Fundamentals of Non-Fungible Tokens

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INTRODUCTION

Non-fungible tokens (NFTs) have been widely adopted by the sports, arts, music, gaming, fashion, and other industries.[1] Behind the hype is a fast-developing ecosystem of technical and commercial innovation that is embracing the promise of bridging physical world concepts of uniqueness and scarcity with the digital world. The NFT market has seen enormous growth in recent years, with sales of NFTs reaching $25 billion in 2021 by one estimate,[2] and this is only expected to grow as creators and brands craft their plans for the metaverse in which NFTs are expected to play a critical role. Similar to other new and evolving technologies and concepts in the blockchain industry, there is not a uniform definition of the term "non-fungible token." There are fundamental characteristics, however, that are common to most NFT projects in the marketplace today and on which participants in this ecosystem tend to agree. In essence, an NFT is (1) a unique digital token recorded on a distributed ledger, such as a blockchain; (2) linked to an object, such as a digital image, video, or record; that (3) enables the holder to demonstrate its rights with respect to the linked object. For example, an NFT linked to a digital artwork may enable its holder to access, perform, and display the digital artwork on an exclusive or nonexclusive basis.

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NFTs have already resulted in groundbreaking changes to how digital assets are transferred, authenticated, recorded, and stored, and in how users interact with such assets. As with all forms of technical innovation, these changes pose unique legal challenges and questions to participants in this ecosystem. Who has the control of, or intellectual property rights in, the media associated with an NFT? What do issuers, collectors, facilitators, or purchasers of an NFT need to know about securities, copyright, and contract law? What are the attendant anti-money laundering and gambling risks associated with the NFT marketplace?

This white paper explores this groundbreaking technology and seeks to answer those questions by first providing an overview of NFTs from a commercial and technical perspective and then addressing various legal considerations. As the NFT industry grows and evolves, these issues will become increasingly relevant to all participants in the digital ecosystems associated with NFTs and their creation, transfer, storage, and interactive uses.

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[1] *See, e.g.*, "Beeples Opus," Christie's, Beeple: A Visionary Digital Artist at the Forefront of NFTs | Christie's (christies.com); Elizabeth Howcroft, "Twitter boss Jack Dorsey's first tweet sold for $2.9 million as an NFT," Twitter boss Jack Dorsey's first tweet sold for $2.9 million as an NFT | Reuters.

[2] Elizabeth Howcroft, *NFT sales hit $25 billion in 2021, but growth shows signs of slowing*, Reuters (Jan. 11, 2022), https://www.reuters.com/markets/europe/nft-sales-hit-25-billion-2021-growth-shows-signs-slowing-2022-01-10/.

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WHAT ARE NFTS?

A BRIEF INTRODUCTION TO NFTS

To understand NFTs as "non-fungible" tokens, the first step is to define what makes an asset fungible. "Fungible" means "capable of mutual substitution" or "something (such as money or a commodity) of such a nature that one part or quantity may be replaced by another equal part or quantity in paying a debt or settling an account."[3] Fungible assets, such as stocks, dollars, and commodities, are instruments that are readily exchangeable in a given transaction for another unit of the same instrument. In short, fungible assets are interchangeable for the purposes of a particular transaction.

In contrast, non-fungible assets have unique qualities that make them not readily interchangeable due to a difference in characteristics, quality, or form. For example, a diamond ring, a rookie baseball card, and an original painting are not readily substitutable for a like asset of equal value (a similar diamond, card, or painting).[4]

The digital world, and particularly the digital ecosystems of distributed ledger technology (DLT), also contains this dichotomy of fungible and non-fungible assets. For example, domain names and email addresses are familiar non-fungible digital assets. And in the world of digital assets, any Bitcoin token (BTC) or native token of the Ethereum platform (ether or ETH), for example, is a fungible asset readily substitutable in value for another of the same token. NFTs are distinct from BTC, ETH, and other fungible tokens because they are a type of cryptographic token that represents ownership of digitally unique and non-fungible assets. Like their fungible counterparts, each NFT is a unit of data stored on a distributed ledger[5] that enables access and control rights to an object, such as a digital image, video, or record. Unlike fungible tokens, NFTs are not interchangeable in value because of their unique qualities and characteristics. Additionally, as discussed below, NFTs can represent control of or access to a correlated physical asset, such as a painting. NFTs leverage the functional aspects of blockchains, namely the ability to record the transfer of, and enable access to, digital or physical content. The token, as a digital record, also is capable of storing or referencing particular characteristics of a digital asset.

As a simple example to illustrate non-digital and digital non-fungible assets, physical tickets for a professional basketball game could be resold following a game as non-fungible collector's items.[6] If a team had issued tickets as unique *digital* tokens, each one providing access to specific seats in the arena for the game, the tokens themselves would be NFTs and they could be transferred after the game as digital collector's items.

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[3] "Fungible." Merriam-Webster.com Dictionary, Merriam-Webster, https://www.merriam-webster.com/dictionary/fungible.

[4] As commonly explained, in a transaction settled in a fungible asset like the U.S. dollar, it does not matter *which dollar* is transferred. In contrast, of course, in a transaction regarding a non-fungible asset like a diamond ring, baseball card, or a famous painting, the purchaser is interested in the asset because of its uniqueness. Assets commonly thought of as fungible such as stocks or U.S. dollars may, under certain circumstances in fact be non-fungible, because both stocks and dollars have unique identifiers (serial numbers). This distinction highlights the fluidity of fungibility which, as discussed below, is relevant when applied to digital assets.

[5] For discussion of distributed ledgers and smart contracts, *see* J. Dax Hansen & Carla L. Reyes, Legal Aspects of Smart Contract Applications (May 2017), https://www.virtualcurrencyreport.com/wp-content/uploads/sites/35/2017/05/Perkins-Coie-LLP-Legal-Aspects-of-Smart-Contracts-Applications.pdf; J. Dax Hansen, Laurie Rosini & Carla L. Reyes, More Legal Aspects of Smart Contract Applications (Oct. 2018), https://www.perkinscoie.com/images/content/1/9/v3/199672/2018-More-Legal-Aspects-of-Smart-Contract-Applications-White-Pa.pdf.

[6] *See, e.g.*, "Basketball Vintage Sports Ticket Stubs," Basketball Vintage Sports Ticket Stubs for sale | eBay.

Although NFTs have long been an important use case and value proposition of DLT (such as for supply chain management and property uses), the concept exploded into mainstream applications in 2021.[7] Uses for NFTs in today's DLT ecosystem abound, as highlighted below.

Digital Art and Digital Collectibles:

NFTs have been embraced by the arts, media, and entertainment industries as a way to replicate the concept of a first edition or limited series work in the digital context. In 2021, Kings of Leon became the first major band to release an album via NFTs, offering three different types of NFTs in connection with their album "When You See Yourself." The various NFT packages included digital album downloads, digital collectible album artwork, exclusive audiovisual art, and "golden ticket" tokens granting VIP access to concerts, receptions, and merchandise. The film and television industries have also incorporated NFTs into new releases; a recent documentary is the first Academy Award nominee to be released as an NFT, and 10 first edition copies of the movie were auctioned over 72 hours on Rarible.[8] There are also decentralized marketplaces for digital art, as well as aggregators (e.g., OpenSea),[9] that utilize NFTs for transactional purposes in addition to sports collectibles such as the NBA Top Shot marketplace and NFL All Day, where NFTs represent access to digital video collectibles of sports moments.[10]

Metaverse and Gaming Items:

NFTs have grown in popularity in gaming. For instance, the 3D virtual world and gaming platform Decentraland uses NFTs to allow the purchase and sale of digital parcels of real estate, unlocking opportunities to use such parcels for advertising and other engagement.[11] By way of example, Ex Populus, a Web3 game publishing company, has been developing games that incorporate NFT-backed collectibles and in-game items.

Digital Access Rights:

In other use cases, ownership of an NFT allows access to a particular social network, such as is the case with the "Bored Ape Yacht Club," where ownership of an NFT representing a "Bored Ape" allows "membership access to a club whose benefits and offerings will increase over time."[12]

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[7] Google searches for the term "NFT" hit an all-time high in early March 2021 and nearly did so again in early September 2021. *See* https://trends.google.com/trends/explore?geo=US&q=NFT.

[8] https://variety.com/2021/film/global/nft-movies-first-film-sale-claude-lanzmann-documentary-1234930343/.

[9] *See* OpenSea, "the largest NFT marketplace," https://opensea.io/.

[10] *See* NBA Top Shot, https://nbatopshot.com/.

[11] *See* Decentraland, "Welcome to Decentraland," https://decentraland.org/.

[12] "Welcome to the Club," boredapeyachtclub.com.

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Event Ticketing: The use of NFTs in event ticketing involves granting control of a unique identifier that allows the holder certain access rights. Moreover, those identifiers are often capable of being resold. As a result, event ticketing is a strong use case for recordation on a digital ledger. Various projects, such as Kred, leverage NFTs for this use case.[13]

Ownership Records: NFTs can be used to record ownership over a digital or physical asset, as with the goods above. In particular, digital ownership is a common use of NFTs. Domain names, which are unique digital assets, can be represented by NFTs (e.g., Ethereum Naming Convention, or ".eth").[14] The cryptographic nature of digital ledgers enhances the security of ownership records associated with physical assets and previously recorded through verbal confirmation, certificates of authenticity, or manually recorded ledgers, for instance in the case of artwork.[15]

Finance: NFTs are being used in decentralized finance (DeFi) applications as collateral,[16] allowing owners to borrow money against them. Other financial projects use NFTs for options, insurance, and bonds.

Ownership of Physical Assets: In some cases, an NFT's purpose may be less, or not at all, reliant on digital content, and instead the NFT serves as the mere transactional record on a blockchain. This recordation on a blockchain may be, on its own, a valuable contribution to industries in which it is crucial to track unique assets. If the NFT tokenizes chain of custody for real-world assets, and the parties mutually agree on the specific asset referenced by the NFT (e.g., physical property or a collectible item in a closed system marketplace), then the transactional record provided by the blockchain is an efficient and immutable way to track such custody.

People can purchase, access, and interact with NFTs via a combination of methods. Indeed, the interoperability of NFTs—that is, their potential to be moved, viewed, or tradeable across various ecosystems—is one of the main draws of this technology. For example, CryptoPunks is a collection of 10,000 collectible "Punks" on the Ethereum network, each a unique character that can be transferred between Ethereum wallets.[17] This latter point, tradeability, is one reason NFTs have made headlines recently and provides an example of how one might go about participating in the NFT ecosystem.

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[13] *See* Kred, https: //www.nft.kred/events/tickets.
[14] *See* Ethereum Naming Service, https://ens.domains/.
[15] *See, e.g.*, Jennifer Maloney, "The Deep Freeze in Art Authentication," WALL ST. J. (Apr. 24, 2018), The Deep Freeze in Art Authentication - WSJ.

[16] DeFi is a form of finance that relies on distributed ledgers or other technology to eliminate (in whole or in part) intermediaries such as brokerages, exchanges, or banks.
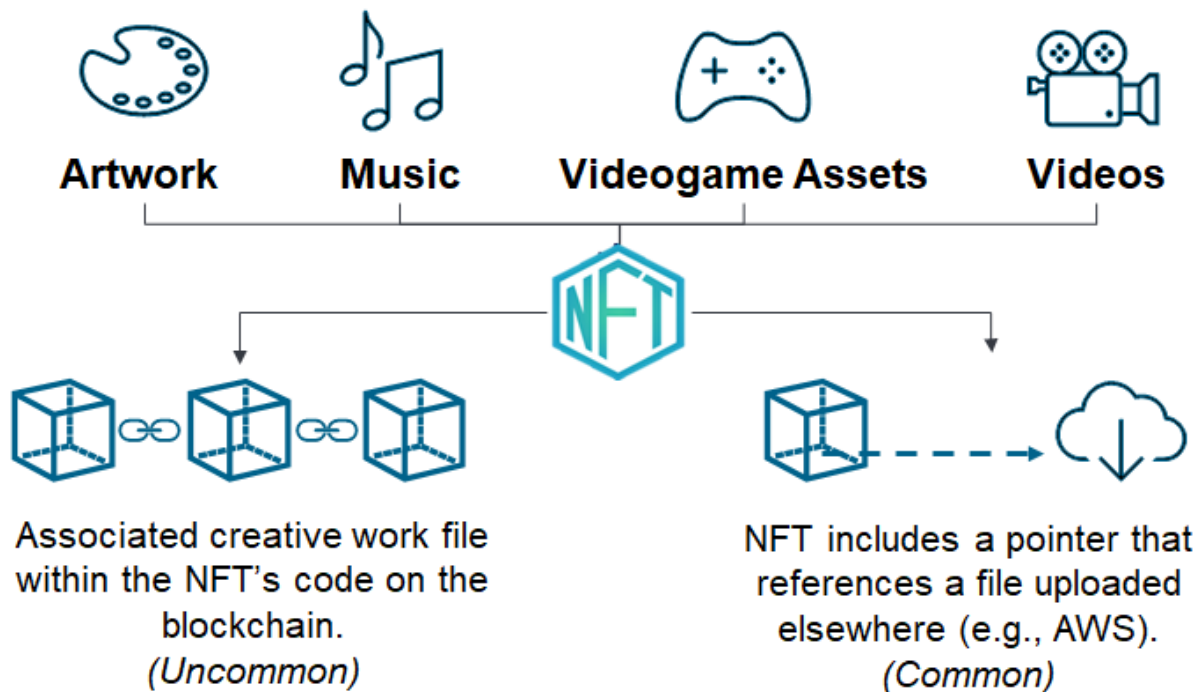[17] "CryptoPunks," larvalabs.com.

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To create (or mint) or interact with NFTs, one typically needs to first access a blockchain protocol. With respect to the Ethereum blockchain, one needs an ETH wallet and a mode of interaction with the protocol, such as via MetaMask.[18] One then must fund their wallet with sufficient funds to conduct a transaction on the blockchain, including the "gas" (transaction) fees. On a platform such as OpenSea, one can upload an image or other media file, conduct a transaction on the blockchain to record the existence of that file, and then sell the ownership of that record to other users. What is actually transferred in a sale—meaning what rights and/or characteristics—varies depending on the NFT and what it represents, as explained further below.
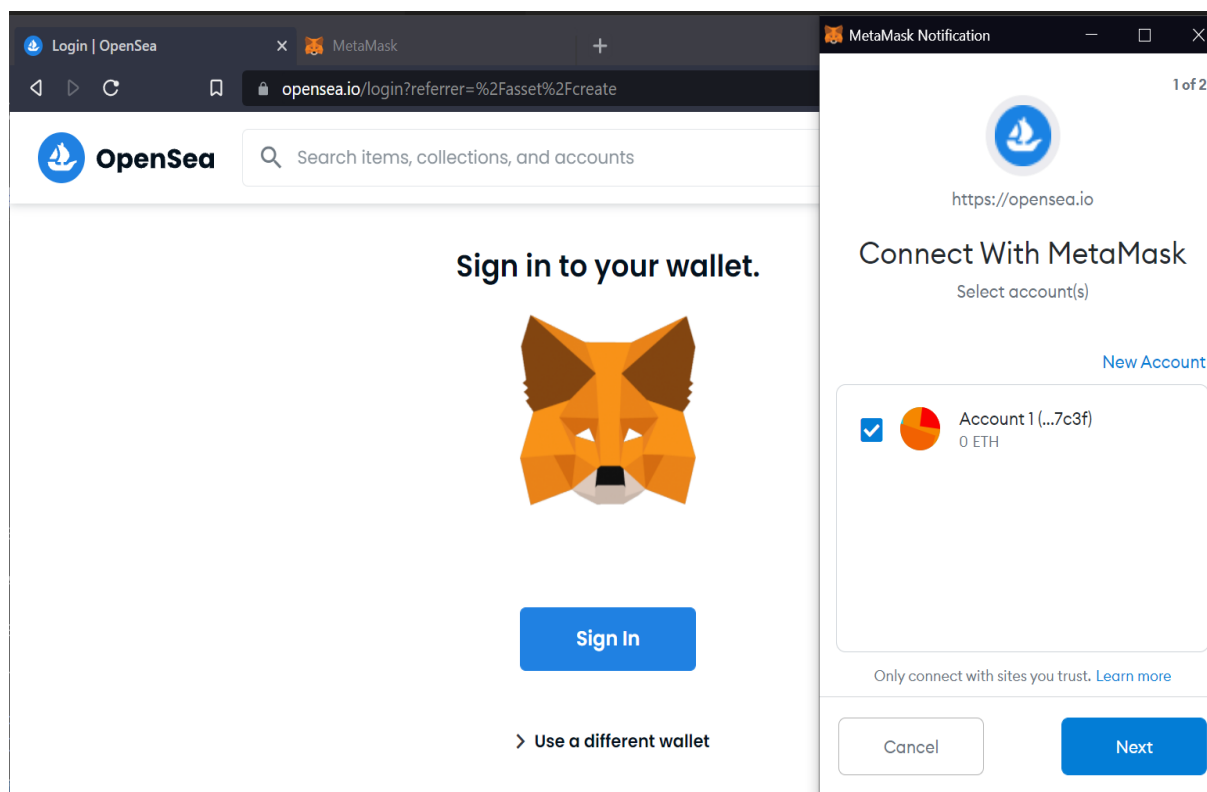
As explained below, there is an important distinction between whether NFT content is represented "on-chain" or "off-chain." Stated another way, data incorporated in or represented by the NFT could either appear directly in the smart contract representing the token (which is exceedingly rare) or the token is merely a pointer, or reference, to that information. Generally, the NFT contains metadata or content "pointing" to a location where digital content is stored (with limited or no ability for others to access it) and is a representation of control or access rights to the asset. In this case, the token enables a recorded transactional chain in which one address is currently able to access the metadata that points to that location. In other use cases, all associated content may permanently reside with the token, and therefore the content is stored "on-chain." Because some digital ledgers impose transaction costs on the basis of data size, on-chain storage can cause transactional congestion and inefficiency. This was the case with the popular CryptoKitties project (as described below): the transactional costs of writing a large amount of data to the blockchain itself effectively crashed the blockchain via congestion.[19] At the time of writing, it is unlikely that larger files such as a film or other large digital file itself will be stored on the blockchain, while very small amounts of content (such as mere lines of text conveying unique information) are capable of being stored efficiently on-chain. For that reason, NFTs may incorporate both on-chain and off-chain content.[20]

Artwork   **Music**   **Videogame Assets**   **Videos**

Associated creative work file within the NFT's code on the blockchain.
(Uncommon)

NFT includes a pointer that references a file uploaded elsewhere (e.g., AWS).
(Common)

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[19] *See infra* n.32.
[20] There are also projects that incorporate metadata across multiple chains, for instance utilizing the Ethereum protocol for recordation of transfer and a separate protocol for storage of digital content. *Id*.

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TECHNICAL OVERVIEW

From a technical perspective, an NFT is a unit of data stored as a hash on a given digital ledger that enables a digital asset to be unique and not interchangeable and/or enables access rights to an associated object (such as digital content) or metadata. NFTs can be implemented on blockchains which support smart contract programming. The NFT can be any token (being transferrable tokenized data in the form of a hash corresponding to a transaction) that represents a unique value and is not readily substitutable in value for another token. The purpose of the token is to record information related to access of and characteristics of the asset.

The unique properties of an NFT, notably by whom (or by which wallet) it is owned and any external links or pointers, are generally stored in each token's metadata; that is, a set of data that describes and gives information about other data. Many protocols that host NFTs have a metadata extension that allows smart contracts to be interrogated not only for their name but also for particulars about the assets the NFTs represent.[21] As discussed above, this information, such as the digital image itself (in the case of a digital artwork) and a description of the NFT, is often too big to store on the actual blockchain because of the transaction fees and time associated with recording large amounts of data to a blockchain.[22] Similarly, it is impossible to store a physical underlying asset (a physical artwork) on the actual blockchain. Thus, in most cases, the blockchain only stores a pointer to an asset via the NFT's metadata, not the digital image or other asset associated with it.

> The NFT can be any token … that represents a unique value and is not readily substitutable in value for another token.

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[21] ERC-721 does not mandate a standard for token metadata or restrict adding supplemental functions. The metadata extension is, thus, optional for ERC-721 smart contracts.

[22] *See, e.g.*, "Decentralized Storage," https://ethereum.org/en/developers/docs/storage/; *see also* Natalya Dyatko, "No, you don't store data on the blockchain—here's why," https://jaxenter.com/blockchain-data-164727.html (explaining that the Ethereum blockchain costs 20,000 gas to store one 256-bit word, and at an average block time of 13 seconds, you'd need to wait for over 14 minutes to save just 1 MB."). For instance, in 2017, the popular project CryptoKitties severely congested the Ethereum blockchain. *See* "CryptoKitties craze slows down transactions on Ethereum," BBC News (Dec. 5, 2017), https://www.bbc.com/news/technology-42237162.

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Ethereum Protocol

Many NFT platforms utilize the Ethereum protocol and secure metadata in their Ethereum Request for Comment (ERC) implementations, which may ultimately become Ethereum Improvement Proposals (EIP). Two relevant EIPs are Ethereum's EIP-721 and EIP-1155. The EIP-721 standard is a free, open standard that "provides basic functionality to track and transfer NFTs," allowing for the creation of smart contracts that can mint unique tokens with different properties.[23] EIP-721 defines a minimum interface a smart contract must implement to allow unique tokens to be managed, owned, and traded. The EIP-721 standard's token ID is a single non-fungible index and the group of these non-fungibles is deployed as a single contract with settings for the entire collection. The ERC-721 standard first came to light in the popular CryptoKitties project and has since become supported and endorsed by a large number of projects across the crypto ecosystem.

The standard for fungible tokens is EIP-20, and there are several fundamental differences between EIP-721 and EIP-20. The development need behind EIP-721, as opposed to EIP-20, is that EIP-20 "is insufficient for tracking NFTs because each asset is distinct (non-fungible) whereas each of a quantity of tokens is identical (fungible)."[24] Another difference is that, for EIP-721, transferring a token requires knowledge not only of the address of the smart contract but also the token's ID. Further, consistent with the motivation for developing the standard, a single EIP-721 smart contract can manage several tokens, contrary to EIP-20 in which each smart contract manages only a single token.

ERC-1155 is perhaps the most prominent standard for creating NFTs on the Ethereum blockchain. The EIP-1155 Multi Token Standard, created by the Enjin project for blockchain-based gaming, also allows for the creation of smart contracts that support both fungible and non-fungible tokens.[25] In contrast to the EIP-721 standard, EIP-1155 allows for each token ID to represent a new configurable token type, which may have its own metadata, supply, and other attributes. The purpose of the EIP-1155 Multi Token Standard pertains to efficiency and scaling of token use, and its use cases expand beyond gaming.[26]

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[23] *See* EIP-721: ERC-721 Non-Fungible Token Standard https://eips.ethereum.org/EIPS/eip-721.
[24] *Id.*
[25] *See* Enjin, "The Multi-Token Standard," https://enjin.io/about/erc-1155.
[26] *See* EIP-1155: ERC-1155 Multi Token Standard, https://eips.ethereum.org/EIPS/eip-1155, "Tokens standards like ERC-20 and ERC-721 require a separate contract to be deployed for each token type or collection. This places a lot of redundant bytecode on the Ethereum blockchain and limits certain functionality by the nature of separating each token contract into its own permissioned address. With the rise of blockchain games and platforms like Enjin Coin, game developers may be creating thousands of token types, and a new type of token standard is needed to support them. However, ERC-1155 is not specific to games and many other applications can benefit from this flexibility."

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A review of some code from the standard reveals how NFTs work in practice. Because of the limitations of on-chain storage, the EIP-721 interface, for example, includes a TokenURI function (highlighted below, which is reproduced from the code base for the EIP-721 standard). A "URI" is a uniform resource identifier and identifies either the name or location (or both) of particular information.

```
/// @title ERC-721 Non-Fungible Token Standard, optional metadata extension

/// @dev See https://eips.ethereum.org/EIPS/eip-721

///  Note: the ERC-165 identifier for this interface is 0x5b5e139f.

interface ERC721Metadata /* is ERC721 */ {

        /// @notice A descriptive name for a collection of NFTs in this contract

        function name() external view returns (string _name);


        /// @notice An abbreviated name for NFTs in this contract

        function symbol() external view returns (string _symbol);


        /// @notice A distinct Uniform Resource Identifier (URI) for a given asset.

        /// @dev Throws if `_tokenId` is not a valid NFT. URIs are defined in RFC

        ///  3986. The URI may point to a JSON file that conforms to the "ERC721

        ///  Metadata JSON Schema".

        function tokenURI(uint256 _tokenId) external view returns (string);

}
```

When called, this function in effect interrogates to the NFT's smart contract, which returns a URI. The URI points to a JavaScript Object Notation (JSON) file often providing a link to an image referenced by the NFT.[27]

Applications for displaying NFTs in a web browser can have three parts: a back-end, a front-end, and an NFT smart contract.

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[27] JSON is a syntax for exchanging text data between a browser and a server.

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When using the application, the front-end loads into the website browser. The front-end sends a request to the NFT's smart contract to retrieve the URL of the metadata. Once retrieved, the front-end sends a request to the back-end, which then forwards the metadata of the token through a JSON file.

```json
{
        "title": "Asset Metadata",

        "type": "object",

        "properties": {

           "name": {

               "type": "string",

               "description": "Identifies the asset to which this NFT represents"

        },

        "description": {

               "type": "string",

               "description": "Describes the asset to which this NFT represents"

        },

        "image": {

                "type": "string",

               "description": "A URI pointing to a resource with mime type image/* representing the asset
                              to which this NFT represents. Consider making any images at a width
                              between 320 and 1080 pixels and aspect ratio between 1.91:1 and 4:5
                              inclusive."

        }

    }

}
```

The JSON file will identify the URL of the image corresponding with the NFT. The image could be stored on any server and need not be the same server that stores the metadata.

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On-Chain Versus Off-Chain Vulnerabilities

While on-chain metadata allows characteristics of an NFT to reside permanently on the blockchain, most Ethereum NFT projects store their metadata off-chain due to the storage limitations described above. Typically, this off-chain storage occurs via centralized servers or the InterPlanetary File System (IPFS). The former is a familiar storage vehicle, such as Amazon Web Services. The latter is a peer-to-peer decentralized file storage system.

Yet this off-chain construct presents a potential vulnerability: any reference from the blockchain itself to an external server or source relies on the permanency of the location hosting the off-chain metadata. If the off-chain storage is controlled by a third party (for instance, a centralized web server that hosts the image), the image itself is dependent on the external server. For example, each CryptoPunk has an index referencing an associated image stored on a server hosted by Larva Labs. As a result, for off-chain metadata, the putative owner of the NFT must rely on the off-chain server host to access the metadata associated with their token. This reliance could be jeopardized if the centralized server crashes, voluntarily shuts down, or is hacked. Some ecosystem participants are drawn to decentralized servers, such as IPFS, which are viewed as less likely to have such issues (although they could potentially suffer the same issues as centralized servers). Another effect of off-chain metadata and content is that the token holder does not have actual possession of the associated content, which is hosted on an off-chain server, although the holder does have a permanent record of their theoretical right to the asset in the form of the transaction hash that records the wallet address as the owner.

> In short, while NFTs conceptually provide a reliable record of transactional history, in some cases the framework may be less reliable insofar as it depends on pre-blockchain, external Internet infrastructure.

In short, while NFTs conceptually provide a reliable record of transactional history, in some cases the framework may be less reliable insofar as it depends on pre-blockchain, external Internet infrastructure. Yet, digital art that is "backed" by NFTs may create an expectation among buyers that such digital art would persist indefinitely, even if the metadata extension does not. And while it would be ideal, for example, to store songs, artwork, or high-definition artwork directly on-chain, this solution is not currently practical due to image sizes and gas costs.[28] Ethereum, for instance, was not designed to accommodate these types of transactions, unless the file size is very small or could be compressed to a very small size. Records in most blockchains are simply too small to hold entire images.

Innovative Alternatives to Off-Chain Storage

Innovation marches forward, and mechanisms are evolving that attempt to address the vulnerability discussed above and ensure that art or other underlying assets can reliably persist indefinitely. One approach in the case of digital artwork is through the use of decentralized systems such as IPFS, as described above, to store digital art. According to IPFS documentation, "[o]ne goal of IPFS is to preserve humanity's history by letting users store data while minimizing the risk of that data being lost or

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[28] And, in fact, the resources required to simply record current-state, NFT-related transactions on some protocols are already a cumbersome or negative externality.

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accidentally deleted."[29] But even the IPFS faces challenges to guarantee persistence to the extent that it cannot ensure that content will be tagged for permanent retention by its users and service providers.[30]

There are also some efforts to directly create and store assets on-chain. Autoglyphs (another project by Larva Labs, the creators of CryptoPunks) are on-chain generative art on the Ethereum blockchain. Each piece of art is unique and generated by smart contract code that mints the art from pseudo-random, deterministic patterns. In other words, the artwork is actually minted on-chain, resulting in low storage costs[31] because the token is the artwork rather than referring externally to artwork.[32] Indeed, this development significantly circumscribes the scope of what NFTs might be to those mintable on-chain, although future developments may expand this functionality. Various other projects attempt to tackle the on-chain/off-chain distinction in various ways, such as Flow, which distributes the storage, collection, execution, and verification functions of its blockchain across various nodes, eliminating congestion caused by one node performing all four functions.[33]

Ultimately, NFTs and their functional purposes are a useful feature of DLT, though NFT technology remains subject, in some cases, to technical limitations. As the technology continues to progress and more use cases become clear, its popularity may continue to rise.

THE NFT ECOSYSTEM

That each NFT is technically unique from another has propelled a boom in the use of NFTs among content creators in the media, entertainment, and arts industries and beyond by enabling scarcity through authentication of digital content. NFTs have ungated new possibilities for content creators, who now have a new avenue for monetizing content. Moreover, the incorporation of automated, self-executing smart contracts creates downstream monetization opportunities that are a boon to creators, especially in jurisdictions where there is no mandatory resale royalty owed to artists. Unlike physical content (e.g., physical artwork, a limited edition vinyl), smart contracts can be designed to automatically remit a royalty on each resale of the NFT to designated recipients, and this automatic royalty could be used to provide a royalty to the artist(s), a sound editor, a music label, an estate manager, and so on (although beware that this resale royalty is not without legal risk, as discussed further below). An entire ecosystem has emerged and continues to develop to capitalize on this new opportunity: content owners, issuers, platforms, marketers, and collectors.

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[29] "Persistence versus Permanence," IPFS, https://docs.ipfs.io/concepts/persistence/#persistence-versus-permanence.

[30] *See id.* ("Nodes on the IPFS network can automatically cache resources they download, and keep those resources available for other nodes. This system depends on nodes being willing and able to cache and share resources with the network. Storage is finite, so nodes need to clear out some of their previously cached resources to make room for new resources. This process is called garbage collection. To ensure that data persists on IPFS, and is not deleted during garbage collection, data can be pinned to one or more IPFS nodes. Pinning gives you control over disk space and data retention. As such, you should use that control to pin any content you wish to keep on IPFS indefinitely.").

[31] *See also* Neloastics (https://neolastics.com/), Avastars (https://avastars.io/), and Squiggly (https://www.squiggly.wtf/).

[32] *See also* Jboogle, "The broken promises of NFT Art," Jboogle, https://jboogle.medium.com/the-broken-promises-of-nft-art-e5ee8a4b7412), providing a description and representation of this distinction. The project, InfiNFT, promises on-chain metadata, on-chain image storage, and support for 3D, audio, and other file types.

[33] *See* "What is Flow," Flow, https://www.onflow.org/primer#primer-multinode; *see also* the chart provided by Ricardo Stuven, "On-Chain Artwork NFTs," Treumk, https://medium.com/treum_io/on-chain-artwork-nfts-f0556653c9f3.

Content Owners: NFTs were embraced early on by certain music communities (such as the electronic dance music community) and digital artists, but content creators are not limited to individuals. There has been increasing activity from brands that are entering the NFT market to engage with their fans and followers. We refer to all of these creators and rights holders as "Content Owners" for purposes of this white paper. NFTs allow for broad creativity around the release of content and give Content Owners the ability to customize how they offer and promote their content. As noted in the Kings of Leon example above, the special album package NFT highlights how NFTs can combine both digital and physical goods—that particular offering included digital artwork, a digital album artwork, and a physical vinyl of the album. NFTs can also create charitable opportunities: Kings of Leon donated all proceeds from the special album package NFT and the highest priced "golden ticket" NFT to Live Nation's "Crew Nation Fund" for out-of-work live music crew members.

Issuers: While Content Owners sometimes mint NFTs themselves, there is also a separate part of the ecosystem of developers that manage the design, minting, and listing of NFTs (Issuers). These Issuers (whether individuals or companies) offer these services either as part of a pure service provider relationship with a Content Owner or as part of a collaborative partnership with a Content Owner. Often, Platforms (as defined below) may also play the role of Issuer with respect to a given NFT project. Sweet, for example, is both a Platform and an Issuer, and it collaborates with brands to design collectibles using brands' content, and then it mints and distributes them.

Platforms: A number of digital marketplaces have emerged that allow people to mint, sell, and buy NFTs. Among the most widely used are OpenSea, Rarible, Foundation, and Nifty Gateway. Some of these marketplaces support only the Ethereum blockchain, while others offer "multi-chain" support. Platforms like OpenSea organize the NFTs by categories, some of which include artworks, music, photos, videos, and in-game assets. This broad spectrum of categories illustrates the diversity in the market for NFTs. Other Platforms have a more tailored focus. Foundation, for example, is geared toward artworks and digital art creators.

There are also companies creating "walled garden" NFT Platforms, such as NBA Top Shot, in which the collectibles can only be traded within the Platform itself. NFTs have also been featured in real-world auctions, such as the sale of Beeple's "Everydays: The First 5000 Days" at Christie's, a historic art auction house.[34] We refer to these marketplaces, walled garden platforms, and auction houses together as "**Platforms**."

Marketers: Certain individuals and companies offer marketing services for NFTs ("**Marketers**"). This part of the ecosystem includes celebrities, influencers, and companies that market Platforms and/or specific NFT projects.

Collectors. Those who buy, or otherwise acquire, NFTs include consumers, investors, and collectors (collectively, "**Collectors**"). While consumers and art/memorabilia Collectors tend to be the focus of most NFT projects, NFTs are sometimes held by people or companies that view the NFT as an investment.

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[34] https://onlineonly.christies.com/s/beeple-first-5000-days/beeple-b-1981-1/112924.

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OVERVIEW OF KEY LEGAL AND REGULATORY ISSUES REGARDING NFTS

NFTs entail numerous legal and regulatory issues that may impact participants in the NFT ecosystem. Below we have provided an overview of key intellectual property rights issues, contractual issues, and regulatory issues that we often see in NFT projects. *Please note that this overview is provided for illustrative purposes only and is not legal advice.*

As we detail below, entities should be aware that intellectual property rights that transfer with an NFT may be limited to a form of licensing rather than ownership transfer and entities should ensure that they thoroughly understand what rights they are providing or receiving. Content Owners, Issuers, Platforms, and Collectors should consider the key contractual issues that apply to each group we have described below. Further, depending upon the characteristics and marketing of an NFT, entities should understand the various regulations that may apply, including those relating to securities laws, gambling and lottery laws, consumer protection, sanctions, anti-money laundering, money transmitter licensing, and commodities.

INTELLECTUAL PROPERTY OWNERSHIP AND LICENSING

It is critical to distinguish ownership of the underlying NFT (as a token itself) from ownership of the content that is associated with that NFT. While NFT holders own the token, in most cases rights owners do not intend to transfer ownership of the associated content and are even less likely to be transferring their ownership in the intellectual property rights in such content. Instead, the trend is for rights owners to license the associated content to the NFT holder, setting out specific permitted uses along with limitations and restrictions.

This licensing approach to NFT-related content gives rights owners greater control over their works and may help to avoid U.S. copyright law's first sale doctrine from applying to such works, which, if the doctrine were to apply, could undermine some of the advantages of NFTs for content creators and owners (e.g., the ability to limit downstream misuses of their content associated with NFTs). Under U.S. law, a copyright owner has certain exclusive rights in their works of authorship, including the rights to control the reproduction of such works, the distribution of copies of such works to the public, the public performance and display of such works, and the preparation of derivative works based on such works. Notably, when someone purchases an NFT, they are not necessarily purchasing the intellectual property rights in the content associated with the NFT. This is consistent with the analog world, where, if someone buys a novel, they do not automatically acquire the copyright in the novel; rather, there needs to be a signed writing for a transfer of such copyright to occur.

> Notably, when someone purchases an NFT, they are not necessarily purchasing the intellectual property rights in the content associated with the NFT.

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Taking this one step further, the owner of an NFT may not even be obtaining ownership of the copy of the content associated with such NFT akin to the way someone might own a physical copy of a novel in the analog world. Ownership of a lawfully made physical copy of a work generally gives the owner of the copy the right to sell or otherwise dispose of the possession of such copy without restrictions from the copyright owner.[35] This principle is referred to as the "first sale doctrine," which is an exception to the copyright owner's exclusive distribution right. The owner of a particular copy is entitled, without the need to obtain authorization from the copyright owner, to sell or otherwise dispose of the possession of the copy.

In the United States, the applicability of the first sale doctrine with respect to digital works (as opposed to physical works) is murky. The Court of Appeals for the Second Circuit rejected the concept of a digital first sale doctrine in a case involving a technology that allowed users to resell digital music files.[36] Moreover, as described in greater detail above, in most cases in the NFT space, content is associated with an NFT (via a pointer of some sort) rather than actually embedded in the NFT, with such content being stored remotely on a web server. As explained above, on-chain storage of content is not feasible for most blockchains because the size of the token would become too large. This off-chain content hosting means that the content itself is not changing hands as the NFT is resold, thus supporting an argument that there has not been a true distribution of the content that would trigger the application of the first sale doctrine to such content, even to the extent that the first sale doctrine were to apply to digital content.

For copyright owners, there are reasons for not wanting the first sale doctrine to apply to their content associated with NFTs. If the first sale doctrine were to be applicable, then efforts by a copyright owner to limit or restrict an NFT purchaser's use of the copyright owner's content (e.g., prohibitions on the Platforms on which the NFT and associated content can be resold, or other limitations on resale) might be unenforceable. Much of the draw of NFTs for copyright owners is the opportunity to benefit from downstream sales by including a resale royalty in the smart contract. The first sale doctrine, if applicable, could potentially jeopardize the copyright owner's ability to impose a royalty on downstream transfers of the NFT.

When granting a license to NFT holders, copyright owners should expressly set out the rights being granted. From a rights owner's perspective, the license grant ideally should be a nonexclusive, limited license to make certain limited uses of the content associated with the purchased NFT—typically, rights to access, perform, and/or display (as applicable) the content solely through the NFT for the buyer's personal, noncommercial purposes. The content license grant ideally should terminate upon the earlier of the buyer no longer owning the NFT associated with the licensed content or the buyer breaching the applicable terms and conditions of the license. We have observed a range in approaches to setting out this license grant. Some rights owners have a more streamlined agreement focusing largely on the license grant and related limitations and restrictions, whereas others set out the license grant as part of comprehensive terms and conditions that govern the purchase and subsequent sale of the NFT, including risk allocation provisions (such terms and conditions, the NFT Terms). Where the NFTs are bought or otherwise transferred in a "walled garden" Platform, the license grant can be set out within the terms of service for the Platform itself. Further, the NFT Terms should make clear that the rights owner retains ownership of the content. Additionally, the NFT Terms should restrict the NFT holder's ability to transfer the NFT and should impose sufficient restrictions to bolster an argument that the NFT holder has a license to the content rather than ownership of the copy.[37]

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[35] 17 U.S.C. § 106(3).

[36] *Capitol Records, LLC v. ReDigi, Inc.* (2d Cir. Dec. 10, 2018).

[37] In a pivotal first sale doctrine case, a computer software customer was not entitled to invoke the first sale doctrine in a copyright infringement action, where the copyright owner specified that the customer was granted a license,

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KEY CONTRACTUAL CONSIDERATIONS

The NFT industry is built on relationships between Content Owners, service providers, consumers, and other players in the ecosystem. Each participant in the ecosystem should take care to manage the commercial and legal risks associated with agreements in the NFT space. Following is a high-level overview of the key considerations for such agreements.

Contractual Considerations for Content Owners

AGREEMENTS WITH ISSUERS

☐ Content Owners should specifically identify the content that will be associated with the NFT.

☐ The scope of the license granted to the Issuer should be narrowly tailored to provide only the rights necessary for the Issuer to mint and list the NFT.

☐ The agreement should set out whether the content would be stored on-chain or off-chain. The agreement should also specify which party is responsible for hosting the content.

☐ To the extent that the Issuer is making any modifications to the content, the Content Owner may need a license from the Issuer to use that modified version of the content (e.g., if the Content Owner is interested in marketing the NFT).

☐ Content Owners may wish to specify preapproved Platforms or retain an approval right regarding which Platform the NFT can be listed on for initial sale.

☐ The agreement should specify any royalties to the Content Owner (or other parties) in connection with the initial sale and downstream sales of the NFT (note that royalties based on downstream NFT sales may raise securities law and other regulatory concerns, depending on the facts and circumstances).

AGREEMENTS WITH PLATFORMS

☐ The scope of the license granted to the Platform should be narrowly tailored to provide only the rights necessary for the Platform to display and market the NFT.

☐ The parties should acknowledge and agree that, although the NFT itself may be sold, the content associated with the NFT will be licensed and not sold to end users.

☐ The Platform should be required to have terms and conditions that apply to end users, and the Content Owner may wish to be a third-party beneficiary of such terms and conditions (e.g., this could be done as a general reference to "licensors" as third-party beneficiaries). If the Content Owner has its own NFT Terms, the Platform should be obligated to present those NFT Terms to end users in a manner acceptable to the Content Owner.

☐ The Content Owner may wish to prohibit the Platform from taking actions that would imply that the Content Owner is endorsing or sponsoring the Platform or any cryptocurrency.

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significantly restricted the customer's ability to transfer the software, and imposed notable use restrictions. *Vernor v. Autodesk, Inc.*, 621 F.3d 1102 (9th Cir. 2010).

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AGREEMENTS WITH COLLECTORS

- [ ] The Content Owner should disclose in such an agreement any royalty that it would receive from the initial sale and/or downstream sales of the NFT and that the NFT embeds a smart contract that may automatically execute such royalty payments by deducting those amounts from the purchase price.

- [ ] Content Owners should consider setting out risk allocation provisions relating to the NFT, including disclaimers, indemnities from the Collector, and limitations on liability.

- [ ] As discussed further below in subsection 3(c), Content Owners should take steps to bolster the enforceability of agreements with Collectors.

CONTRACTUAL CONSIDERATIONS FOR ISSUERS

- [ ] Issuers will want to minimize their risk in handling the content provided by the Content Owner and should consider how to do so via risk allocation provisions in the agreement. Issuers may consider requiring Content Owners to make representations and warranties regarding the content being provided (including that such content does not infringe, violate, or misappropriate the intellectual property or other rights of any third parties), indemnify the Issuer for certain acts and omissions (including breach of representations and warranties), and include limitations on liability.

- [ ] Issuers should review the governing terms and conditions of the Platform on which the applicable NFT will be minted and listed.

CONTRACTUAL CONSIDERATIONS FOR PLATFORMS

- [ ] As set out in further detail in subsection 3(c), Platforms should take steps to bolster the enforceability of agreements with end users (e.g., terms of service).

- [ ] Platforms should make clear to end users the scope of the rights being granted in connection with holding an NFT, and the limitations and restrictions on those rights. Importantly, it should be stated that, although the NFT itself may be sold, the content associated with the NFT will be licensed and not sold.

- [ ] As with any terms of service, Platforms should consider including disclaimers, indemnities from end users, and limitations on the Platform's liability.

CONTRACTUAL CONSIDERATIONS FOR COLLECTORS

- [ ] Collectors should do their due diligence to understand what rights will be granted to them in connection with owning an NFT. Importantly, the Collector should review the scope of the license grant to the content associated with the NFT.

- [ ] Collectors may be interested in knowing whether the Content Owner, Issuer, or third party will be obtaining a cut of the sale price. This information may be disclosed in the applicable agreement.

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ONLINE CONTRACT FORMATION WITH END USERS

NFT Terms should be presented to potential buyers in a manner designed to support a finding that the terms are binding on the initial NFT holder at a minimum and ideally on subsequent buyers of a given NFT as well.

If content is stored off-token, rights owners should consider where the NFT Terms will be stored (e.g., on IPFS or in the cloud). Where an NFT is offered within a walled garden Platform, the NFT Terms could be presented to prospective NFT holders as part of opening a Platform account, ideally by obtaining a "click" acceptance from each Platform user. Under U.S. contract law, courts have generally enforced "clickwrap" agreements (i.e., online agreements where users affirmatively show their acceptance after being presented with the terms, usually by clicking "I agree"). There is less certainty around "browsewrap" agreements (i.e., online terms that do not require any affirmative indication of consent). In analyzing the enforceability of clickwrap and browsewrap agreements, courts evaluate a number of factors, some of which include (1) whether the consent mechanism is proactive, (2) whether the call to action (e.g., "By clicking "AGREE" you are consenting to…") is clear and conspicuous, (3) whether the call to action is spatially near the consent mechanism, and (4) whether the overall layout of the user interface is uncluttered.

> Ideally, the NFT Terms, or a link thereto, should be embedded in each NFT in the description metadata field, so that the terms would "travel" with the collectible.

After the initial sale or transfer of an NFT, an important challenge to address is how to maximize the likelihood that subsequent NFT holders are bound by the NFT Terms. Ideally, the NFT Terms, or a link thereto, should be embedded in each NFT in the description metadata field, so that the terms would "travel" with the collectible. Rights owners may also consider setting out in the NFT Terms that the current NFT holder must (1) notify any potential downstream buyer of their NFT that such would-be buyer's purchase of the NFT will be subject to the NFT Terms and (2) provide such would-be buyer with an opportunity to review the NFT Terms prior to purchase. Even with these measures in place, however, it may be difficult to establish that a subsequent NFT holder had sufficient notice of the NFT Terms to form a binding contract with the rights owner.

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POTENTIAL REGULATORY CONSIDERATIONS

NFTs (and activities involving NFTs) may implicate a variety of U.S. federal and state regulatory regimes, depending on how they are structured and distributed, with important consequences for NFT market participants.

Federal Securities Laws

Depending upon certain characteristics and the manner in which it is marketed, an NFT could be considered a security under federal securities laws. The term "security" includes the broadly defined term, "investment contract," which exists where there is an "investment of money in a common enterprise with a reasonable expectation of profits to be derived from the efforts of others" (the *Howey* test).[38] While the U.S. Securities Exchange Commission (SEC) has published a "Framework for 'Investment Contract' Analysis of Digital Assets" (the Framework)[39] to address how a digital asset generally could fall within the definition of an investment contract, neither the SEC nor any court has stated how the *Howey* test might apply specifically to NFTs. Analysis of the application of securities laws to digital assets has tended to focus on whether there is a reasonable expectation of profits derived from the efforts of others as the earlier elements of the test are typically (though not always) satisfied. In evaluating this aspect of the test, the SEC considers the "economic reality" of the transaction and the "character" of the instrument based upon "the terms of the offer, the plan of distribution, and the economic inducements held out to the prospect."[40] In the Framework, the SEC set out numerous characteristics tending to increase the likelihood of meeting this requirement. For NFTs, some of the most relevant characteristics include the following:

> Built-in rights to earnings;

> The Issuer or a third party retains a stake in the NFT or uses it as a form of compensation;

> Broad, as opposed to more targeted, marketing;

> Sales in quantities indicating investing intent;

> Little correlation between an NFT's price and its value as a good or service;

> Marketing implying that the NFT is an investment; and

> The existence of a secondary market or trading platform.[41]

A finding that an NFT is a security would mean, among other things, that the NFT should not be distributed absent registration under the securities laws or determining that the NFT qualifies for an exception or safe harbor under the securities laws. Content Owners, Issuers, and Platforms involved in structuring contractual arrangements relating to an NFT may wish to consider ways to mitigate the likelihood that an NFT may be deemed a security, such as by not requiring or facilitating downstream royalties or by ensuring that the NFT is not marketed in a manner that implies it is an investment.

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[38] See *SEC v. W.J. Howey Co.*, 328 U.S. 293 (1946). For more information about the details and application of the *Howey* test, see J. Dax Hansen, Carla L. Reyes & Josh Boehm, Perkins Coie Virtual Currency Report, "Resources on Crypto-Tokens and Securities Law" (June 5, 2017), https://www.virtualcurrencyreport.com/2017/06/resources-on-crypto-tokens-and-securities-law/#more-3282.

[39] SEC, Strategic Hub for Innovation and Financial Technology, "Framework for 'Investment Contract' Analysis of Digital Assets" (Apr. 3, 2019), https://www.sec.gov/corpfin/framework-investment-contract-analysis-digital-assets.

[40] Framework, *supra* note 39, Sec. II.C

[41] Framework, *supra* note 39, Sec. II.C.2.

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If an NFT is deemed a security that must be registered or qualify for an exemption, there may be prohibitions or restrictions on further sales of the NFT, and the value of other NFTs from a particular Content Owner or Issuer may also be affected. If an NFT is deemed a security, Platforms that make the NFT available may need to register as an intermediary, such as a broker-dealer, alternative trading system, or exchange. As such, these entities may need to consider the characteristics and marketing of an NFT and monitor the pricing, quantities, and selling patterns of NFTs to determine the likelihood that an NFT may be deemed a security.

NFT Marketers should be careful not to imply that an NFT is an investment and should more narrowly target their marketing efforts toward persons who would clearly value an NFT for its consumptive use. If an NFT is found to be a security, depending upon their activities certain Marketers may need to register as broker-dealers. Collectors of NFTs that are found to be unregistered securities may be restricted from selling such NFTs broadly to retail investors and such a finding by the SEC may cause the value of an NFT to decline. Collectors should also be aware of the possibility that use of the NFT may be restricted if it is found to be an unregistered security.

> NFT Marketers should be careful not to imply that an NFT is an investment and should more narrowly target their marketing efforts toward persons who would clearly value an NFT for its consumptive use.

Illegal Lottery, Games of Chance and Skill, Gambling, Consumer Protection Laws, and Commercial Co-Venture Requirements

Depending on the extent to which an NFT may enable players to obtain rewards or other perks and how an NFT is marketed, regulations relating to lotteries, gambling, or advertising could be triggered.

ILLEGAL LOTTERY LAWS

It is generally illegal, pursuant to U.S. state and federal laws, to run a promotion or contest characterized as a lottery. An illegal lottery incorporates the following three elements: (1) a prize; (2) chance; and (3) consideration (i.e., payment, substantial time and effort, sensitive information, or other significant benefit). Depending on the facts and circumstances, each of these elements might be present when a person is offered the opportunity to receive a reward in exchange for playing a game or paying something of value. For example, an Issuer or Platform provider providing some purchasers (but not all) with "awards" of monetary value (e.g., a valuable game character, if the character could be purchased or sold) and while providing others with awards of no monetary value (e.g., opportunity to participate in feedback sessions) could be considered a chance-based promotion requiring consideration and thus an illegal lottery.

A promotion providing a reward based on chance or skill must remove one of the key three elements. A game of skill "contest" promotion would eliminate the chance element, while a game of chance "sweepstakes" promotion would eliminate the consideration element. For a chance-based promotion or sweepstakes to eliminate "consideration," the sponsor would need to offer an alternative method of entry, such as a mail-in or email entry mechanism, to give participants the ability to participate in the sweepstakes for free. In a game of skill or contest, the sponsor would need to eliminate the "chance" element by basing the outcome of the contest on some objective skill within the control of the participant, such as an essay contest or foot race.

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In addition, assuming the chance or consideration element is removed to avoid illegal lottery laws, U.S. state contest and sweepstakes requirements would still apply, requiring (among other obligations) (1) official rules governing the award of the prizes to be posted and (2) certain minimum disclosures to be provided wherever the promotion is advertised. Further, games of chance with a value over a certain amount must be registered and bonded in certain states (e.g., $5,000 in Florida and New York).

For NFT Issuers or Platforms offering some form of prize in connection with the purchase of an NFT, basing the granting of any prize on some form of a skill-testing question or action would help to ensure compliance with these laws. Issuers and Platforms may also want to consider better familiarizing themselves with applicable state laws to ensure that the mechanics of any contest or prize meet the specific applicable requirements.

GAMBLING LAWS

State and federal laws generally significantly restrict gambling activities. For example, most states establish that "the making, placing or receipt of any bet or wager" without express statutory authorization (and in some instances, a license) is illegal gambling. Pursuant to the federal Uniform Internet Gambling Enforcement Act "unlawful Internet gambling" is defined as the knowing transmission of a bet or wager, by means of the Internet, where the bet or wager is otherwise illegal in the place where the bet or wager is "initiated, received, or otherwise made."

Gambling laws will likely apply if a business establishes mechanisms that allow persons to challenge other players for money or "buy in" to a tournament. Penalties for violating the law vary by jurisdiction and may entail fines or imprisonment depending upon the precise circumstances. Therefore, NFT Issuers and Platforms should seek to avoid structuring a "buy in" type of mechanism into their NFTs.

TRUTH-IN-ADVERTISING LAWS/PROMOTIONS LAWS

The Federal Trade Commission Act prohibits "unfair or deceptive acts or practices in or affecting commerce." State laws also impose similar prohibitions. Under these laws, advertisers must ensure that their advertising claims are truthful, not misleading, and supported by evidence.

Furthermore, "free offers" and "gifts with purchase" (e.g., "buy x, get y") are subject to federal and state "free offer" laws and "gifts with purchase" laws that require the offeror to: (1) disclose material terms and conditions of the offer; (2) award at no cost items advertised as "free"; and (3) in certain cases, establish particular time, duration, and frequency limitations. For example, the FTC establishes timing and duration restrictions for single product SKUs advertised as "free" or "buy one, get one," or similar terminology in a particular market (for example, the offer must not be made for more than six months in any 12-month period and at least 30 days should elapse before another such offer is promoted in the same trade area).

These truth-in-advertising laws and transparency principles would apply to all promotional activities relating to NFTs and as such could impact any market participant with a financial interest in NFT promotion, including Issuers, Platforms, Marketers, and Content Owners.

INFLUENCER FTC ENDORSEMENT COMPLIANCE

The FTC subjects influencer activities to the Guides Concerning the Use of Endorsements and Testimonials in Advertising (the Endorsement Guides) and related FAQs. The Endorsement Guides require (1) all comments, posts, and other messages to reflect the endorser's honest opinions, beliefs, and experiences; (2) influencers (and the brand) to ensure that all claims made are truthful, not misleading, and supported by evidence; and (3) disclosure of the "material connection" between the

brand and the influencer in every post or communication made by the influencer related to the brand or product. A "material connection" will be found where there is a relationship that could affect the weight or credibility that the audience would give the endorsement, such as payment, receipt of free product, employment, family, etc. Acceptable disclosures of a material connection between an NFT Issuer and the Marketer that it is using would include, among other options, #[NFT Issuer Name]Ambassador, #[NFT Issuer Name]Influencer, and "I am a [NFT Issuer Name] ambassador."

The FTC has also indicated that a company's strong policies and procedures regarding influencers and their content will reduce the probability of influencer or endorsement-related enforcement. To address this, the FTC asks that advertisers (1) instruct celebrity endorsers, bloggers, and other social media influencers about their compliance obligations and (2) periodically monitor and follow up with such endorsers if questionable practices are found. To ensure compliance with FTC requirements, Issuers should heed this guidance in their use of Marketers for their NFTs.

COMMERCIAL CO-VENTURE REQUIREMENTS

Approximately 25 states regulate commercial co-ventures, requiring a number of different disclosures in connection with advertising the promotion and specific contractual provisions that should be included in contracts between the co-venturer and the charity. These requirements may apply to NFTs sold with a charitable promise. Some states also require that the commercial co-venturer register with the state or require the submission of information with respect to individual promotions. A number of states do not require registration if the agreement between the co-venturer and the charity includes specific contractual provisions, including, for example, the names, addresses, and phone numbers of the co-venturer and the charitable organization, the dates of the campaign, a statement of the charitable purpose, a schedule for when the donations will be transferred from the commercial co-venturer to the charity, a statement that the charity has the ability to cancel with or without cause, and a statement that the commercial co-venturer will disclose in its advertising the dollar amount or percent per unit that will benefit the charity.

U.S. Sanctions Requirements

Issuers and Platforms should also be aware of U.S. economic sanctions relating to certain countries and individuals. The Office of Foreign Assets Control (OFAC), an agency of the U.S. Department of the Treasury, generally prohibits U.S. persons and, in some cases, foreign persons from conducting or facilitating transactions with sanctioned parties.[42] OFAC has issued guidance asserting that compliance obligations are the same regardless of whether a transaction is denominated in fiat currency or digital currency.[43]

All U.S. persons are required to comply with OFAC regulations, including U.S. citizens and permanent resident aliens (wherever located), companies organized in the United States, including foreign branches, and individuals and entities located in the United States. OFAC also interprets its jurisdiction broadly to apply to foreign persons. It has done so based on various theories, such as contacts with the United States and the use of secondary sanctions.

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[42] U.S. Dep't of the Treasury, "Office of Foreign Assets Control—Sanctions Programs and Information," https://home.treasury.gov/policy-issues/office-of-foreign-assets-control-sanctions-programs-and-information.
[43] U.S. Dep't of the Treasury, "Frequently Asked Questions, Questions on Virtual Currency" (2018), https://home.treasury.gov/policy-issues/financial-sanctions/faqs/topic/1626.

No U.S. person can participate in or facilitate a transaction with (1) a business or individual resident in Iran, Cuba, North Korea, Syria, and the Crimea, Luhans, and Donetsk regions in Ukraine or (2) certain named entities or individuals placed on one of OFAC's sanctions. The most widely used list is the Specially Designated Nationals And Blocked Persons List (SDN) list and any transaction with an SDN is prohibited. The list of sanctioned countries and persons changes frequently and OFAC has added digital currency addresses to this list.[44]

Recently, OFAC issued an advisory specifically relating to potential sanctions risks in relation to trade in high-value artwork with OFAC-sanctioned persons. This advisory describes aspects of the market that pose sanctions risks and emphasizes the importance of a risk-based compliance program for entities such as private art collectors, auction companies, agents, brokers, and others to address such risks.[45] OFAC has also published guidance describing the essential elements of an effective sanctions compliance program (SCP).[46]

Given OFAC's heightened attention to both the art market and the use of virtual currency by sanctioned parties, NFT market participants, particularly Issuers and Platforms, should implement an SCP that meets OFAC expectations. Violating OFAC regulations is generally subject to "strict liability." A violation could result in criminal and civil penalties as well as blocked funds and seized goods. If there is a sanctions violation, OFAC will review and consider favorably an effective SCP in determining the appropriate enforcement response, including whether to impose a civil monetary penalty.[47] Market participants accepting virtual currency, such as Issuers and Platforms, should be aware that OFAC has concluded enforcement actions against virtual currency companies and has retained a services vendor to identify and monitor virtual currency blockchain transactions.

NFT Platforms in particular should also expect heightened attention by the Department of Justice.

It is also notable that the U.S. Department of Justice recently announced the creation of a National Cryptocurrency Enforcement Team to address "complex investigations and prosecutions of criminal misuses of cryptocurrency, particularly crimes committed by virtual currency exchanges, mixing and tumbling services, and money laundering infrastructure actors."[48] As such, NFT Platforms in particular should also expect heightened attention by the Department of Justice.

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[44] U.S. Dep't of the Treasury, "OFAC Consolidated Frequently Asked Questions," https://home.treasury.gov/policy-issues/financial-sanctions/frequently-asked-questions/ofac-consolidated-frequently-asked-questions.

[45] U.S. Dep't of the Treasury, "Advisory and Guidance on Potential Sanctions Risks Arising From Dealings in High-Value Artwork" (Oct. 30, 2020), https://home.treasury.gov/system/files/126/ofac_art_advisory_10302020.pdf.

[46] U.S. Dep't of the Treasury, "A Framework for OFAC Compliance Commitments," https://home.treasury.gov/system/files/126/framework_ofac_cc.pdf.

[47] *Id.*; U.S. Dep't of the Treasury, "Advisory on Potential Sanctions Risks for Facilitating Ransomware Payments" (Oct. 1, 2020), https://home.treasury.gov/system/files/126/ofac_ransomware_advisory_10012020_1.pdf.

[48] U.S. Dep't of Justice, "Deputy Attorney General Lisa O. Monaco Announces National Cryptocurrency Enforcement Team" (Oct. 6, 2021), https://www.justice.gov/opa/pr/deputy-attorney-general-lisa-o-monaco-announces-national-cryptocurrency-enforcement-team.

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ANTI-MONEY LAUNDERING LAWS

Money Services Businesses

The Financial Crimes Enforcement Network (FinCEN), a bureau of the Department of the Treasury that administers and enforces anti-money laundering (AML) laws, has implemented regulations imposing AML requirements on money services businesses (MSBs) and other financial institutions.

FinCEN guidance indicates that a person engaged as an "administrator" or "exchanger" of convertible virtual currency (CVC) will be deemed to be a money transmitter, which is a type of MSB under FinCEN's regulations.[49] CVC is defined as "virtual currency" that has "an equivalent value in real currency, or acts as a substitute for real currency."[50] "Virtual currency" is defined as "a medium of exchange that operates like a currency in some environments, but does not have all the attributes of real currency . . . specifically, virtual currency lacks the status of legal tender in any jurisdiction."[51] An NFT might constitute CVC under FinCEN's guidance depending on the facts and circumstances, which vary depending on the features of the NFT in question.

So long as NFTs are sold and marketed as unique collectibles, and not designed or promoted as a medium of exchange or investment, it is generally unlikely that NFTs would constitute CVC. By extension, it is generally unlikely that issuing or exchanging NFTs (taken alone) constitutes MSB activity. As a practical matter, the uniqueness of each NFT would likely make it difficult for the NFTs to function as a medium of exchange because each NFT would have a different value. Further, the absence of an exchange platform where NFT holders can use their NFTs to purchase other goods or services or quickly convert their NFTs into fiat currency makes it less likely that a reasonable person would choose to use NFTs as a medium of exchange. On the other hand, the more fungible an NFT is, and the more ways it can be used as a medium of exchange in practice, the more likely an NFT could substitute for currency and be viewed as CVC.

If a business qualifies as an MSB under FinCEN's regulations, then it will need to register with FinCEN and implement an AML compliance program.[52] Operating an unregistered MSB is a federal crime and FinCEN may impose substantial fines and even imprisonment.[53] The business may also be subject to civil forfeiture,[54] meaning that any real or personal property involved in an MSB transaction could be taken away.[55]

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[49] "Application of FinCEN's Regulations to Persons Administering, Exchanging, or Using Virtual Currencies," FIN-2013-G001 (Mar. 18, 2013) (2013 FinCEN Guidance). Giving legislative support to this guidance, recent amendments to the Bank Secrecy Act under the Anti-Money Laundering Act of 2020 (AMLA) codify the intent of Congress to cover entities engaged in virtual currency activities by: (i) amending the term "money transmitting business" to include a person engaged in the business of transmitting "value that substitutes for currency"; (ii) amending the term "money transmitting service" to include accepting "value that substitutes for currency" and transmitting it; and (iii) adding businesses "engaged in the exchange of currency, funds, or value that substitutes for currency or funds" to the definition of "financial institution." The amendment was intended to strengthen FinCEN's ability to safeguard the financial system from financial crime that may result from the "use and trading of virtual currencies" that criminals may rely upon as "substitutes for currency." AMLA, Sec. 6102(a)(3), (d)(1)(B), and (d)(2).

[50] *See* 2013 FinCEN Guidance.

[51] *See id.*

[52] *Fact Sheet on MSB Registration Rule*, FinCEN, https://www.fincen.gov/fact-sheet-msb-registration-rule (last visited Sept. 21, 2021).

[53] *See id.*; *see also* 18 U.S.C. § 1960.

[54] 18 U.S.C. § 1960.

[55] 18 U.S.C. § 981(a)(1)(A).

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Content Owners and Issuers could reduce the possibility of Platforms falling under the definition of an MSB by ensuring their NFTs are unique through qualitatively different features that would be valued differently. Issuers of NFTs could reduce the possibility of falling under the definition of an MSB by refraining from the appearance of operating an exchange service between virtual or fiat currencies and NFTs.

Other Businesses

Recently enacted AML laws direct regulators to more carefully review the sale of art and antiquities, which may include some NFTs. The Anti-Money Laundering Act of 2020 expands the definition of a "financial institution" under the Bank Secrecy Act to include persons "engaged in the trade of antiquities, including an advisor, consultant, or any other person who engages as a business in the solicitation or the sale of antiquities" and directs FinCEN to develop implementing regulations. The AMLA also requires the Secretary of the Treasury, in coordination with the Director of the Federal Bureau of Investigation, the Attorney General, and the Secretary of Homeland Security, to study money laundering and terrorism financing facilitation through trade in art. The study should include a consideration of which markets should be subject to regulation, the degree to which regulations should focus on high-value trades, and the need to identify the art purchasers, in addition or others engaged in the art trade.[56]

> Recently enacted AML laws direct regulators to more carefully review the sale of art and antiquities, which may include some NFTs.

While regulations have not yet been developed, and the term "antiquities" is not currently defined, the broad scope of regulations being considered and the possibility that NFTs generally, or at least certain NFTs, may be covered suggests that Issuers, Platforms, and Marketers, in particular, may fall under the scope of this regulation. As such, these entities should be prepared for greater scrutiny of their activity and future AML regulation of their activity.

STATE MONEY TRANSMITTER LAWS

Many U.S. states require certain non-bank financial institutions to obtain a money transmitter license (MTL). The following types of activities typically require an MTL in various states: (1) transferring funds; (2) selling or exchanging virtual currency for fiat or other virtual currency; (3) providing stored value services; and (4) issuing or selling payment instruments. In each state where an MTL is needed, regulators may impose, among others, requirements to: (1) provide audited financial statements to the state regulator; (2) maintain surety bonds of up to $2 million; (3) maintain a minimum net worth of up to $1 million; (4) maintain AML policies and procedures; (5) periodically permit examinations of the company's books and records; (6) maintain permitted investments equal to the value of money transmitted; and (7) submit its officers, directors, and other control persons to extensive background checks.

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[56] FinCEN, FinCEN Notice FIN-2021-NTC2 FinCEN Informs Financial Institutions of Efforts Related to Trade in Antiquities and Art (Mar. 9, 2021).

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As with the federal MSB analysis, whether a business would be required to obtain an MTL in a particular state in connection with NFTs typically depends upon whether the NFTs would be construed as monetary value, payment instruments, or virtual currencies under the applicable state laws. Issuers or Platforms providing wallet services and permitting use of NFTs outside of a limited context, such as a gaming application, could increase their risk of being required to obtain an MTL. We note also that each state has unique requirements and would advise considering the specific requirements of each state in which the NFTs may be offered.

FEDERAL COMMODITIES LAW

The U.S. Commodity Futures Trading Commission (CFTC) generally has jurisdiction under the Commodity Exchange Act (CEA) over transactions involving: (1) "swaps"; (2) futures contracts;[57] and (3) retail commodity transactions entered into on a leveraged or margined basis that do not result in actual delivery within 28 days.[58] The CFTC also has anti-fraud and anti-manipulation enforcement authority over commodities generally.[59]

While NFTs may not generally be thought of as commodities, the CEA defines a "commodity" very broadly to include various enumerated agricultural commodities as well as "all services, rights, and interests in which contracts for future delivery are presently or in the future dealt in."[60] The CFTC has found that Bitcoin is a commodity within scope of the CFTC's anti-fraud and anti-manipulation authority[61] and has stated that it believes that ether and other virtual currencies or virtual tokens may be commodities or derivatives.[62]

While the offering of swaps and futures on NFTs may not currently be very common, it is possible that NFTs may be offered on a leveraged basis. A "retail commodity transaction" is any commodity transaction (1) entered into with or offered to a person that is not an eligible contract participant (i.e., not a sophisticated investor); and (2) that is leveraged, margined, or financed.[63] The definition excludes contracts that (1) result in actual delivery within 28 days and (2) create an enforceable obligation to deliver between an Issuer and a buyer that have the ability to deliver and accept delivery, respectively, in connection with the line of business of the Issuer and the buyer.[64] "Actual delivery" as used in (1) above requires: (1) a purchaser to secure (a) transfer of title and possession of the commodity and (b) the ability to freely use the commodity away from any particular execution platform beginning no later than 28 days after the transaction; and (2) the seller to not retain any interest in, legal right, or control over any of the commodity purchased at the expiration of 28 days.[65]

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[57] 7 U.S.C. § 2(a)(1)(A).
[58] 7 U.S.C. § 2(c)(2)(D).
[59] 7 U.S.C. § 9(1).
[60] 7 U.S.C. § 1a(9).
[61] *See, e.g.*, *In the Matter of: Coinflip, Inc.*, CFTC Dkt. No. 15-29 (Sept. 17, 2015) (a settlement order where the CFTC found that "[b]itcoin and other virtual currencies are encompassed in the definition and properly defined as commodities"); *CFTC v. McDonnell,* 287 F. Supp. 3d 213 (E.D.N.Y. Mar. 6, 2018) (the first federal case confirming that the CFTC may regulate virtual currency as a commodity).
[62] *See*, *e.g.*, LabCFTC, A CFTC Primer on Virtual Currencies (Oct. 17, 2017) at p.14; CFTC, Chairman Tarbert Comments on Cryptocurrency Regulation at Yahoo! Finance All Markets Summit, Release Number 8051-19 (Oct. 10, 2019) (then-CFTC Chairman Heath Tarbert expressed the view that ether is a commodity and would fall under CFTC jurisdiction).
[63] 7 U.S.C. § 2(c)(2)(D)(i). The CFTC has provided further guidance as to what "actual delivery" means.
[64] 7 U.S.C. § 2(c)(2)(D)(ii).
[65] See Retail Commodity Transactions Involving Certain Digital Assets, 85 Fed. Reg. 37,734 (June 24, 2020).

The CFTC has the authority to bring enforcement actions against persons who engage in fraud or manipulation with respect to any commodity, including in the spot market, which could impact multiple participants in NFT markets, including Issuers, Collectors, Platforms, Marketers, and promoters. Offering retail commodity transactions may require certain Platforms to register as dealers, futures commission merchants, or contract markets and may require compliance with certain other requirements.

Given the broad definition of commodity, NFT market participants may want to consider certain steps to reduce regulatory risk. Content Owners and Issuers should ensure that their NFTs are unique, reducing the possibility of them being considered commodities and of the development of related futures and swaps. Issuers and Platforms should refrain from offering leverage to retail purchasers of NFTs and should ensure that NFTs are delivered to a purchaser's wallet, over which the Issuer or Platform have no control, within less than 28 days of purchase. Platforms should also monitor and enforce anti-fraud and anti-manipulation measures on their marketplace, and Collectors and Marketers should refrain from engaging in such activity.

> Content Owners and Issuers should ensure that their NFTs are unique, reducing the possibility of them being considered commodities and of the development of related futures and swaps.

CONCLUSION

NFTs and the digital ecosystems with which they are associated are vast, fluid, and constantly evolving. The digital aspect of these ecosystems also presents unique challenges and opportunities for local, national, and international participants in the space, including regulators, commercial actors, and end users. As the many use cases for NFTs continue to grow and garner attention, so will the various legal and regulatory issues associated with such use. While some of these issues are discussed herein, market participants are encouraged to continually monitor and consult with qualified counsel regarding applicable legal issues in this rapidly developing space.

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