chapter is the digitisation of music which started in 1999 with Napster and file sharing but then took off in 2012 with a greater legal framework behind it. Ian Rogers, Chief Experience Officer at Ledger, is particularly excited about the possibilities in the art world:

> **This is like being back in 1999 and what's happened is we've just been through that bubble where everything is possible and an opportunity. Then you realise it's a long way away but it's also inevitable.**

NFTs are expanding economic activities and, it could be argued, levelling the playing field by offering greater opportunities for creators while providing them with an opportunity to protect their IP and earn money. A comparison is the internet offering writers the opportunity to self-publish rather than being at the mercy of the traditional agent-publisher dyad. Rebecca Rettig, Chief Legal Officer & Chief Policy Officer at Polygon, explains:

> **NFTs are important in terms of what they were built out to be in the first place – a different way for true creators to get into the economy. It's hard to be a living artist. When creators post on some of these decentralised social media applications, their posts are NFTs and allow people to purchase them for small amounts of money.**

The idea of addressing some of the murkier activities on the internet is supported from a different angle by Pierre-Nicolas Hurster, CEO and co-founder of Arianee, who sees NFTs as taking back data ownership from Big Tech where these platforms' model is data exchange for services:

> **The number one reason why we should care about NFTs is the fact that for the first time since the internet has become a widely used tool, there's a technology allowing people to be in control of their data rather than give it away to gain platform access to companies who then use it and/or sell it. Our mission is to contribute strongly to the transformation of the internet towards regained control and sovereignty of people and brands' data.**

Scope and Clarity of Regulation – protection that doesn't prevent innovation, clear guidelines and expedient processes

Turning to regulation, our experts welcomed regulation that would provide clarity for industry players as well as protection for consumers. **Entrepreneurs are looking for jurisdictions with clear regulatory frameworks, to focus on building their businesses**, rather than having to look over their shoulders to ensure that they will not be tripped up by legislation later on. Building a business in an environment where regulations are pragmatic could offer entrepreneurs a competitive advantage. Adriana Vitagliano, Principal at venture capital firm firstminute capital, flags the time it takes to register. She illustrates the regulation registration processes in Gibraltar compared to the UK:

> **What we've seen from our portfolio is that unlike in the UK where registration can take six to eighteen months, during which you have to freeze operations, in Gibraltar it takes six to eight weeks. You know what you need to do to register and you're happy to work under a regulatory body.**

Our experts provide insight into the challenges NFT companies face with regulatory uncertainty, the implications of regulatory processes on business operations, and the strategic considerations of jurisdictional choice in the context of the evolving landscape of digital assets.

Currently, UK regulations are ambiguous, according to Adriana Vitagliano. Entrepreneurs she speaks to want to comply and operate within a legal framework. They are not looking for lax regulations but are searching for a supportive regulatory environment, with clearly explained guidelines and simple, expedient processes where they can continue to build their businesses while working through these administrative procedures. **It is not just time but also cost that concerns them** given that startups are mindful of what they are spending their limited funds on. These are critical dimensions that can be decisive factors as to where an entrepreneur chooses to locate and, crucially, contribute to the growth of the overall market. Christopher N Goi, Director of Advisory at KPMG Singapore, emphasises the latter point:

> **It's only upon regulatory clarity that we'll start to see adoption scale significantly.**

While regulation is welcomed by our experts, a red flag was raised that **regulation should not come at the price of discouraging innovation and experimentation**. Regulation that is heavy-handed or is all-embracing while not considering the nuances of NFT utility would render a geography less interesting for nascent market activities. This point is picked up by Seth Hertlein, VP and Global Head of Policy and Government Relations at Ledger:

Regulation by its very nature is the antithesis of experimentation, which is necessary for innovation. To take this overly simplistic view that NFTs are financial assets used for speculation and to regulate all these use cases under that umbrella, under that framing, takes us back to regulation versus innovation. This would be incredibly short sighted and self-defeating for the type of experimentation that's happening.

Rebecca Rettig supports this proposition that **regulators should take a nuanced approach to what is regulated and what isn't**, comparing different use cases:

We should not paint with broad brushstrokes. When NFTs are used in a social media platform, what's the type of content moderation and IP that we need to worry about? When it's used in some DeFi platforms, does it need to be regulated in a different way?

Ian Rogers picks up this point by adding that NFTs are merely a technology that allows for digital ownership:

Regulation and new legal paradigms, where do these appear in the concept of ownership? We need to encourage people to look at the use cases and not the technology – use rather than what they are that should decide what is regulated and what is not.

Pierre-Nicolas Hurster, illustrates this with the use case of event ticketing and accreditation:

There is no reason to have a conversation with a market regulator, such as AMF, SEC etcetera... to sell concert tickets – the organiser is not even going to understand the list of requirements to be approved. Similarly, if an NFT is used to authenticate my diploma, why should I talk to market regulators? The rules would be completely irrelevant in terms of consumer protection.

Our experts suggest it would be helpful to both sides if **regulators have ongoing conversations with industry players**. This would be a pragmatic and pre-emptive move to ensure that regulation balances consumer protection with creating supportive boundary conditions for entrepreneurs, as forcefully argued by Ian Rogers:

If I were a regulator, I would focus on consumer protection. There is a real need for it in this space. Certainly, I would work with the collectibles industry to talk about what protections we can put in place.

Building on this point of balancing regulation and consumer protection and the evolution of NFTs, Mathilde Carle, Intellectual Property lawyer at Kramer Levin Naftalis & Frankel LLP in France warns of the difficulties of regulating this space and the dangers of fixed regulation:

Lots of consumers are buying this very complex product and they need security, regulation, and protection. We have seen many cases brought by consumers who felt they have been misled, abused, or fallen into traps of the NFT issuers. There is a need for regulation, and I think we can all agree that it's difficult to regulate it very well now as it's too complex and evolving.

Sharing this view but making a suggestion of a way forward, Hubert de Vauplane, Partner at law firm Kramer Levin Naftalis & Frankel LLP, suggests a more progressive regulatory approach to be developed in association with industry players:

In France, local regulation was viewed as a way to increase the knowledge of the market and discuss with market players. When the market is ready then we can go to the EU level. For NFTs, we don't fully understand what we are regulating. For example, intellectual property and the global art market are not regulated at the European level, we may need more local rules first before escalating across Europe.

Ben Cousens, Chief Strategy Officer of Zebedee.io suggests regulators consider:

I think you have to separate the market in three ways. Look at fungible tokens primarily as securities, non-fungible tokens as digital collectibles, and then there's money. A deeply innovative thing to do would be to legally acknowledge and define these three categories, and then legislate or regulate them as we do their analogue counterparts. These could have new standard definitions, for example "SEC-1" could be

the digital collectible standard, and if a release under that standard is very light touch, legally speaking, and render it easy for folks like Baseball card manufacturers to enter the NFT market with confidence in any legal risk assumed. Then companies can—and likely will—go for it. If they infringe on anything that is stipulated, the regulator can enforce as stipulated, just as in markets today. We over-complicate this space too much just because it's digital—we should look instead to other examples, like the music industry, where IP is IP regardless of whether it's vinyl, CD, MP3 or a TikTok video. The same goes for digital securities (fungible tokens) and digital money (bitcoin).

In summary

As discussed, entrepreneurs in the NFT industry are looking for jurisdictions where they can set up and build their businesses with as much legal and regulatory certainty as possible. Ambiguity and lack of stability are far less attractive than a set of thoughtful and pragmatic guidelines that offer clarity over what they can and cannot do and expedient processes for registration, so entrepreneurs and creators can focus on creating sustainable businesses that create economic growth.

Regulators need to consider balancing their regulatory framework to offer consumer protection with encouraging experimentation and innovation in this nascent industry. Regulation is welcomed by our experts, but heavy-handed regulation is likely to stifle growth.

6

Recommendations

Financial services regulations

- **As a priority, regulators should focus on producing NFT-dedicated guidance on the specific characteristics that may result in the issuance, purchase, or trading of an NFT being treated as a regulated financial services activity.**

It is challenging to assess the application of new technology classes to existing financial services regulations. Financial services rules and legislative definitions are not always well suited to the diverse nature and characteristics of NFTs. However, given the regulatory structure in most jurisdictions relies on financial services regulators, rather than bespoke virtual assets authorities, NFTs will typically be assessed against their economic reality in the financial services sector. While regulatory clarity is difficult to achieve given the complex range of NFT designs and use-cases, there are common characteristics that are likely to result in an NFT being considered more akin to a financial services activity.

This may include i) providing rights to a financial asset/ operating in a similar way to a financial instrument, ii) granting purchaser rights to ongoing income or dividends, iii) traded on financial services markets, iv) the NFT being largely indistinguishable from other NFTs within a collection, granting the holder retaining control over its valuation/secondary market participation. Regulators should focus on building a similar taxonomy to provide market clarity on when an NFT is more likely to be designated a financial instrument.

- **Policymakers should consider whether existing securities laws should apply to f-NFTs, or whether the development of a modified set of requirements should apply**

Some f-NFTs may be classified as financial instruments (e.g., securities) under national frameworks for financial services, as observed in the SEC's cases against NFT projects in 2023. However, this can result in market confusion; regulators should explore the extent to which applying existing traditional finance laws to NFTs is the appropriate avenue. An agile regulatory consideration is to apply a similar framework to the public offer of a cryptoasset through Initial Coin Offerings (ICOs) given the similarity in the way F-NFTs may be marketed and sold. Further engagement with the industry on the suitability of adapting and applying such a framework would be a welcome step.

- **The fungibility of an NFT should not be the sole determinant of whether or not financial services regulations should apply. The economic reality, utility and full suite of characteristics must be assessed on a case-by-case basis.**

To balance consumer protection with fair and clear regulation for NFT businesses, policymakers should examine an NFT holistically by considering all characteristics and functions present. Fungibility alone does not necessarily classify an NFT as a financial instrument. Therefore, a more in-depth assessment of characteristics and utility is in order to ensure non-financial NFTs do not end up being incorrectly captured by strict financial services regulations, which could impact the overarching development of the space and lead to a disproportionate approach towards regulations. This should take into account the manner in which the NFT is traded and rights to income attached to the sale of the token.

Non-financial services regulations

- **NFTs should not be regulated as a distinct asset class and applying financial services regulations is often inappropriate due to NFTs' non-fungible characteristics. A case-by-case approach should be adopted, aligning with rules from analogous traditional sectors.**

As recognised by several regulators and industry participants that we interviewed, the majority of NFTs on the market at this stage are akin to artwork or a digital collectible. Additional use-cases are typically non-financial in their nature, given NFT's lack of fungibility and interchangeability limits their functionality as a means of exchange. Instead, policymakers should treat NFTs as technology that functions as a digital certificate of ownership and consideration should be given to what existing rules may apply. For instance, AML requirements facing art market participants would be appropriate for the vast majority of NFTs.

- **Governments should monitor developments and engage with NFT marketplaces to better understand the potential threats of intellectual property infringement and the role of industry self-regulation.**

As more brands, creators, and consumers enter the NFT marketplace it will become increasingly important to increase creator and investor awareness regarding the acquisition of intellectual property rights attached to the sale of an NFT. Industry standards and effective self-regulation may develop as the industry matures. Governments can benefit through wider engagement with the industry and consideration of how to best encourage self-regulation that promotes awareness and protection within the market.

- **Clarity should be provided on the legal status of NFTs and digital assets as a form of property.**

Establishing a clear definition of an NFT in legal terms is the foundation to determining their legal treatment and how this would translate to different policy areas. Regulators should consider their national context and the levels of maturity of relevant regulations in order to adapt existing legal frameworks to address the NFT sector, similar to the Law Commission's proposal to establish a separate category of legal property to have clarity over the treatment of digital assets.

- **Governments and regulators should consider establishing an expert advisory panel to provide opinions on the application of legal and regulatory frameworks to NFTs as the technology continues to develop.**

In line with the UK Law Commission's recommendation, a dedicated expert panel to monitor and issue opinions on the NFT ecosystem and potential regulatory approaches would benefit from the consolidation of in-depth expertise, understanding of market trends, as well as research and analysis of most recent developments, opportunities and challenges in the sector and how these reflect on emerging products and services. This would provide market entrants with the necessary expertise and opinions on the application of legislative frameworks and promote clarity and certainty of the interpretation of existing laws, supplementing specific guidance for the sector and improving awareness of emerging use-cases.

- **Guidance on NFT taxation with regard to calculation methods and taxable entities should be provided to promote legal certainty.**

Taxation frameworks can vary significantly across jurisdictions and a "one-size-fits-all" approach to taxation of NFTs may not be helpful in meeting regulatory objectives. For the purposes of legal certainty, national regulators may benefit from issuing guidance on what is considered a taxable event, the relevant calculation methods and taxable entities, that are specifically tailored to the economic realities of NFTs to ensure investors and businesses alike can meaningfully comply with clear tax obligations.

- **Governments and regulators should consider developing 'sandbox' initiatives to allow brands and issuers to experiment with new NFT technologies and applications, while also providing increased training to staff on NFT products and services.**

Regulatory 'sandboxes' are a helpful tool for promoting regulatory development that enable a controlled environment for products and services based on innovative technologies to grow and meet various consumer demands. In the context of the NFT ecosystem, sandboxes and dedicated staff training are critical for the appropriate education and understanding the intricacies of NFT products and services to inform future regulatory considerations.

Annex

The NFT Global Regulatory Landscape

The growing traction of Non-Fungible Tokens (NFTs) has led to increased consideration from issuers and businesses regarding the regulatory landscape and its potential impact on the market. While specific legislation tailored to NFTs is yet to be developed in any jurisdiction, the growing significance of NFTs within the digital asset ecosystem and the real economy has prompted regulatory authorities to acknowledge the need for potential future legislation to address associated risks. Classifying NFTs poses a challenge due to their diverse use cases and applications, contributing to the absence of a clear regulatory framework at present.

In addition to NFT-specific regulations, businesses are considering the applicability of existing regulatory frameworks that govern traditional products and finance, depending on the nature of the NFT subject to assessment. This section provides an overview of potential spillover effects within leading jurisdictions worldwide, exploring how NFTs may intersect with established regulatory structures. By examining the regulatory landscape, we aim to shed light on the current and potential future regulatory environment surrounding NFTs.

	Legal definition	Bespoke framework	Crypto-asset regulations	Financial services regulations	Intellectual property laws	Taxation
European Union	⚪	⚪	⚪	🔴	🟢	◯
United Kingdom	'Property'	⚪	🟢	🔴	🟢	🔴
United States	⚪	⚪	⚪	🔴	◯	🟢
United Arab Emirates	⚪	⚪	🔴	⚪	⚪	🔴
China	'Virtual property'	⚪	⚪	🔴	🟢	⚪
Japan	⚪	◯	⚪	🔴	⚪	⚪
Singapore	'Property'	⚪	⚪	🔴	🟢	🟢
South Korea	⚪	⚪	🔴	🔴	⚪	⚪
India	⚪	⚪	◯	🔴	⚪	🟢

⚪ No bespoke framework or definition 🔴 Certain NFTs could be captured, but no legal clarity

◯ NFT-specific rules are being developed 🟢 NFT-specific rules exist

Insights from global approaches to NFT

Legislative framework

- In the EU, a Parliamentary non-initiative report was set to be published in late 2022, covering NFTs' potential definition and use-cases in each industrial ecosystem. To date, no progress has been made on the publication of this report. The European Commission however is granted authority under MiCA to publish its own report on NFTs by December 2024.
- Despite the lack of bespoke frameworks, some countries have already recognised NFTs in judicial rulings. Notably, these are the UK, China and Singapore, where NFTs were recognised as property.
- Dubai's VARA is reportedly working on a regulatory framework for the NFT sector.
- The USA, China and Japan have set up committees and task forces to investigate NFTs and their impact on investor protection. So far, no legal framework has emerged as a result of that.

Crypto-asset regulations

- The EU explicitly excludes NFTs that are unique and non-fungible from the MiCA Regulation governing stablecoin issuers and CASPs.
- In countries where no overarching crypto-asset regulation (beyond registration in certain jurisdictions' national registers) has been enforced – UK, USA, UAE, Japan, Singapore, South Korea, India – the distinction of NFTs from crypto-assets is still unclear, and definitions remain a major challenge.
- NFTs could be captured by national AML regimes (e.g., in the UK, South Korea), which also capture crypto-assets, however this depends on the NFT use-case and activity.

Financial services regulations

- The main point of ambiguity and uncertainty with regard to NFT regulation across all jurisdictions examined is whether these products could fall in scope of national financial services legislation if they are being used for an activity of a financial nature.
- This is especially relevant for fractionalised NFTs (f-NFTs), which could be defined as securities, commodities or other types of financial instruments, depending on the national definition. This would trigger additional compliance obligations.
- UK, EU, USA, UAE, China, Japan, Singapore, South Korea, India all do not clarify the potential assessment and treatment of NFT use-cases that could be considered as financial instruments.
- The opaque boundary between financial and non-financial classification creates a high level of uncertainty for businesses.

Intellectual property laws

- The UK Intellectual Property Office (UKIPO) published guidance on the classification of NFTs, virtual goods, and services provided in the metaverse in early 2023.
- The Intellectual Property Office of Singapore (IPOS) published a circular letter on the classification practices on NFTs and Metaverse-related goods and services, clarifying the manner in which the IPOS would describe and classify NFTs in an application for trademark registration
- US - Given the ambiguity around NFT copyright, the current legal protection that could be granted is on case law basis (see *Hermès International v. Rothschild, Tarantino v. Miramax in the US,* Hangzhou Internet Court in China in 2022 ruled that NFTs are 'virtual property').
- Generally, however, in the US, UAE, Japan, South Korea and India, NFTs have not been included in the main legal frameworks governing the protection of creative works, which causes concern for creators and investors.
- More clarity on trademarks is seen in the EU, whereby the IPO's 2023 Guidelines now include the classification of NFTs, virtual goods, and virtual services, enabling the official registration of digital artwork, collectibles, and gaming NFTs.

Taxation

- The EU's Directive for Administrative Cooperation (DAC8), which will enter into force in 2026, considers "certain" NFTs used for payment and investment as reportable. CASPs are liable to assess on a case-by-case basis if an NFT qualifies as such.
- In the UK, there are no specific rules regarding the creation of NFTs from a tax perspective but generally it is unlikely to give rise to a taxable event. In respect

of sale, NFTs are regarded as another form of a cryptoasset and follow the same tax treatment. This depends on the specific characteristics, utility, and nature of the NFT, determined on a case-by-case basis (e.g., if ownership rights in underlying assets).

- In the US, the Internal Revenue Service (IRS) collects property tax on NFT sales gains (with corresponding capital gains rules) from purchases of NFTs with cryptocurrency, NFT-to-NFT trade, and sale/disposal of an NFT for a fungible cryptocurrency. If these activities are conducted in a professional nature, the usual income tax rules apply.

- The tax treatment of NFTs in the UAE, Japan, Singapore and South Korea is not yet clear. Depending on how the NFT is defined in the national context, different tax rates would apply.

- The tax framework in India (Income Tax Act 1961) explicitly references NFTs under the category of a virtual digital asset. Income generated from NFT trading is subject to 30% capital gains tax.

Glossary of Terms

Smart contract - A smart contract contains the address of the issuer, the name of the token, the unique identifier of the token and the functions of the smart contract, as well as a link to the underlying file which could be stored on a storage blockchain, a centralised database, or on an open source peer-to-peer file distribution protocol known as InterPlanetary File System (IPFS).

Token - A token in the blockchain ecosystem is the term used to describe a unit of value. A token can represent anything from a digital asset such as a digital image, a physical asset such as real estate or art.

Fungible – physical money and cryptocurrencies are fungible in that they can be traded or exchanged for each other. One bitcoin is equal in value to another bitcoin. The same as a £1 coin is exchangeable for another £1 coin.

Non-fungible – every NFT is unique and cannot be exchanged for another NFT. It is this characteristic that makes them fungible. For example, the Mona Lisa is unique. It could not be exchanged for The Laughing Cavalier.

Gas fee – this is the cost of validating functions on the blockchain. The fee is an amount of crypto currency that is an incentive for validators to accurately record transactions across the distributed ledger.

Crypto wallet – crypto wallets store passwords "private keys" that allow holders to interface with the blockchain to send, receive and spend cryptocurrencies. A wallet can exist solely online "hot wallet" or offline on a device owned by the holder "cold wallet".

Minting – means creating a unique token on a blockchain.

Burned – the process of "destroying" an NFT. Being immutable, NFTs cannot be destroyed but they can be sent to an address that no one has access to. Once an NFT is burned, it cannot be recovered.

ETC - a decentralised computing platform and cryptocurrency.

Web3.0 - is the next iteration of the digital world which is highly immersive. It involves concepts such as cryptocurrencies and decentralised finance (DeFi), decentralised ledgers, and individual control of personal data.

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Links
INSEAD web page
LinkedIn profile
Forbes profile article from July 2023
HBR Article "Can GenAI Do Strategy?"

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